



**North Amethyst Satellite Tie-back
Socio-economic Impact Assessment**



Cover graphic: Tie-back Option A

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EXECUTIVE SUMMARY

This Socio-Economic Impact Statement (SEIS) discusses the socio-economic effects of the North Amethyst Satellite Tie-back Project, as described in the North Amethyst Development Plan (SR-SRT-RP-0002) and the White Rose Development Plan Amendment - Modifications to the *SeaRose FPSO* (SR-SRT-RP-0003). It is an update of the SEIS completed in 2000 as part of the White Rose Oilfield Development Application and focuses mostly on the same components, summarizing the findings and providing an update where relevant. The impacts of the Project on these components are assessed. A discussion on Husky Oil Operations Limited's (Husky's) approach to sustainable development has also been included in the SEIS, as required under the Development Application Guidelines of the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB).

While this SEIS is primarily concerned with the North Amethyst Tie-back, it may be undertaken at the same time as a potential non-North Amethyst related refurbishment and upgrading of the *SeaRose FPSO*. The combined employment and business benefits of the construction phases of these two projects would be substantially larger than those of North Amethyst alone, and as appropriate the SEIS addresses the joint impacts of them both.

The SEIS examines the same Valued Environmental Components (VECs) -- Business and Employment, Community Social Infrastructure, and Physical Infrastructure and Services -- as in the White Rose SEIS, other than for the Fisheries VEC. The effects of the Project on fisheries were recently considered in another assessment completed by Husky. The temporal scope extends from the initial development phase, through installation and operations. The geographic scope of the analysis is again provincial, with those areas most likely to experience direct effects from the Project -- the St. John's, Isthmus of Avalon and Marystown Areas -- examined in greater detail.

The last twenty years have seen major fluctuations in the Newfoundland and Labrador economy, not least as a result of the development of the Province's offshore oil industry, and the cod moratorium. Newfoundland and Labrador's population has been in decline since 1991 and the unemployment rate remains the highest in Canada. However, the offshore oil sector and the Voisey's Bay mine have been the primary economic drivers in the Province during the current decade and the reason why the economy of Newfoundland and Labrador is now one of the fastest growing in Canada.

The St. John's Area economy has fared comparatively well by provincial standards over this decade, and is currently enjoying an economic boom. In 2006, the real GDP for the St. John's Area grew by 1.2 percent, employment increased 3.4 percent and the unemployment rate declined 0.8 percentage points. Between 2001 and 2006, the population of the St. John's Area increased by 4.7 percent.

The Isthmus of Avalon Area has not fared as well as the St. John's Area, but its relatively diverse economy and large industrial projects have sheltered it from much of the economic disruption experienced elsewhere in rural Newfoundland and Labrador. These projects include activity at, and associated with, the Bull Arm yard, the Newfoundland Transshipment Terminal at Whiffen Head, and North Atlantic Petroleum's Come By Chance refinery and associated sulphur plant. However, there was still a steady decline in the Area's population between 1991 and 2006, from 17,845 to 15,479.

The economic fortunes of the Marystown Area have primarily reflected developments in the fishery and at the Marystown Shipyard. The activity at the Shipyard has included work on the *Hibernia*, Newfoundland Transshipment Terminal and White Rose projects. However, the population of the Marystown Area still declined between 1991 and 2006, from 12,939 to 10,469.

The SEIS assesses the effects of the Project on each of these three areas and, as appropriate, the Province as a whole. The assessment focuses on the direct effects of the Project, mostly through expenditures or activities. However, as appropriate, some secondary effects are considered, including those of any Project-related demographic change on community services and infrastructure and physical infrastructure. The great majority of socio-economic effects will occur during the construction phase.

During Project construction, the St. John's Area will see administrative, engineering, training, regulatory, and supply and service activity. This will have a wide range of positive economic effects, similar to, but much more modest than, those experienced during the Hibernia, Terra Nova and White Rose development phases. These include the provision of local employment, training, business and R&D. More generally, the Project will result in the further development of provincial expertise and capabilities, contributing to sustainable economic development.

This will include benefits to rural Newfoundland and Labrador. The Isthmus and/or Marystown Areas will receive direct and multiplier employment and business benefits, and the yards engaged in this work will further develop their capabilities. However, the scale of construction activity in these areas will be less than was experienced on earlier offshore petroleum projects and, given that they did not result in any substantial social services and infrastructure or physical infrastructure problems for local communities, it is anticipated that they will be able to absorb the smaller demands that result from the Project or even combined projects.

The Project effects on education at the provincial level will be limited to those associated with post-secondary training. Demands from the Project construction phase, even in combination with refurbishment and upgrading of the *SeaRose FPSO*, will be much smaller than those from Hibernia, Terra Nova and White Rose. In all those cases, project-related demands were accommodated without difficulty, and hence no problems are anticipated to arise from the Project. Furthermore, there will be no additional labour force requirements associated with Project operations. The Project is not expected to have any effect on education in the study areas.

The Project, or combined projects, will only have a small and relatively short-term incremental effect on the overall demand for St. John's Area medical services. Construction activity is similarly not expected to place notable demands on the health systems of the Isthmus and Marystown Areas, which may anyway have experienced some reductions in baseline levels of demand as a result of population decline.

The effects of the Project on St. John's Area Income Support and employment services will likely be small and primarily positive. Given the relatively small scale and short-term nature of the Project's, or combined projects', effects on the area, it is not expected to have any noticeable effect on demand. It is not expected that any Project construction activity on the Isthmus will have negative local effects on Income Support and employment services, and Project employment may well have a positive effect. White Rose project activity did have some minor effects on Income Support and employment services in the Marystown Area, driving up costs of local rental accommodations with some secondary effects on persons with low incomes. However, the smaller size of the Project, in conjunction with reduced housing demand as a result of population decline, will minimize any such effects associated with Project construction.

There has been no suggestion or evidence that Hibernia, Terra Nova or White Rose have affected the nature or level of crime, or the demands for policing services or fire protection, in the study areas.

Similarly, the project had no effect on fire protection at the provincial level. The same is expected to be the case with the Project or combined projects.

While the population of the St. John's Area has grown in the last decade, there have also been increases in the provision of recreation services and facilities, and any Project or combined projects-related demands can be easily absorbed. In the Isthmus 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. Past projects have not resulted in problems related to the availability of recreation facilities in Marystown.

Past projects had a small effect on the housing market in the St. John's and Isthmus Areas. The Project or even combined projects construction-related requirements will be smaller than those for past projects, and any direct effects are likely to be small and short-term. They will be beneficial from the perspective of home-builders and suppliers, home sellers and municipal taxation. The White Rose project did result in housing problems in the Marystown Area that lasted about a year. Various adjustments were made, including the construction of the new hotel, the renovation of basement apartments, and people moving into their summer cottages so as to rent their homes to project workers. Given this experience, together with housing vacancies resulting from continued out-migration, only minor short-term negative Project or combined projects housing impacts are expected.

The Project or combined projects will have minor construction phase effects on industrial and commercial land, warehousing and office space in the St. John's Area, and will have no additional operations phase effects. Accordingly, they will benefit the area and should not exceed its ability to meet demand. No construction activity-related demand for additional industrial land is expected in Clarendville, Arnold's Cove or other Isthmus Area communities, or as a result of Project operations. The Marystown Shipyard and the Cow Head facility proved capable of accommodating the demands placed on them by the White Rose project. Accordingly, they would have no difficulty accommodating work on the Project or combined projects, which would be welcomed and would generate benefits for the area.

The SEIS also discusses Husky's approach to sustainable development. Husky believes that sustainability is achievable and requires innovative thinking. In support of this, Husky's activities and proposed projects, and their effects, are continually analyzed and improved so as to meet, and often exceed, industry and government regulatory requirements. The Husky Operations Integrity Management System (HOIMS) is a systematic approach towards operational excellence. It details how Husky will "operate responsibly to minimize the environmental impact of our operations" and "leave a positive legacy behind us when we leave". Husky has a number of programs in place to meet this goal.

Husky has introduced a number of initiatives to contribute to positive and sustainable economic and social change. These include employment and training initiatives, supporting petroleum industry research and development work, involving the local business community in operations through the East coast business unit and promoting and supporting workplace diversity within Husky and the local oil and gas industry.

1.0 INTRODUCTION

This Socio-Economic Impact Statement (SEIS) discusses the socio-economic effects of the North Amethyst Satellite Tie-back Project (hereafter referred to as the “Project”), as described in the North Amethyst Development Plan (SR-SRT-RP-0002) and the White Rose Development Plan Amendment - Modifications to the *SeaRose FPSO* (SR-SRT-RP-0003). It is an update of the SEIS completed in 2000 as part of the White Rose Oilfield Development Application and focuses mostly on the same components, summarizing the findings and providing an update where relevant. The impacts of the Project on these components are assessed. A discussion on Husky Oil Operations Limited’s (Husky’s) approach to sustainable development has also been included in this SEIS, as required under the Development Application Guidelines (C-NLOPB 2006) of the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB).

The analysis examines the same Valued Environmental Components (VECs, the socio-economic issues of primary concern for stakeholders) -- Business and Employment, Community Social Infrastructure, and Physical Infrastructure and Services -- as in the White Rose SEIS, other than for the Fisheries VEC. The effects of the Project on fisheries was recently assessed in the *Husky White Rose Development Project: New Drill Centre Construction and Operations Program Environmental Assessment* (Husky 2006) and the *Husky White Rose Development Project: New Drill Centre Construction and Operations Program Environmental Assessment Addendum* (Husky 2007), released from the *Canadian Environmental Assessment Act* on April 19, 2007. The findings of the assessment were that the predicted residual effects of the proposed Project, including possible accidental events on the fishery were negative, but not significant (See Appendix A).

The geographic scope of the analysis is again provincial, with those areas most likely to experience direct effects from the Project examined in greater detail. The temporal scope covers the initial development phase, through installation and operations, decommissioning and abandonment.

It should be noted that while this SEIS is primarily concerned with the Project, it could be undertaken at the same time as a potential refurbishment and upgrading of the *SeaRose FPSO* to increase produced water and gas handling capacity. The combined employment and business benefits of the construction phases of these two work scopes will be significantly larger than those for North Amethyst alone, and this SEIS also addresses the joint impacts of both.

The next section of this SEIS provides a summary of the findings of the White Rose SEIS. This is followed, in Section 3.0, by a description of the Socio-economic Context and Environment within which North Amethyst activity will occur. Section 4.0 then provides an assessment of the Project’s impacts on that environment, focusing on the effects on employment and business, community social services and infrastructure, and community physical infrastructure. Section 5.0 discusses Husky’s approach to sustainable development, as required under the Development Application Guidelines (C-NLOPB 2006), and Section 6.0 provides a short Summary and Conclusion.

2.0 THE WHITE ROSE SEIS

This section of the North Amethyst SEIS provides a summary of the findings and conclusions of the socio-economic assessment completed in 2000 as part of the White Rose Oilfield Development Application.

2.1 Assessment Scope and Methodology

The 2000 White Rose SEIS focuses on four issue areas, or Valued Environmental Components (VECs), that were viewed as being the primary areas of concern for stakeholders:

- § Business and Employment;
- § Community Social Infrastructure;
- § Physical Infrastructure and Services; and
- § Fisheries¹.

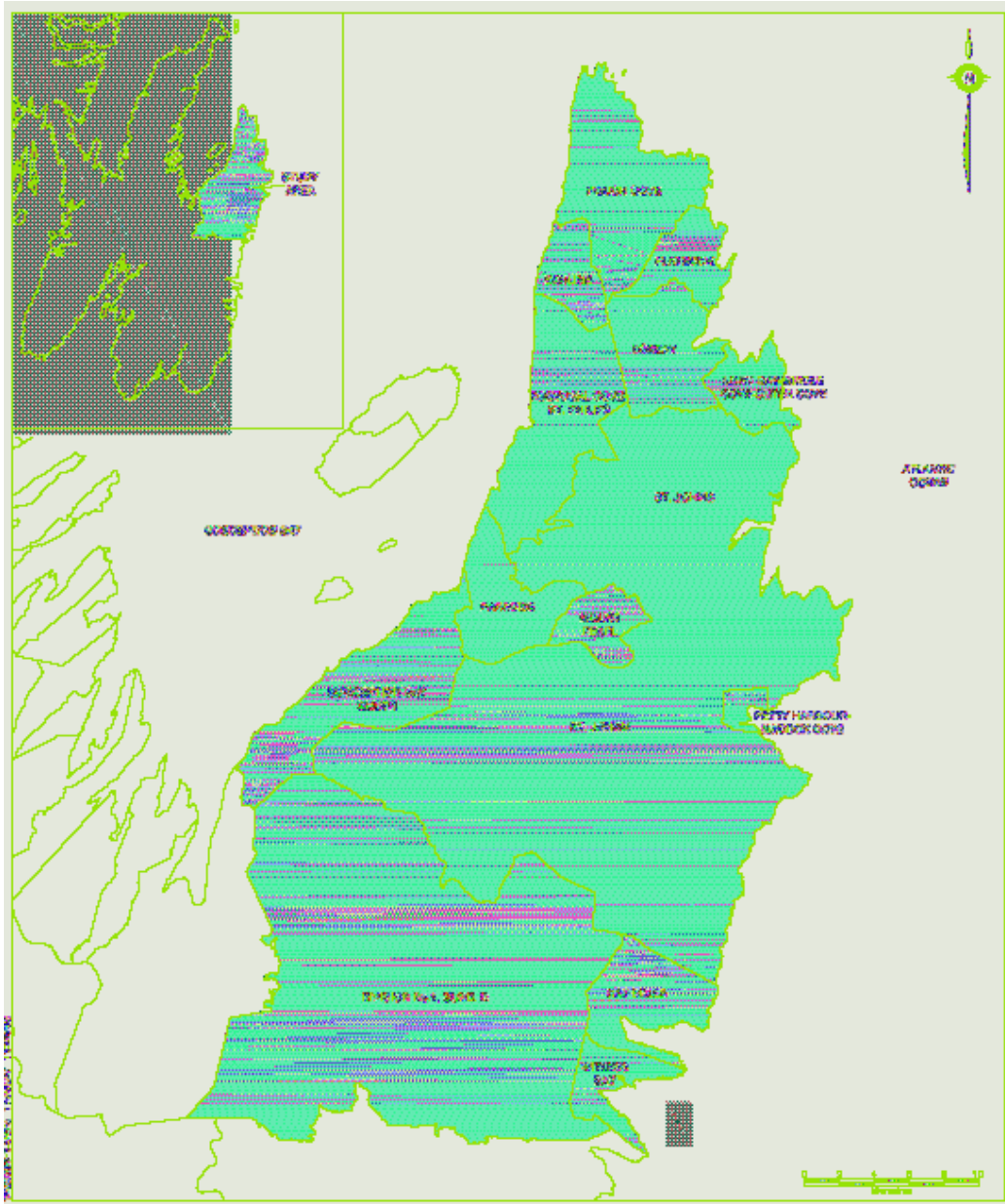
The geographic areas for detailed assessment were selected based on a precedent set by patterns of activity for the Hibernia and Terra Nova projects. They are the:

- § St. John's Area (Figure 2.1-1);
- § Isthmus of Avalon Area (Figure 2.1-2); and
- § Marystown Area (Figure 2.1-3).

Each area consists of a 50 km zone around the likely main centre of activity, within which most of the effects of the Project are expected to occur.

¹ As is noted in Section 1.0, a summary of a recent assessment of the effects on fisheries is provided in Appendix A.

Figure 2.1-1 St. John's Area



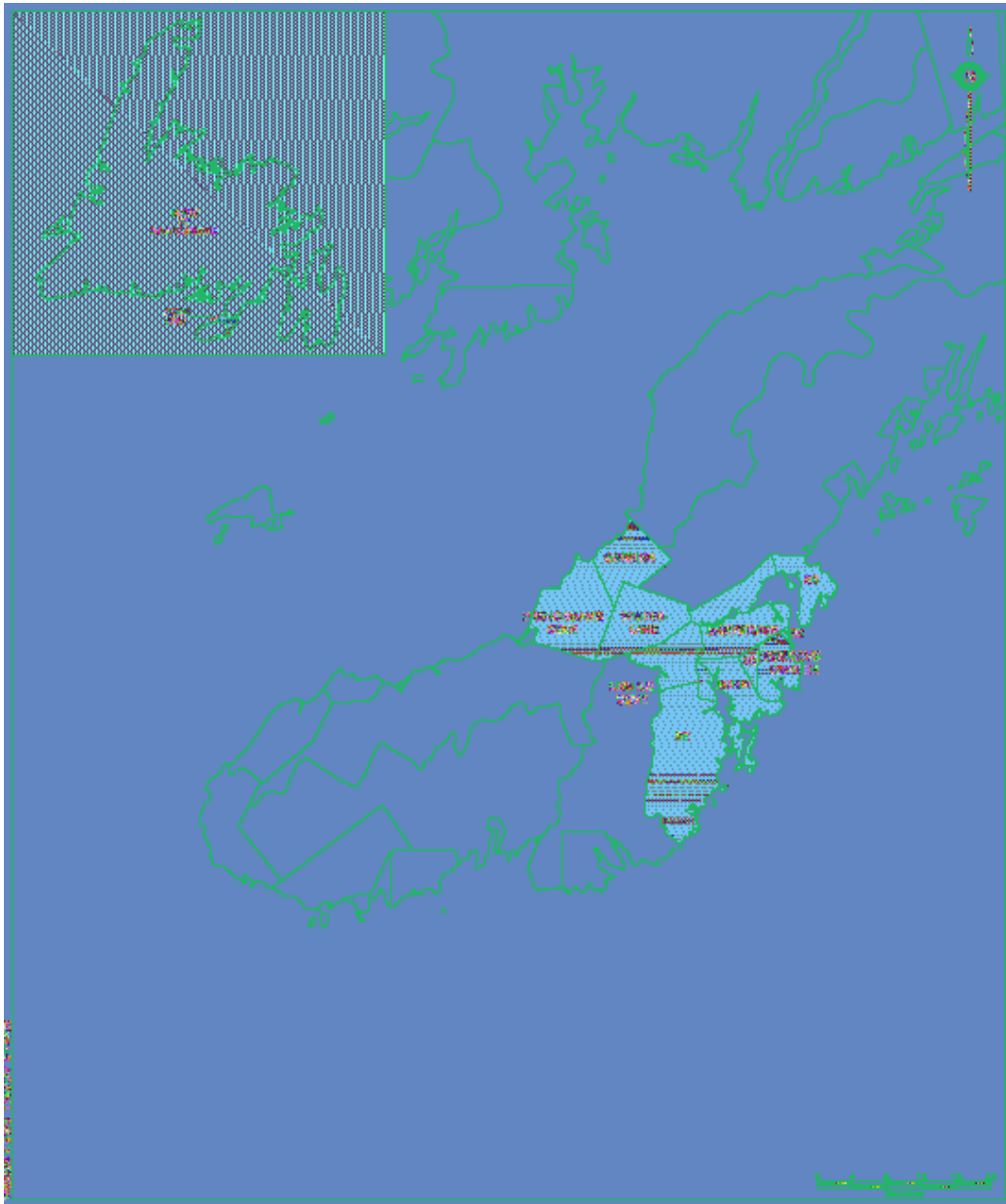
Source: Statistics Canada 2006.

Figure 2.1-2 Isthmus of Avalon Area



Source: Statistics Canada 2006.

Figure 2.1-3 Marystown Area



Source: Statistics Canada 2006

2.2 Business and Employment

The White Rose SEIS concluded that the project would have a range of positive direct and indirect business and employment effects on Newfoundland and Labrador, and Canada, throughout the construction and operations phases. The effects were expected to be Province-wide, but concentrated in and around the facilities used by companies that secured project contracts, including offices, warehouses and harbour facilities in the St. John's Area. No adverse or negative effects or mitigation measures were identified because any changes were expected to be within the capacity of the local economies to absorb them. Overall the project was expected to build on the previous impacts of the petroleum industry and add further business and employment benefits to each of the directly affected areas and the Province as a whole.

In the St. John's Area, the direct White Rose project demand for business and labour was expected to be related to all elements of construction and fabrication (topsides fabrication/outfitting, subsea unit fabrication and field development/installation), operations (administration, supply base/warehousing, helicopter transport, offshore production/marine support and tanker transport), malfunctions, accidents and unplanned events. In the Isthmus Area, direct demand was expected for all elements of construction and fabrication, and tanker transport. The Marystown Area was expected to experience direct demand for topsides fabrication/outfitting and subsea unit fabrication.

The local engineering industry and labour force were identified as having the potential to provide a major portion of the skills required to carry out the construction phase work. It was expected that these capabilities would be enhanced by the project through technology transfer and skills development. The full and fair opportunity that Husky provides for local participation in the supply of goods and services was identified as a means to maximize potential. However, the SEIS noted that the potential for Newfoundland and Labrador involvement in the construction and fabrication of the project on a competitive basis would be constrained by the local industrial and labour capability and capacity, resulting in some work going outside Newfoundland and Labrador.

It was thought unlikely that there would be demand conflicts with other provincial projects (Terra Nova, Hebron, Voisey's Bay, and Lower Churchill hydro development). Maritime Provinces projects (Scotian Shelf development, natural gas distribution, and Strait Area petro-chemical development) were seen as having the potential for limited conflict within the anticipated project schedules. Potential operations phase conflicts were not viewed as problematic due to the potential for long-term opportunities, which were thought to justify investment in new infrastructure and training.

It was determined that St. John's, as the administrative, engineering, training, regulatory, and supply and service centre for the project, would see wide ranging and beneficial effects, similar to those experienced from the Hibernia and Terra Nova projects.

The SEIS identified the Isthmus Area, particularly the Bull Arm site, as a possible location for the fabrication/construction of the topsides modules, topsides mounted structures, and riser bases for the project, and for the hook-up and commissioning of the FPSO and a support base for offshore installation. The Marystown Shipyard was seen as another potential site for fabrication of topsides and the maintenance of rigs involved in production drilling. The resulting activity would provide direct and spin-off benefits to the local economies involved and reinforce the position of these yards in the industry.

2.3 Community Social Infrastructure and Services

The White Rose SEIS assessed the impacts of the project on community social infrastructure and services, specifically in the areas of education, health and community services, social assistance and employment services, security and safety, and recreation. It noted that the implications of increased demands for services and infrastructure were a function of the existing supply and demand situation in particular areas. Additional activity had the potential to exacerbate the problems faced where there were already stressed services, while underutilized services may not reach their existing capacity.

2.3.1 Education

The White Rose SEIS concluded that, when mitigation strategies were taken into consideration, there would be no significant adverse or negative effects of the project on educational infrastructure or services, and any potential effects would likely be positive.

The provincial-level effects were anticipated to be limited to post-secondary systems through training of new entrants to the industry. Demands placed by other offshore petroleum projects had been accommodated without difficulty and the demands from White Rose were expected to be similar, but smaller in scale. Additionally, training institutions expressed confidence that they could respond adequately to industry demands and deliver programs as required.

The Hibernia EIS predicted that the St. John's Area would be able to accommodate any demands resulting from project-related demographic change. In fact, the population increases were even smaller than anticipated, and neither it or the Terra Nova project appears to have had any negative impacts.

The Isthmus Area did experience increased student enrollment during the construction of Hibernia, with one school requiring the addition of an extra half-time teaching unit and the provision of Norwegian language instruction. These demands did not go beyond the life of the construction project. The SEIS noted that Terra Nova did not have the same impact and concluded that White Rose would not have any negative effects on schools in the Isthmus or Marystown Areas.

2.3.2 Health and Community Services and Infrastructure

The White Rose project was seen as having the potential to increase demand on medical services in all three geographic areas. Where workers and their families were in-migrants to the Province, there would be an overall increase in demand, while movement within it could result in a geographic shift in demand. The SEIS noted that any new demands by in-migrants to the Province would not be large, given their demographic profile, and that these requirements would anyway be offset by their contribution to the tax base. Overall, the new demands on the health and community services infrastructure were seen as being minimal, and it was concluded that there would be no significant adverse or negative effects.

2.3.3 Income Support and Employment Services

The SEIS forecast that most of those reliant on income Support and employment services would not be able to take advantage of the direct project opportunities due to the need for specific education, training and experience. However, the spin-off effects were expected to provide a broader range of employment in all study areas.

The direct demands on the St. John's Area were expected to be similar to that of both Terra Nova and Hibernia, each of which resulted in direct employment for approximately 400 people. The cumulative effects of three operating projects on the St. John's housing market was identified as a concern during the issues scoping process. The change in the housing market was attributed to both economic growth and general demographic and lifestyle changes. While these effects were generally considered positive, for those displaced or negatively affected, it was thought that agencies responsible for social housing might be asked to assist.

In both the Isthmus and Marystown Areas, few effects were expected and it was forecast that, should they occur, they would generally be positive. It was noted that the provincial department responsible for social assistance and employment programs had mechanisms in place to identify and address program needs as they arise.

2.3.4 Security and Safety: Policing and Fire Protection

Based on previous experiences in all three geographic areas, it was not expected that the project would have any significant effect on security and safety services. However, it was noted that all three areas could experience demand relating to unplanned events, which might involve both police and fire services.

2.3.5 Recreation

The White Rose SEIS identified a potential for both negative and positive effects on recreational infrastructure. While there was a possibility of creating demand that exceeded the capacity of the local facilities, thereby reducing access, an influx of newcomers was seen as having the potential to make some recreation facilities more viable through user pay. No significant adverse or negative effects were expected.

In the St. John's Area, it was predicted that demographic change would not result in substantial increases in demand on services and facilities. It was noted that the demands resulting from previous projects had been easily absorbed, and there was no indication that local facilities would not be able to meet growing or changing demand resulting from White Rose or the cumulative effects of three offshore projects.

In the Isthmus Area, new demand during Hibernia construction was successfully absorbed by the local facilities. The Terra Nova project resulted in lower demand than the Hibernia project and the effects of White Rose were expected to be similar. The SEIS noted that authorities responsible for recreational facilities and programs had mechanisms in place to assess and forecast demand for services and were expected to respond accordingly.

2.4 Community Physical Infrastructure

2.4.1 Housing

Overall, the White Rose SEIS concluded that that project's effects on housing would be primarily positive and not significantly adverse or negative.

In the St. John's Area, White Rose requirements were forecast to be comparable to those for Terra Nova with direct project-specific effects that would be small, short-term and beneficial from the perspective of home-builders and suppliers, home sellers and municipalities. Cumulatively, general industry growth and increased economic activity was expected to increase demand for housing. While these effects were forecast to be generally positive, some negative inflationary impacts were expected.

In the Isthmus Area, concern over Hibernia's impact on housing was addressed by the construction of a work camp. Generally, Hibernia had little effect on overall demand or prices and any increases were short term. Terra Nova activity was on a much smaller scale with little or no effect on the local market. The worker accommodation strategy that would be adopted for White Rose was dependent on activity levels at Bull Arm and Marystown, which was unknown at the time of the White Rose SEIS.

2.4.2 Ports and Airports

White Rose project effects for both the Port of St. John's and St. John's International Airport were expected to be significant and positive, with greater use generating increased revenue while having no negative effect on other users.

The A. Harvey facility in the Port of St. John's was projected to be adequate to support field development and operations for White Rose. Use of the Port for the project was seen as benefiting the Port Authority and creating potential asset sharing opportunities for Husky and other operators. At the same time, increased activity was not expected to adversely affect other port users. Any cumulative effects of multiple field developments were not considered to be problematic.

The existing facilities at St. John's International Airport were thought capable of handling the then current cargo volume, with additional space being available if necessary. The airport was described as operating below history peak passenger volumes, with new facilities and ongoing expansion increasing its capacity.

2.4.3 Industrial and Commercial Land, Warehousing and Office Space

Overall, the White Rose SEIS concluded that potential effects of the White Rose project on industrial and commercial land, warehousing and office space were likely to be positive, with there being existing capacity to meet demand and available land for additional developments if required.

It was expected that the same types of demand experienced by the Terra Nova project would be generated by White Rose. Requirements for industrial land were expected to include fabrication yards such as those at Bull Arm, Marystown and St. John's, and light industrial land of the types found in industrial estates in the St. John's Area. However, the SEIS noted that the pattern of demand for industrial and commercial land, warehousing and office space could not be fully determined until contracts were awarded and would also depend on other activities, which could result in cumulative demands of the three offshore projects, especially in the St. John's Area.

Offshore operators and the supply and service industry were expected to continue to utilize office and warehouse space in and around St. John's. The Hibernia, Terra Nova and White Rose operating companies occupy office space in downtown St. John's, and it was forecast that Terra Nova and White Rose operations would require some additional warehouse space. No demand for additional industrial land was forecast for either the Isthmus or Marystown Areas, because the Bull Arm yard and the Marystown Shipyard were considered to have sufficient area.

2.5 Conclusion

The White Rose SEIS concluded that the project would have a range of positive consequences for Newfoundland and Labrador, and its citizens, families and communities. The potential adverse effects were minor and non-significant.

The main positive effects were those on the economy. White Rose was seen as creating large amounts of employment and business in the Province during all phases of activity. This would, in turn, create spin-off employment and business, as well as new revenues for government through personal, business and property taxes. Municipal government would also benefit through increased user pay for the use of recreational and other infrastructure and services. White Rose would also result in major direct government revenues.

White Rose would build on, and further contribute to, the development of the Newfoundland and Labrador offshore petroleum industry. It was noted that this would reduce industry costs locally, encouraging additional projects and maximizing local benefits, and contributing to the likelihood of Newfoundland and Labrador individuals and companies being successful in the international oil industry.

The SEIS also noted that while the effects of offshore petroleum industry projects on local people, families and communities were an issue that caused considerable concern in the 1980s, subsequent experience was that, given appropriate management initiatives, these effects were very minor and largely positive. Any economic development would inevitably have some minor negative effects, but the benefits clearly greatly outweighed the costs.

3.0 THE SOCIO-ECONOMIC CONTEXT AND ENVIRONMENT

This section of the SEIS describes the economic and demographic context within which the White Rose project has occurred and the North Amethyst Project will occur, and the elements of the socio-economic environment (VECs) that are thought likely to be affected by the Project. The VECs discussed are Business and Employment, Community Social Infrastructure, and Physical Infrastructure and Services.

3.1 Economic and Demographic Context

An understanding of the economic and demographic context within which the North Amethyst Satellite Tie-back Project will occur is fundamental to the analysis of its potential effects. This section summarizes this context in the Province as a whole, as well as the St. John's, Isthmus and Marystown Areas.

3.1.1 Newfoundland and Labrador

The last twenty years have seen major fluctuations in the Newfoundland and Labrador economy. The start of the 1990s saw the start of a new phase in the Province's offshore oil industry with its first oilfield development project, including the construction of the Hibernia platform at Bull Arm on the Isthmus of Avalon. This \$5.8 billion project, the largest construction project in North America at the time, created, at peak, some 6,100 jobs in Newfoundland and Labrador (HMDC 1996a), and this is reflected in the substantial increase in capital investment in the 1993 to 1996 period. Other oil-related activity during this period included the construction of the Newfoundland Transshipment Terminal and preparations for the development of the Terra Nova field (Department of Finance 2000a).

This positive development was dramatically offset in 1992, with the declaration of moratoria on northern cod and a number of other groundfish species. In that year, approximately 32,000 Newfoundlanders and Labradorians were put out of work (Storey and Smith 1997) and between 1990 and 1994 the volume of fish landings fell by over 70 percent. These events have had a major effect on the economy and society.

Table 3.1-1 Population of Newfoundland and Labrador, 1991-2006

Year	Population	Change (%)
1991	579,500	5.2
1996	560,600	-3.3
2001	512,930	-7.1
2006	505,469	-1.5

Source: Statistics Canada 2000b; 2006b

Table 3.1-2 Interprovincial Migration, Newfoundland and Labrador, 1991-2006

Census Year ¹	In	Out	Net
1991-92	9,266	10,935	-1,669
1992-93	7,558	10,636	-3,078
1993-94	6,580	11,532	-4,952
1994-95	6,406	13,380	-6,974
1995-96	7,005	14,441	-7,436
1996-97	6,962	15,096	-8,134
1997-98	7,392	16,882	-9,490
1998-99	10,988	16,613	-5,625
1999-00	8,400	12,663	-4,263
2000-01	7,499	11,992	-4,493
2001-02	8,784	12,136	-3,352
2002-03	9,198	10,881	-1,683
2003-04	8,397	10,424	-2,027
2004-05	8,213	11,923	-3,710
2005-06	10,544	14,912	-4,368

¹ July 1 to June 30

Source: Statistics Canada 2000a; 2006b.

Note: Figures do not include international migration

A major consequence of the closure of the fishery has been the decline of the population since 1991 (Table 3.1-1). There were net losses of nearly 18,900 people between 1991 and 1996, of nearly 48,000 between 1996 and 2001, and of over 6,000 between 2001 and 2006. This population decline is also illustrated by interprovincial migration data. Between 1991 and 2006, Newfoundland and Labrador showed a net out-migration each year (Table 3.1-2). As might be expected, these losses have particularly affected rural Newfoundland and Labrador. This blow to the economy was also reflected in higher unemployment rates (20.4 percent in 1994) (Table 3.1-3), a decline in the labour force, decreases in retail trade, and declining housing starts.

The production from the offshore oil sector and the Voisey's Bay mine has been the primary economic driver in the Province during the current decade and the reason why the economy of Newfoundland and Labrador is now one of the fastest growing in Canada. This is reflected in GDP growth (Table 3.1-3), which was predicted to grow 6.2 per cent in 2006. However, mineral production and offshore oil production are highly capital-intensive activities. As a result, the corresponding growth in employment, while significant, has not kept pace with the level of growth in GDP and the unemployment rate in Newfoundland and Labrador still remains the highest in Canada.

Table 3.1-3 Selected Economic Indicators Newfoundland and Labrador 1995-2005

Economic Indicators	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 ¹
Population as of July 1 (000's)	567.4	559.8	551	539.9	533.4	528	522	519.4	518.5	517.3	514
% Change		-1.3	-1.6	-2	-1.2	-1	-1.1	-0.5	-0.2	-0.2	-0.6
GDP at Market Prices (\$000)	10,652	10,417	10,533	11,176	12,184	13,922	14,179	16,452	18,131	19,433	21,486
% Change		-2.2	1.1	6.1	9	14.3	1.8	16	10.2	7.2	10.6
Personal Income (\$000)	10,130	9,972	9,963	10,239	10,651	11,122	11,576	11,895	12,385	12,851	13,316
% Change		-1.6	-0.1	2.8	4	4.4	4.1	2.8	4.1	3.8	3.6
Per Capita Personal Income (\$)	17,853	17,814	18,082	18,965	19,968	21,064	22,176	22,901	23,886	24,842	25,907
% Change		-0.2	1.5	4.9	5.3	5.5	5.3	3.3	4.3	4	4.3
Labour Force, Annual Average (000s)	237.1	231.7	230.9	234.3	241.9	237.8	242.7	248.5	254.1	254.3	252.5
% Change		-2.3	-0.3	1.5	3.2	-1.7	2.1	2.4	2.3	0.1	-0.7
Employment, Annual Average (000s)	194.4	187.5	188.3	192.4	201	198	203.8	207.2	212.3	214.3	214.1
% Change		-3.5	0.4	2.2	4.5	-1.5	2.9	1.7	2.5	0.9	-0.1
Unemployment Rate, Annual Average (%)	18	19.1	18.4	17.9	16.9	16.7	16.1	16.7	16.5	15.7	15.2
% Change		6.1	-3.7	-2.7	-5.6	-1.2	-3.6	3.7	-1.2	-4.8	-3.2
Consumer Price Index (2002 = 100) ¹	-	-	92.3	92.5	93.8	96.6	97.7	100	102.9	104.8	107.6
% Change				0.2	1.4	2.9	1.1	2.4	2.9	1.8	2.7
Newsprint Shipments (thousands of metric tonnes)	734.7	713.7	740.9	569.8	722.2	807.8	745.8	740.3	780.9	731.7	761.8
% Change		-2.9	3.8	-23.1	26.7	11.9	-7.7	-0.7	5.5	-6.3	4.1
Value of Fish Landings (\$Millions)	329.8	263.9	308.8	384.4	509.3	570.7	487.2	505.4	575.6	606.1	461.3
% Change		-20	17	24.5	32.5	12.1	-14.6	3.7	13.9	5.3	-23.9
Value of Mineral Shipments (\$Millions)	881.5	911.3	1,010.10	1,095.80	821.1	974.2	754.7	797.5	774	694.5	1,549.2
% Change		3.4	10.8	8.5	-25.1	18.6	-22.5	5.7	-2.9	-10.3	123.1
Value of Iron Ore Shipments (\$000)	-	-	919,409	1,026,517	760,482	902,134	691,626	728,909	720,427	624,677	1,286,771
% Change				11.6	-25.9	18.6	-23.3	5.4	-1.2	-13.3	106

Economic Indicators	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 ¹
Value of Manufacturing Shipments (\$000)	-	-	-	-	2,200.7	2,503.8	2,467.8	2,537.3	2,583.8	2,544.5	2,345.1
% Change						13.8	-1.4	2.8	1.8	-1.5	-7.8
Oil Production (Millions of Barrels)*	-	-	1.3	23.8	36.4	52.8	54.3	104.3	123	114.8	111.3
% Change				1730.8	52.9	45.1	2.8	92.1	17.9	-6.7	-3
Public and Private Capital Investment (\$Millions)	2,984	2,457	2,788	2,825	3,611	3,399	3,371	3,361	3,712	4,243	4,576
% Change		-17.7	13.5	1.3	27.8	-5.9	-0.8	-0.3	10.4	14.3	7.8
Dwelling Starts (Number)	1,712	2,034	1,696	1,450	1,371	1,459	1,788	2,419	2,692	2,870	2,498
% Change		18.8	-16.6	-14.5	-5.4	6.4	22.5	35.3	11.3	6.6	-13
Retail Trade NAICS (\$Millions)	3,626	3,672	3,957	4,102	4,433	4,760	5,201	5,407	5,736	5,755	5,825
% Change		1.3	7.8	3.7	8.1	7.4	9.3	4	6.1	0.3	1.2
New Motor Vehicle Sales (Number)	17,112	16,199	20,985	21,472	24,421	23,859	24,649	25,790	25,428	22,898	24,899
% Change		-5.3	29.5	2.3	13.7	-2.3	3.3	4.6	-1.4	-9.9	8.7

Source: Newfoundland and Labrador Statistics Agency 2006

¹ Newfoundland and Labrador Department of Finance, Economics and Statistics Branch, 2007.

* = Hibernia began production in November 1997, Terra Nova began in January 2002, White Rose began in November 2005 and Voisey's Bay began in September 2005.

Unemployment in Newfoundland and Labrador has significant regional characteristics. For instance, in 2006, the St. John's Census Metropolitan Area unemployment rate (7.4 percent) was comparable to that in the rest of Canada (6.3 percent) while on the south coast of Newfoundland and Labrador it was much higher (25.8 percent). This indicates a changing structure in the provincial economy away from rural, labour-intensive, resource-based activities to highly capital-intensive, concentrated, resource-based activities (JWL 2006).

The excess of births over deaths (Table 3.1-4) has been getting smaller since 1981. In the last 10 years, Newfoundland and Labrador has recorded a large decline in the rate of natural population growth as a result of fewer births and an increase in the number of deaths. The Province's fertility rate is currently the lowest in the country, and in 2006, Newfoundland and Labrador was the only province to report negative natural population change (Department of Finance 2006). This negative natural population growth is reinforced by the effects of net out-migration. The population has declined in most parts of the province, with fishery and Employment Insurance dependent regions being disproportionately affected (Department of Finance 2006). Areas heavily dependent on the groundfish fishery, including the Northern Peninsula and the South Coast, experienced the greatest losses.

Table 3.1-1 Natural Increase Components of Growth, Newfoundland and Labrador, 1991-2006

Census Period	Average Births per Year	Average Deaths per Year	Average Net Increase per Year
1991 - 1996	6,405	3,905	2,500
1996-2001	5,108	4,167	943
2001 - 2006 ¹	4,564	4,308	255

¹ Preliminary estimate

Source: Statistics Canada 2000b; 2006b

3.1.2 St. John's Area

The St. John's Area economy fared comparatively well by provincial standards over the past decade, and is currently enjoying a boom in economic growth and activity. Intercensal demographic changes in the St. John's Area and the City of St. John's since 1981 are illustrated in Table 3.1-5. The area as a whole has been growing, although at a rate that had been in decline until 2006. The total population grew by only 1.3 percent in the 1991 to 1996 period and decreased by 0.7 percent between 1996 and 2001. Between 2001 and 2006, it grew by 4.7 percent.

Table 3.1-2 Population and Intercensal Changes, St. John's Area and City, 1991-2006

Year	St. John's Area		City of St. John's	
	Population	Intercensal Change (%)	Population	Intercensal Change (%)
1991	171,859	6.2	95,770	-0.5
			104,659 ¹	
1996	174,051	1.3	101,936	-2.6
2001	172,918	-0.7	99,182	-2.7
2006	181,113	4.7	100,646	1.5

¹ 1996 boundaries

Source: Statistics Canada 1981; 1986; 1991; 1996, 2006a

The City of St. John's and the City of Mount Pearl in particular, have experienced substantial economic growth recently. In the late 1990s and early 2000s, St. John's experienced a wave of construction activity, including the new Janeway Hospital, the civic centre and convention facility, The Rooms (provincial art gallery and archives complex) and the Outer Ring Road. The St. John's Airport also underwent a \$48 million redevelopment and there was an expansion and redevelopment at the St. John's Dockyard (NEWDOCK). Mount Pearl, home to the Donovan's Industrial Park, the Province's largest, has experienced economic growth across a number of sectors, but offshore-related development has been particularly important. These and other infrastructure developments are discussed further in Chapters 4 and 6 of this report.

In 2006, real GDP for the St. John's Area grew by 1.2 percent to \$7.2 billion, employment increased 3.4 percent to 93,400 and the unemployment rate declined 0.8 percentage points to 8.1 percent. Real GDP growth was influenced by gains in finance, insurance, real estate and leasing, and a number of other industries, including wholesale and retail trade, information, culture and recreation. In 2007, economic growth of the St. John's Area is expected to increase substantially due to increases in oil and gas extraction, finance, insurance and other industries (Department of Finance 2007).

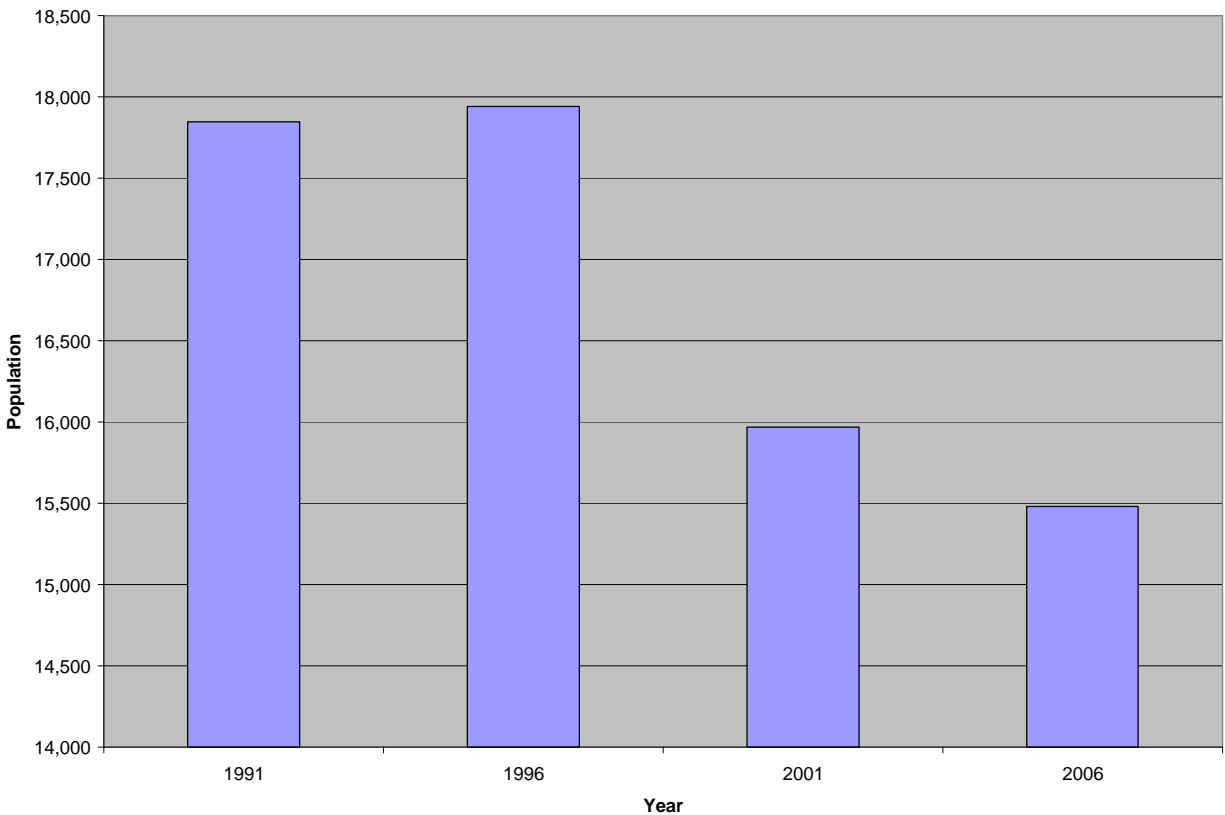
3.1.3 Isthmus of Avalon Area

The Isthmus of Avalon Area has not fared as well as the St. John's Area, but its relatively diverse economy and large industrial projects have sheltered it from much of the economic disruption experienced elsewhere in the Province. There was a general decline in the population between 1991 and 2006, from 17,845 to 15,479 (Figure 3.1-1).

In 1991, the area had a labour force of 7,460, of which 26.5 percent were unemployed. By 1996, the labour force had increased to 7,875 but the percentage unemployed had declined to 23.5 percent. The labour force decreased to 7,235 by 2001 and the unemployment rate had grown to 24.1 percent (Statistics Canada 1991; 1996; 2001). Since the 1990s, the Isthmus of Avalon Area has been involved with construction at the Bull Arm yard and of the Newfoundland Transshipment Terminal at Whiffen Head.

Other activities that have contributed considerably to the local economy include North Atlantic Petroleum's Come By Chance refinery and the associated sulphur plant, the fish plant at Arnold's Cove and the Clarenville crab processing plant. Employment at these and other businesses in the area, combined with out-migration, have helped reduce the number of people needing Income Support in recent years (see Section 5.4). In addition, planning is currently underway for the Voisey's Bay Nickel Company commercial nickel processing plant at Long Harbour, an LNG transshipment facility at Arnold's Cove, and a refinery at Southern Head. These could provide thousands of jobs during construction and operations.

Figure 3.1-1 Population, Isthmus of Avalon Area, 1991-2006

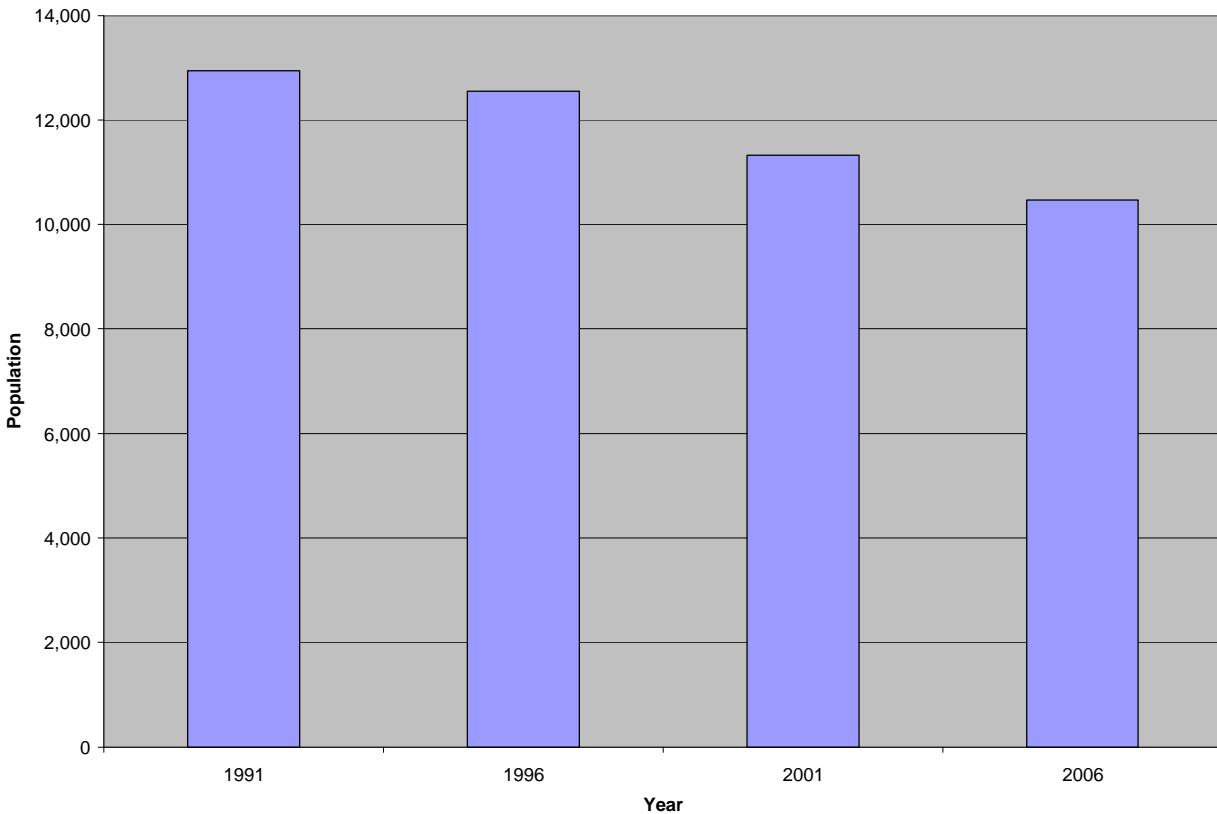


Source: Statistics Canada 1981; 1986; 1991; 1996; 2006a.

3.1.4 Marystown Area

The population of the Marystown Area declined by 16.6 percent between 1991 and 2006, from 12,939 to 10,469 (Figure 3.1-2). The economic fortunes of the area primarily reflect what has been happening in the fishery and at the Marystown Shipyard. The effects of the fisheries moratoria can be inferred from the population changes in Burin in particular, but the closures have affected the entire area. Hibernia-related work was of particular importance to the yard between 1993 and 1995, as was subsequent work constructing the tugs for the Newfoundland Transshipment Terminal. The Terra Nova project and Husky provided work for the shipyard in the 1990s and in 2005, the *SeaRose FPSO* topsides were completed as part of the White Rose project. In 2006 and 2007, the shipyard was involved in the refit of the Terra Nova FPSO and repairing the *Eirik Raude*.

Figure 3.1-2 Population, Marystown Area, 1991-2006



Source: Statistics Canada 1991; 1996; 2006a.

3.2 Business and Employment

3.2.1 Newfoundland and Labrador

In 2007, Newfoundland and Labrador is forecast to post strong economic growth with private sector estimates forecasting an average real GDP growth of 5 percent, up from a 1.9 percent increase in 2006 (Department of Finance 2007). The oil industry remains the leading contributor to this growth in the provincial economy, accounting for 15 percent of the province's real GDP and close to 2 percent of provincial employment. Strong economic growth, coupled with increasing employment, higher wages, low interest rates and strengthened consumer confidence led to a 3.0 percent increase in retail sales, totaling \$6.1 billion (Department of Finance 2007).

Employment averaged 215,700 in 2006, an increase of 0.7 percent over 2005. Wages also increased in 2006 with average weekly earnings increasing by 4.1 percent. This resulted in a 4.6 percent increase in labour income, bringing the total to \$8.7 billion. Total personal income increased by an estimated 4.1 percent to \$13.9 billion and the unemployment rate declined by 0.4 percentage points, to 14.8 percent. There were job gains in natural resources industries, goods and services producing industries, construction, tourism and transportation industries. Employment growth in the St. John's

and Burin Peninsula areas has been particularly strong at 3.43 percent and 5.97 percent, respectively (Department of Finance 2007).

3.2.2 St. John's Area

The St. John's Area has been a major beneficiary of, and contributor to, the recent economic success enjoyed by the Province. From 2001 to 2006, the population in the St. John's CMA has grown from 172,918 to 181,113, an increase of 4.7 percent. The area's unemployment rate has also declined: in 1991, the rate for the CMA was 16.1 percent; this had fallen to 14.2 percent by 1996 (Statistics Canada 1991; 1996), 10.0 percent by 2001 and 8.1 percent by 2006 (Department of Finance 2007). In general, these declines in the unemployment rate and increases in population reflect the important contribution the offshore oil industry is already making to the St. John's Area economy.

Since the earliest days, St. John's has been the main location for 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 oil industry-related capital expenditures in the region. For example, spending on 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 sub-sea systems fabrication centre and the Pennecon marine terminal in Bay Bulls totaled over \$50 million between 1996 and 2004 (PRAC 2003; 2005). Located 30 km south of St. John's, Bay Bulls has been used for rig mobilization and subsea installation support activity related to different offshore projects.

In addition, the growth of the oil industry has been accompanied by the development in St. John's of an impressive array of education, training and research and development facilities. This has involved construction at: Memorial University (including the Centre for Earth Resources Research, Centre for Cold Ocean Resources Engineering and Landmark Graphics Visualization Center) worth approximately \$66 million; the Fisheries and Marine Institute (including the Marine Offshore Simulator Training Centre, a safety and emergency response training centre, a training model of the White Rose FPSO, the Offshore Safety and Survival Centre in Foxtrap) worth \$24 million; and the College of the North Atlantic (CNA) (including Petroleum Technology Training Program equipment) worth \$25 million (Department of Industry, Trade and Technology 1998; PRAC 2003; 2005).

Ongoing oil industry activities have brought a range of economic benefits to the St. John's region. For example, in 2002, the City of St. John's identified eighteen different oil industry companies with premises in St. John's. The space occupied by these companies had a combined assessed value of \$50.8 million and yielded approximately \$1.85 million in property tax to the city. Similarly, the City of Mount Pearl was home to 95 companies with petroleum work as a significant component of their business. They employed over 900 people and had an assessed value of approximately \$40 million yielding almost \$1.3 million in property tax (PRAC 2003).

3.2.3 Isthmus of Avalon Area

The Isthmus of Avalon has had fluctuating economic fortunes over the years, reflecting changes in the provincial economy, in the fishery, and with major industrial projects within and close by the area. In 1991, the Isthmus had a population of 17,845 and a labour force of 7,460, of whom 1,980 (26.5 percent) were unemployed. By 2001, the area's population had fallen to 15,967 and the labour force to

7,235 and the unemployment rate had increased slightly to 24.1 percent. By 2006, the population had fallen again, to 15,479 (Statistics Canada 1991; 1996; 2001; 2006a).

The Isthmus Area has had a number of important involvements with the offshore oil industry over the last decade. It is the site of both the \$470 million Bull Arm construction and fabrication facility, which saw most of the Newfoundland-based construction and fabrication activity on the Hibernia production platform, and employed at peak about 5,800 workers. Over the life of the project, an average 7 percent of this labour force was from the local area. As of June 1995, local area businesses contracts had also received contracts worth over \$34 million (HMDC 1996a).

Since the completion of Hibernia, the Bull Arm yard has remained involved in the fabrication of major components for the industry. From 1999-2001, it saw large amounts of work on the Terra Nova project, and in 2003 it was leased by North Eastern Constructors Ltd. for White Rose fabrication work. The site was later used for the fabrication of components for the Voisey's Bay mine project and for subsea integration testing for the White Rose project. In 2005, the Transocean Semi-Submersible, *Henry Goodrich*, underwent a five-year fitness survey there and in 2006 the Terra Nova FPSO Additional Living Quarters Module was constructed there. Bull Arm has also been used as a subsea test facility for White Rose.

The Newfoundland Transshipment Terminal is located on Placentia Bay, close to Arnold's Cove. The first two phases, which provided sufficient capacity to handle Hibernia and Terra Nova production, cost approximately \$300 million (excluding the construction of two tugs in Marystown). The terminal itself currently employs 49 people. Local area expenditures exceed \$100,000 a year (NOIA 2007).

North Atlantic Refining, a subsidiary of Harvest Energy Trust, operates a 115,000 barrel per day refinery at Come-by-Chance. Originally completed in 1973, the refinery has subsequently undergone a series of upgrades including the recent 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 currently employs over 700 people (North Atlantic Refining 2004; 2006).

3.2.4 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. In 1991, it had a population of 12,939 and a labour force of 5,995, of whom 1,370 (22.8 percent) were unemployed. By 1996, the population had fallen to 12,552, and the labour force to 5,465. The number of unemployed, however, had increased to 1,850, resulting in an unemployment rate of 33.8 percent. From 2001 to 2006, the population in the area continued to decline, from 11,319 to 10,469. The area labour force also declined, dropping to 4,790 in 2001, while the number of unemployed fell to 905, resulting in an unemployment rate of 24.6 percent (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's involvement in the Newfoundland and Labrador oil industry since its early years. The shipyard has long been the site of rig commissioning, decommissioning and maintenance activity, leading to the \$40 million investment in the Cow Head Fabrication Facility in the early 1990s.

The Marystown 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 percent of the company's throughput over the period. Specific projects included work on mooring pontoons, access systems and two supply vessels (HMDC 1995). The shipyard also constructed the specialized tugs used by the Newfoundland Transshipment Terminal and undertook small fabrication tasks related to the Terra Nova project.

The Marystown Area has also derived benefits from Husky's exploration activity. In the spring of 2000, the Sedco 714 semi-submersible drilling rig was subject to work at the shipyard. From 2002 to 2005, the Marystown Shipyard and Cow Head Fabrication facility were the center of White Rose construction and fabrication activity. In March 2002, it was awarded a \$395 million lump-sum, fixed-price-and-date contract for the engineering, procurement and construction of the topsides module as well as outfitting and commissioning of the *SeaRose FPSO*. Peak employment on this project was 1,458 in August 2004, including a skilled labour force of 1,084.

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

3.3 Community Social Infrastructure and Services

3.3.1 Education

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 (Department of Education 2004). This District includes communities in the region east of Clarendville, including the Burin, Bonavista and Avalon peninsulas. In addition, the Conseil scolaire francophone provincial de Terre Neuve et du Labrador 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 (Eastern School District 2007a).

3.3.1.1 Newfoundland and Labrador

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 294 schools in 2005-06, for example, was 49 fewer than in 1999-2000 and 204 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 decrease of 21 percent, and to 74,315 in 2005-2006, a further decrease of 21 percent. The full-time teaching force declined from 7,699 positions in 1993-94 to 6,453 in 1998-99 (16 percent) and 5,485 in 2005-2006 (15 percent). Overall, enrolments continue to decline slightly faster than the number of teachers, hence, the student-to-teacher ratio continues to decrease, albeit at a much slower rate. For example, it was 1:13.5 in 2005-06 compared to 1:14.7 in 1993-94 (Newfoundland and Labrador 1994; 1999; 2006).

Post-secondary education in the Province is provided primarily through Memorial University, which has its main campus and a Fisheries and 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 (College of the North Atlantic 2006). There are also 27 registered private training institutions, the greatest number of which are located in the St. John's Area. The private colleges primarily offer vocational training (Department of Education 2007a).

3.3.1.2 St. John's Area

In 1998-99, there were 81 schools in the Avalon East School Board, 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. Statistics on school physical capacity are not available.

Post-secondary education 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. Overall, graduate enrolment at the St. John's campus grew from 1,179 in 1992 to 2,187 in 2004, an increase of 85 percent (Memorial University 1999; 2004).

From 1992-93 to 1994-95, the number of students at CNA increased from 4,281 to 4,874, after which there was a 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 (D. Feltham, pers. com.; T. Lopez, pers. com.).

3.3.1.3 Isthmus of Avalon Area

In 2006-07, 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 2,159 in 2005-06, a decrease of 20.6 percent (Newfoundland and Labrador 1994; 1999; Newfoundland and Labrador Statistics Agency 2007).

Post-secondary education is available through CNA, which has a campus in Clarenville.

3.3.1.4 Marystown Area

In 1998-99, there were six primary and secondary schools in the Marystown Area, compared with 10 in 1993-94. In 2007, there are only three schools in the area: two in Marystown and one in Salt Pond. The total student enrolment in 2005-06 was approximately 1,595, compared with 3,067 in 1993-94, a decrease of 47.9 percent (Newfoundland and Labrador 1994; 1999; Eastern School District 2007b). The College of the North Atlantic has a campus in Burin that offers a range of construction-related courses and programs.

3.3.2 Health and Community Services

Health and community services in Newfoundland and Labrador are administered by the provincial Department of Health and Community Services. 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 (Department of Health and Community Services 2005). In addition there is a regional Nursing Home Board in St. John's.

The Eastern Health Regional Integrated Health Authority is responsible for providing health services to all communities on the Avalon, Burin and Bonavista peninsulas. Eastern Health operates more than 80 hospitals and health care facilities with a total of 2,692 beds (Eastern Health 2006a). The geographic areas administered by the Integrated Regional 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 subunits 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.

3.3.2.1 Newfoundland and Labrador

Annual total health care expenditure in the Province was forecast to be \$2,268.1 million in 2006, up from \$2,123.9 million in 2004 and \$1,574.8 million in 1999. In 2006, 9.8 percent of the GDP was forecast to be allocated to health expenditures compared to 10.3 percent for Canada as a whole (National Health Expenditures Database 2000; 2007a; 2007b).

There are 33 hospitals and health care centres and 22 nursing homes in the Province, which in 2004-05, provided a total of 1,678 hospital beds and 2,737 nursing home beds (Department of Health and Community Services 2005). The level of service in the Province, as defined by the number of nurses and doctors per capita, is comparable to other provinces in Canada.

Between 2001 and 2005, the number of physicians in Newfoundland and Labrador increased by 5.2 percent. This is similar to the national rate (5.3 percent), however, the total physician to population ratio has surpassed the national ratio due to a decline in the Province's population (Canadian Institute for Health Information 2006). The number of physicians in the Province declined between 1991 and 1998, but the overall physician-to-patient ratio remained fairly stable from 1993 to 1998, as the decrease in the number of physicians has been matched by the decline in population. In 2005, the number of physicians in the Province increased to 994 from 926 in 1998, for a physician-to-patient ratio of 1.9, the highest it has been since 1991 (Canadian Institute for Health Information 2006).

The number of registered nurses peaked in 1992 at 5,372 and subsequently declined. By 1998, however, numbers had almost returned to 1992 levels. During the 1991 to 1998 period, the registered nurse-to-population ratio showed an overall increase from 9.15 per 1,000 to 9.79 per 1,000 (Department of Finance 2000b). The number of nurses in the province increased to 5,592 between 1998 and 2001 and again to 5,727 by 2005. In 2004-05, there were 10.5 practicing registered nurses employed per 1,000 population (Health and Community Services Human Resource Planning Unit 2006).

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, and the availability of nurses and family physicians in rural areas, as they 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 (Health and Community Services Human Resource Planning Unit 2006).

3.3.2.2 St. John's Area

Eastern Health operates six long-term care facilities, four hospitals and a hostel in the St. John's Area. As of June 2006, Eastern Health provided 684 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 2006a).

There are seven long-term care facilities in the St. John's Area providing 1,073 beds; 74 in a hospital and 999 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 provides 8 acute-care and 12 long-term beds. St. John's also has one psychiatric institution, the Waterford Hospital, which has 73 acute-care and 104 long-term care beds. Other hospitals provide some psychiatric care (Department of Health and Community Services 2000a; Eastern Health 2006a).

The need for physicians is strongly related to the demographic characteristics of the area and as such requires periodic review. In 1999, a Provincial Human Resource Planning Committee, whose membership includes representatives from government, provincial health care boards, unions and other stakeholders, was established to review this and related human resource issues. By March 2008, Eastern Health plans to have completed a needs assessment of the region in support of a regional health services plan (Eastern Health 2006b).

3.3.2.3 Isthmus of Avalon Area

The Dr. G. B. Cross Memorial Hospital in Clarenville serves the Isthmus Area. In 2006, it had 43 acute care, 15 long-term care and 4 critical 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 (M. Elliott pers. com.).

3.3.2.4 Marystown Area

The Marystown Area has one acute-care facility, the Burin Peninsula Health Care Centre, which has 38 acute-care beds and four critical-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 June 2007, 18 family physicians practiced on the Burin Peninsula, eight of them in the Marystown Area (M. Elliott, pers. com.).

3.3.3 Income Support and Employment Services

The Department of Human Resources, Labour and Employment is the provincial agency responsible for providing Income Support (formerly Social Assistance) and employment-related services. Service area boundaries do not coincide with the area boundaries in this assessment. The discussion here focuses on the district offices in each of the areas.

In the St. John's Area there is an Avalon Regional office, two district offices within the City, one in Mount Pearl and others on Bell Island and in Conception Bay South. For the Isthmus of Avalon Area, the District Office is in Clarenville, while that for the Marystown Area is in Marystown.

3.3.3.1 St. John's Area

The number of individuals using Income Support in the area increased in the early 1990s. In 1991, the number of cases was 22,370, which increased to 26,390 in 1995 (17.8 percent). By 2002, however, the number had fallen to 19,890, a decrease of 24.6 percent which reflected improved local economic conditions (Department of Health and Community Services 2000b). In 2005, there were 19,315 cases of Income Support in the area.

3.3.3.2 Isthmus of Avalon Area

In total, the number of Income Support cases for Clarenville fell from 1,005 in 1995 to 630 in 2001. The number of cases increased again to 785 in 2003 and decreased to 700 in 2005 (Department of Health and Community Services 2000b; Newfoundland and Labrador Statistics Agency 2007).

3.3.3.3 Marystown Area

The demand for Income Support services in the Marystown Area increased in the 1990s. From 1991 to 1996, the number of cases grew from 1,665 to 2,180 (30.9 percent), and Client Service Officer caseloads increased considerably. Since then the number has steadily decreased, to 1,220 in 2005 (Department of Health and Community Services 2000b; Newfoundland and Labrador Statistics Agency 2007).

3.3.4 Security and Safety: Policing and Fire Protection

Newfoundland and Labrador is policed by the Royal Newfoundland Constabulary (RNC) and the Royal Canadian Mounted Police (RCMP). Within the areas covered by this SEIS, the RNC has jurisdiction over the St. John's Area, while the Isthmus of Avalon and the Marystown Areas fall under the jurisdiction of the RCMP, which also has its headquarters in St. John's.

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 following analysis.

3.3.4.1 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 percent. The 2006 officer-to-population ratio was 1:641 compared to the national average of 1:521 (Statistics Canada 2006c).

In 2007, 302 fire departments served the Province, down from 312 in 1993 (K. Mahon, pers. com.).

3.3.4.2 St. John's Area

In 2005, 318 RNC personnel served the St. John's Area. This is an increase over 1995 when there were 256 (Petro-Canada 1995; Office of the Auditor General 2005).

Fire protection services are provided by the St. John's Regional Fire Department, which currently operates seven fire departments and employs 223 firefighters. There are also composite (partially paid) fire departments in 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 (D. Hamlyn, pers. com.; K. Mahon, pers. com.).

3.3.4.3 Isthmus of Avalon Area

In 2000, the area was served by 15 officers and the officer-to-population ratio was 1:1,408. The number of officers has increased since then but the population has remained relatively stable. Currently, 22 uniformed RCMP officers and three District Assistants serve Clarendville and the surrounding area, including most of the study area. This represents an officer-to-population ratio of approximately 1:1,080 (J. Taylor, pers. com.).

The Isthmus of Avalon Area is served by 16 volunteer fire departments with an average of approximately 23 firefighters (W. Porter, pers. com.).

3.3.4.4 Marystown Area

In 2000, the Marystown Area was served by a detachment of 13 officers, down from 15 in 1995, which represents an officer to population ratio of approximately 1:1,350 (RCMP 2000). This ratio was down somewhat from an estimated 1:1,200 in 1995, but was sufficient to meet local needs. The current Marystown office Regular Member establishment is 15, not including Highway Patrol or other Specialized Unit Members who are available to the District when their services are required. There are 21 officers serving the Burin Peninsula with an additional 3.5 public service positions and one Highway Patrol position (J. Taylor, pers. com.).

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 (K. Mahon, pers. com.).

3.3.5 Recreation

3.3.5.1 St. John's Area

St. John's and Mount Pearl have numerous recreation and leisure facilities capable of accommodating a wide range of activities. In St. John's, indoor activities can be accommodated at, for example, the H.G.R. Mews Community Centre, the St. John's YMCA-YWCA, the St. John's Recreation Centre at Buckmaster Circle and the Wedgewood Park and Goulds Recreation Centres. 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. In addition, the City has numerous soccer, softball, baseball, tennis and playground facilities.

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.

3.3.5.2 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 (G. Gosse, pers. com.).

3.3.5.3 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.

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 (Town of Marystown no date).

3.4 Community Physical Infrastructure

3.4.1 Housing

The following discussion uses information on housing drawn from the Census (Statistics Canada 1991; 1996; 2001; 2006a) and compiled by the Canada Mortgage and Housing Corporation (CMHC) and the Newfoundland and Labrador Housing Corporation (NLHC). Detailed data are available for the St. John's Area, but not for smaller towns, including Clarenville and Marystown. Even fewer data are available on rural communities, and they are often aggregated on a regional basis. Consequently, the available information for each of the study areas varies by type and level of detail.

3.4.1.1 Newfoundland and Labrador

In 2006, there were 197,245 occupied private dwellings in Newfoundland and Labrador, an increase of 4.3 percent from 2001. There are no data available for 2006 regarding the number of owner-occupied dwellings but in 2001, 78 percent of the 189,040 occupied dwellings were owned. The average value of a home in the Province in 2001 was \$76,283 and the average rent was \$513 (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 were 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 (CMHC 2007a).

3.4.1.2 St. John's Area

There has been a steady growth in the St. John's Area housing stock, with the number of occupied dwellings increased by 9 percent between 2001 and 2006, from 64,830 to 70,663. In 2006, 58.8

percent 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). In 2005, the number of housing starts increased to 1,534 but then fell to 1,275 in 2006 (C. Janes, pers. com.).

In 2006, 3,537 houses were sold and the average price of a home was \$139,542 (CMHC 2007b).

Apartment vacancy rates for the St. John's Area have fluctuated widely over the past decade. 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 of the project (CMHC 2000b). From 2003 to 2006, vacancy rate increased 3.1 percentage points to 5.2 percent, the highest rate since 1999. This increase has been attributed to record home buying activity and the corresponding movement of renter households to homeownership (CMHC 2006).

In the 1990s, a decline in rent 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 2006, the average rent for a three-bedroom unit had risen to \$655 per month (CMHC 2000b; 2006).

3.4.1.3 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.

As in most areas of the Province, dwellings in the Isthmus Area are predominantly owner-occupied. In 1996, the proportion of owner-occupied units varied from nearly 100 percent in Come By Chance to 67 percent in Clarenville. In 2001, 83.7 percent of homes in the area were owner-occupied and the average value of homes was \$52,243.

Average monthly rents in the area vary considerably over time and amongst communities (Table 3.4-1). Rents in Clarenville-Shoal Harbour and Arnold's Cove decreased between 1996 and 2001.

Table 3.4-1 Average Gross Monthly Rents (\$), 1991-2001, Isthmus of Avalon Area

Municipality	1991	1996	2001
Sunnyside	379	N/A	N/A
Come By Chance	537	534	N/A
Arnold's Cove	348	440	374
Clarenville	476	590 ¹	506
Shoal Harbour	385		

¹ Clarenville-Shoal Harbour are now one amalgamated municipality

Source: Statistics Canada 1986; 1991; 1996; 2001.

3.4.1.4 Marystown Area

The Marystown Area housing market is affected by the seasonal and annual fluctuations in employment by the main employers in the area, the Marystown Shipyard and the fish plant. Increased activity at one or both contributes to greater housing market activity, while layoffs have negative repercussions for the area's 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). According to the local realtor, the area's housing market is no longer slow. There were 24 house starts in the Marystown Area in 2005 and 19 in 2006 (P. Dober, pers. com.; C. Janes, pers. com.).

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 percent of homes were owner-occupied (Statistics Canada 1996; 2001). Average gross rents in the area are highly variable both over time and amongst communities (Table 3.4-2).

Table 3.4-2 Average Gross Monthly Rents (\$), 1991-2001, Marystown Area

Municipality	1991	1996	2001
Fox Cove – Mortier Bay	345	N/A	N/A
Marystown	394	508	474
Winterland	N/A	424	N/A
Burin	381	326	488
Lewin's Cove	615	536	333
Port au Bras	N/A	N/A	N/A
Garnish	395	337	N/A
Frenchman's Cove	270	N/A	N/A

Source: Statistics Canada 1986; 1991; 1996; 2001.

3.4.2 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 North Amethyst activity.

St. John's Harbour is administered by a crown agency, the St. John's Port Authority. Since 1999, it 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 2007).

There is a total of approximately 5 km of dockface available, 51 percent 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 percent is privately owned and 17 percent 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 2005).

In 2003, the construction of Pier 17, a 4,200 m² facility on the east side of the port, was completed. It offers increased lift capabilities, accessible in-deck utilidors and modern environmental containment systems. A second Ro/Ro ramp has recently been built at Pier 2 to improve loading and unloading of automobiles, trailers and containers (St. John's Port Authority 2007).

In 2005, the Port recorded its highest gross revenue and general cargo volumes. Gross revenue increased to \$4.482 million, an increase of 9.5 percent over 2004. General cargo volumes increased

0.5 percent between 2004 and 2005 and by nearly 20 percent since becoming a Canada Port Authority in 1998. A record 1,250 vessels, 512 of which were oil industry-related, entered the Port in 2005 (St. John's Port Authority 2007). In 2005, the port hosted 11,904 cruise ship passengers, a 50% increase over 2004 (St. John's Port Authority 2007).

The St. John's International Airport (SJIA) is the busiest commercial airport in the province. Eighty percent of non-resident visitors to Newfoundland and Labrador enter through SJIA. The Airport is characterized as an "end of the line" airport in the national context, but it does serve as a "hub" for traffic within Newfoundland, and as a "gateway" from Newfoundland and Labrador to European markets. The main terminal serves scheduled national and international passenger aircraft, most charter flights and air cargo traffic. General aviation activities take place on the east side of the airport, while helicopters, some military and some 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 35 percent, and in 2005 the SJIA was used by 1.2 million passengers. The SJIA is projecting a further 20 per cent growth in passenger volumes over the next five years. The Authority 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).

The general aviation area includes several hangars, with associated office and service buildings.

3.4.3 Industrial and Commercial Land, Warehousing and Office Space

3.4.3.1 St. John's Area

There are four Industrial Land Use Zones designated with the St. John's Development Regulations: Commercial Industrial (CI); Industrial General (IG); Industrial Quidi Vidi (IQ); and Industrial Special (IS) Sites could be used for warehousing or machine shops, depending on zoning; some areas are best suited to lay-down areas for open storage. Highway access from these industrial lands to other key infrastructure elements such as the Port of St. John's and the St. John's International Airport is generally good, and east-west access has been improved with the development of the Outer Ring Road.

In St. John's, the White Hills Industrial area has approximately 48 lots available with 45 metre frontage. There are some lots available in the Kenmount Road/Kelsey Drive area, which are owned by Donovan Homes. There is also a major development being planned for the Torbay Road North area, called the Torbay Road North Commercial Area. This area will have the potential to support 2.35 million ha. of commercial, retail and aviation activity (D. Squires, pers. com.).

In Mount Pearl, Donovan's Industrial Park has a total 189 ha. of land. Total developed land is 180.5 ha. and 8.5 ha. remains for sale (B. Aylward, pers. com.).

Available office space by region within the City of St. John's is shown in Table 3.4-3.

Table 3.4-3 Office Space Availability, St. John's, Newfoundland, First Quarter 2007

Location	Gross Leasable Area (sq.m)	Vacancy (%)
Downtown ¹	1,307,682	4.77
Central ²	320,510	8.56
North ³	341,979	4.31
East and West ⁴	383,668	7.84

¹ Water Street, New Gower Street, etc.

² Freshwater Road, Harvey Road, Bonaventure Ave, etc.

³ O'Leary Avenue, Kenmount Road, etc.

⁴ Newfoundland Drive, Torbay Road, Elizabeth Avenue, etc.

Source: Cushman and Wakefield LePage 2007b

Within the St. John's Area, the highest vacancy rate is in the Central area and the lowest rate is in the North. All Class A buildings are found downtown. Forty-six percent of space in that area is considered Class A but within that segment, there was only a 1.08 percent vacancy rate.

3.4.3.2 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 drydock site, the fabrication and assembly yard, and the construction camp/administration area. The drydock site, which underwent some modifications in 1999 and 2005, encompasses 140,000 m² and the fabrication and assembly yard is a 120,000 m² area.

During the 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 most of the accommodation units removed. In 2003, the fabrication and assembly yard was used to support the Terra Nova project which had a peak work-force 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 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 no date).

Other industrial and commercial lands in the area are concentrated in Clarenville and Arnold's Cove. In Arnold's Cove, the Town has purchased all the commercial land and residential land from NLHC. In 2007, it has 7.6 acres of serviced industrial lands and 100 acres of unserviced land (W. Slade, pers. com.).

3.4.3.3 Marystown Area

The Marystown Shipyard and the Cow Head Offshore Fabrication Facility were bought by Peter Kiewit Sons Co. Ltd in March 2002. The shipyard has a syncrolift platform dock with hoists accompanied by a side transfer system to accommodate multiple vessels at one time. The facility also has an in-house fabrication area of 9,400 m², 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 Cow Head facility, completed in the early 1990s and subject to significant upgrades since then, handles offshore construction, including fabrication of components and rig repair and modification capabilities. It covers 150,000 m² and includes 14,000 m² of covered-in fabrication area (Kiewit Offshore Services 2006).

4.0 ASSESSMENT OF NORTH AMETHYST PROJECT EFFECTS

4.1 Introduction

This section of the SEIS provides an assessment of the effects of the Project on each of the three areas and, as appropriate, the Province as a whole. It is mostly concerned with the direct effects of the Project, mostly through expenditures (for example, on labour and purchases of supplies and services) or activities (for example, through the transportation of Project supplies and personnel). However, as appropriate, it also considers some secondary effects, including the effects on community services and infrastructure of any Project-related demographic change.

While the SEIS is concerned with Project construction, operations, decommissioning and abandonment, the great majority of socio-economic effects will occur during the first of these phases. It could involve modifications to the *SeaRose FPSO*, the excavation of a gloryhole, the drilling of wells, and the installation of wellheads and flowlines.

However, while the main socio-economic effects will occur during construction, it should be noted that the scale of such activity on the North Amethyst project will be smaller than for White Rose or Terra Nova projects, let alone Hibernia. In total, the Hibernia construction phase saw about 41.5 million person-hours of work in Newfoundland and Labrador. The equivalent figures for Terra Nova and White Rose were 12.0 and 11.4 million person-hours respectively. It is estimated that the North Amethyst construction phase will only involve about 1.9 million-person hours, less than a fifth of the Terra Nova and White Rose requirement and less than one-twentieth of that for Hibernia.

Given that these other projects were highly beneficial to the economy, with only very minor negative socio-economic effects, it is reasonable to expect that the Project's impacts will be similar if smaller. In particular, the same geographic areas that were generally able to cope with the demands of these earlier projects seem likely to be able to handle those from North Amethyst. This is especially the case in the Isthmus of Avalon and Marystown Areas, given that population declines have likely reduced demands for some community services and infrastructure. As was noted in Section 3.1.3, the total population of the Isthmus Area fell from 17,845 in 1991, when the first offshore oil construction activity was starting, to 15,479 in 2006, a decline of 2,366 or 13.3 percent. Over the same 1991 to 2006 period the Marystown Area population fell from 12,939 to 10,469, a decline of 2,470 or 19.1 percent.

It should be noted that the North Amethyst activity could be undertaken at the same time as refurbishment and upgrading of the *SeaRose FPSO*. The topsides would be enhanced to maintain oil production capacity when the water cut increases and to enable more gas handling; the systems under review for the upgrade include the HP separator, gas compression, water injection, power generation and cooling medium. Approximately one million person-hours of additional work are associated with this potential scope, so the total amount of work undertaken in St. John's and the Isthmus of Avalon and/or Marystown Areas could total almost 3 million person-hours. The combined employment and business benefits will therefore be significantly larger than those from North Amethyst alone, and while the joint potential to cause negative community impacts will also be larger, the combined work will still only be a quarter of the size of each of the Terra Nova and White Rose construction projects, and one fourteenth the size of Hibernia.

The socio-economic effects of the Project during operations will be minimal, because it will not require additional personnel or see additional activity, other than a very limited additional amount of inspection and maintenance work that will create few new jobs or contracts. Similarly, the additional decommissioning and abandonment activity that will be required to close the White Rose and North Amethyst fields, as compared to that needed for White Rose alone, will be minor (i.e. the removal of some additional subsea equipment).

These issues are discussed in greater detail below, for each of the VECs under consideration: employment and business, community social services and infrastructure, and community physical infrastructure.

4.2 Business and Employment

4.2.1 Newfoundland and Labrador

The North Amethyst Project will have a range of positive economic effects on the Province. These reflect, in part, Husky's commitment to Canada-Newfoundland and Labrador benefits. It strongly supports providing opportunities to Canada and in particular, Newfoundland and Labrador, and wishes to bring the maximum benefit to the region where practically and commercially achievable on a competitive basis.

The *Atlantic Accord Implementation Acts* provide the legislative framework for the development of Newfoundland and Labrador's offshore resources, and require that development activity benefit Canada as a whole and, in particular, the Province. Husky believes that, as was the case with the White Rose project, its proactive approach will provide significant work and employment to the residents of Newfoundland and Labrador and elsewhere in Canada in a cost-effective and efficient manner.

Husky's approach to benefits has been consistent since it established operations in the Province. Early in the planning phases of the White Rose project, it adopted a set of Canada-Newfoundland and Labrador Benefits Guidelines as a governing document. These have been integrated into the Canada Newfoundland Benefits Reporting and Procedure Manual, which continues to guide how Husky and its contractors conduct business.

Accordingly, the policies and procedures in the White Rose Canada-Newfoundland Benefits Plan (Husky Oil 2001) are still relevant in 2007, and they will remain unchanged as the company pursues other opportunities in the Newfoundland and Labrador offshore area. These governing documents are also aligned with Husky's premise in 2000 that production facilities can be designed to accommodate multi-pool or expanded development concepts. Such is now the case with the North Amethyst Project.

These principles, as described in the Canada-Newfoundland Benefits Plan are, in summary:

Full and Fair Opportunity to provide Goods and Services: Husky will provide full and fair opportunity for Canadian, and in particular, Newfoundland and Labrador companies to participate in the supply of goods and services by:

- § sizing and design of packages to fit the capabilities of Canadian and in particular, Newfoundland and Labrador companies;
- § development and use of vendor databases;

- § investigation of labour and fabrication capabilities;
- § early dissemination of information on the scope of work;
- § open communication with all personnel and companies requesting non-proprietary information;
- § presence of engineering, procurement and project management in Newfoundland and Labrador;
- § open communication with government and industry associations to identify potential suppliers; and
- § assisting and advising on the development and implementation of transfer of technology and training programs for long-term cost effectiveness.

First Consideration to Newfoundland and Labrador and Canada:

- § Husky supports the principle that first consideration be given Newfoundland and Labrador for labour, goods, services, etc., where they are competitive in terms of fair market price, quality and delivery; and
- § Husky will ensure that residents of Newfoundland and Labrador and then other Canadians will be given early and ample opportunities for employment and related training.

Proactivity:

- § Husky is proactive in its approach to Canada-Newfoundland opportunities.

“Value Adding” as an Imperative:

- § Husky, in evaluating of opportunities, will emphasise “best value” for the Project.

As was noted above, the great majority of the business and employment effects will be during construction. There will only be very small amounts of additional inspection and maintenance work, and some additional decommissioning and abandonment business and employment, associated with the Project.

The required infrastructure is primarily designed for offshore petroleum activity, and only a limited amount of this is anticipated within the Project timeframe. Meeting the requirements for some skilled trades may be more challenging, given competing projects in northern Alberta and elsewhere and related out-migration; however, as was discussed in Section 4.1, the Project is small relative to earlier offshore petroleum development projects, and Husky is confident it can attract the required labour to complete the work in Newfoundland and Labrador. Thus there should be only limited conflicts between industrial and labour requirements of the North Amethyst construction project, even in combination with those of the refurbishment and upgrading of the *SeaRose FPSO*, and those of other projects.

The above discussion focuses on the direct effects of the Project on business and employment. In addition, there will be important and wide-ranging secondary, or multiplier, positive effects. Studies of industrial benefits from the Province’s upstream petroleum industry (PRAC 2003, 2005) have demonstrated the total effects on provincial GDP, personal incomes, consumer spending, employment and migration were large and widely distributed, and that they would be long-term. As is discussed in Section 5.0, the industry has also had a transformative effect, developing and diversifying the provincial economy.

The Project will further contribute to this growing and increasingly internationally competitive industry, and hence, to the further development and diversification of the Newfoundland and Labrador economy. At the same time, there is no prior evidence for potential negative economic consequences, such as wage or price inflation.

4.2.2 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. This will have a wide range of positive economic effects, similar to but much more modest than those experienced during development phases of Hibernia, Terra Nova and White Rose. The Project will provide opportunities for local businesses.

The North Amethyst Project will not extend the operational life of the *SeaRose FPSO*, for which St. John's is the administrative, engineering, training, regulatory and supply and service centre, and hence it will not require additional resources in any of these areas.

4.2.3 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, and hook-up and commissioning activity, for the Terra Nova project. Depending on the facility's success in competitively bidding for Project work, the site could be used for North Amethyst activity. Specific work that might be undertaken at Bull Arm, or Marystown includes modifications to the *SeaRose FPSO* (e.g. installation of new risers, and modifications to the turret) and support of offshore construction and drilling.

During peak Hibernia project activity, there were 5,800 employees working at Bull Arm. The peak for Terra Nova activity saw 2,400 employees working there. The estimated average Bull Arm and/or Marystown labour requirement for the Project is 140 workers (or 360 if the activity occurs in combination with the refurbishment and upgrading of the *SeaRose FPSO*), and while the peak levels are unknown, they are certain to be smaller than was the case with the earlier projects.

4.2.4 Marystown Area

The Marystown Shipyard could also be affected by the construction phase of the North Amethyst Project. This might similarly result from the required modifications to the *SeaRose FPSO* and from support of offshore construction and drilling. The amount of such 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 again provide direct and spin-off benefits to the local economy and reinforce the shipyard's position as an important oil industry facility.

As was noted above, the peak direct Marystown and/or Bull Arm Project labour requirement for the above North Amethyst work is not known, but the average requirement will be 140 workers (or 360 if the activity occurs in combination with the refurbishment and upgrading of the *SeaRose FPSO*). This compares with peak Marystown Area employment of 1,458 workers during White Rose construction. The White Rose project had a range of positive local impacts, including project employment, increased business for hotels, restaurants and clubs, and increased retail activity, on the Marystown Area, with a lesser impact elsewhere on the Burin Peninsula. Some contracting companies in Marystown and Grand

Bank were able to get project work, but not many new businesses were established as a result of the project; instead, it was mostly existing companies that benefited. (G. Dominaux, pers. com.)

4.3 Community Social Infrastructure and Services

This section assesses the effects of the Project on community social infrastructure and services in the areas of education, health and community services, social assistance and employment services, security and safety, and recreation. As appropriate, it examines the impacts on the St. John's, Isthmus of Avalon and Marystown Areas, and the Province as a whole. While the primary focus is the Project, as appropriate reference is made to the combined effects of it in combination with work on the refurbishment and upgrading of the *SeaRose FPSO* (the 'combined projects').

4.3.1 Education

4.3.1.1 Newfoundland and Labrador

The Project effects on education at the provincial level will be limited to those associated with post-secondary training. Demands from the Project construction phase, even in combination with refurbishment and upgrading of the *SeaRose FPSO*, will be much smaller than those from Hibernia, Terra Nova and White Rose. In all those cases, project-related demands were accommodated without difficulty, and hence no problems are anticipated to arise from the Project. Furthermore, as was discussed above, there will be no additional labour force requirements associated with Project operations.

4.3.1.2 St. John's Area

The Hibernia SEIS (Mobil 1985) predicted that St. John's Area schools would be able to accommodate any demands resulting from demographic changes associated with that project. In fact, the population increase resulting from that project was less than anticipated and there was no significant effect on schools. Consistent with the findings of the Terra Nova and White Rose SEISs, and subsequent experience, there is no indication that a yet smaller project will have any effect.

4.3.1.3 Isthmus of Avalon Area

The Hibernia SEIS (Mobil 1985) forecast that the construction of that 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. However, it was subsequently found that in-migrant children made up only one percent of the 1993-94 enrolment, albeit the presence of Norwegian children did present education system challenges and opportunities in Clarenville (HCSEMC 1994).

The Terra Nova and White Rose construction projects did not have any perceptible effects on the Isthmus of Avalon Area education system. They were smaller projects than Hibernia, workers either commuted from their home locations on a daily basis or found accommodations locally, and there was no temporary in-migration of foreign workers and their families. Based on the above experience, and the smaller overall size of the Project and combined projects, it is not expected that any construction activity will have perceptible effects.

4.3.1.4 Marystown Area

No data are available on the effects of the Hibernia or Terra Nova projects on the education system of the Marystown Area. The scale of White Rose project activity was much greater than 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 unanticipated influx of about 50 extra students and it was necessary to hire an ESL teacher. However, this was done without difficulty, and the in-migrant families integrated well into the community. (J. Mitchell, P. Ward and D. Kelly, pers. com.)

The scale of both the Project and combined projects will be smaller than was experienced during the White Rose construction phase. Furthermore, continued declining enrolments in the Marystown Area have left some additional capacity in the education system, and the Project or combined projects are not expected to generate any demands that it could not accommodate.

4.3.2 Health and Community Services

4.3.2.1 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. The population increases associated with these projects have been small and, in the case of Hibernia, smaller than expected. Generally speaking, incoming workers and their families have been relatively young and healthy and placed relatively low 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 a small and relatively short-term incremental effect on the overall demand for St. John's Area medical services.

4.3.2.2 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 affected the demand for services. North Amethyst project (and even the combined projects) construction activity is similarly not expected to place notable demands on the health system, which may anyway have experienced some reductions in demand as a result of population decline.

4.3.2.3 Marystown Area

There is no evidence had White Rose construction work had effects on the demand for medical services in the Marystown Area. North Amethyst and combined projects construction activity are similarly not expected to place notable demands on the system, given that their scale will be smaller and there may be some reductions in demand for healthcare infrastructure and services as a result of population decline.

4.3.3 Income Support and Employment Services

4.3.3.1 St. John's Area

The effects of the Project on St. John's Area Income Support and employment services will likely be small and primarily positive. The Hibernia, Terra Nova and White Rose SEISs discussed concerns that project-related population increases would place additional burdens on the local social services system. In particular, it was thought that increases in the cost of living would generate new demands for Income Support, especially by those on low and fixed incomes. However, the population growth and inflation associated with these projects were considerably less than expected, and the demands on services proved insignificant. Given the relatively small scale and short-term nature of the Project's or combined projects effects on the area, it too is not expected to have any noticeable effect on demand.

4.3.3.2 Isthmus of Avalon Area

The Hibernia construction project created some minor problems on the Isthmus in that, for a short period, there were insufficient on-site accommodations, which drove up local rents. This required minor expenditures on the part of what is now the provincial Department of Human Resources, Employment and Labour.

Between 1992 and 1996, the Hibernia Construction Sites Environmental Management Committee monitored demand for Income Support in the Isthmus Area. The Committee's quarterly reports showed that from June 1991 to November 1994, the number of Income Support cases increased on an annual basis was greater than in the same month the previous year. However, from November 1994 to December 1999, month-to-month numbers declined each year (HCSEMC 1994).

Overall, an audit of Hibernia's overall socio-economic effects concluded that 'there is no evidence that the project has had any significant positive or negative effect on social services' (Storey et al. 1996), and the same has been the case with subsequent offshore petroleum-related construction and fabrication activity. Accordingly, it is not expected that any Project construction activity (even for the combined projects) on the Isthmus will have negative local effects on Income Support and employment services, and Project employment may well have a positive effect.

4.3.3.3 Marystown Area

Hibernia and Terra Nova construction project activities had few if any effects on Income Support and employment services in the Marystown Area. White Rose activity did have some minor effects, driving up costs of local rental accommodations (see Section 4.3.1.3) with some secondary effects on persons with low incomes. However, the smaller size of the Project (and combined projects), in conjunction with reduced housing demand as a result of population decline, will minimize any such effects associated with Project construction.

4.3.4 Security and Safety

4.3.4.1 Newfoundland and Labrador

During the public consultation process for the Hibernia project, considerable concern was expressed that it might lead to increases in organized and white-collar crime, drug-trafficking and prostitution. None of these concerns proved to be justified and they disappeared over the life of the project. The

RNC and RCMP reported that neither the type nor the rate of criminal activity increased substantially during the project and any changes in policing requirements were not attributable to it. Similarly, the project had no effect on fire protection at the provincial level. The Terra Nova and White Rose SEISs forecast that these smaller projects would similarly have no significant effects, and this proved to be the case thus far. The same is expected to be the case with the Project or combined projects.

4.3.4.2 St. John's Area

There has been no suggestion or evidence that Hibernia, Terra Nova or White Rose have affected the nature or level of crime, or the demands for policing services or fire protection, in the St. John's Area. The Project or even combined projects are not expected to have any such effect.

4.3.4.3 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. They proved effective; the RCMP reported no Hibernia-related effects on crime and by 1996, local residents were no longer indicating that project-related crime was a concern for them (Jones 1998).

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 was no substantive effect on policing or crime. The Project or combined projects are not expected to have any different effects.

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 there have not had any effects on local fire services, and this will remain the case with any Project or combined projects construction activity.

4.3.4.4 Marystown Area

There were policing requirements related to White Rose project activity, including some theft, vandalism and labour unrest, but the RCMP has reported that this was nothing out of the ordinary for such a project. Similarly, while there was increased criminal and highway enforcement activity, this was seen as proportional to the increase in population and traffic, and unproblematic. (Sgt. Fitzgerald, pers. com.)

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 this experience, and the smaller scale of any Project or combined projects activity, they are not expected to have significant impacts on police or fire services.

4.3.5 Recreation

4.3.5.1 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 or combined projects-related demands can be easily absorbed.

4.3.5.2 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 has proven to be the case thus far. The same is likely to be so given any Project or combined projects construction activity.

4.3.5.3 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 economic viability of the facility (J. Mitchell, P. Ward and D. Kelly, pers. com.). Any Project or combined projects construction activity is not expected to have different consequences.

4.4 Community Physical Infrastructure

This section of the SEIS discusses the effects of the Project on housing, ports, airports, industrial and commercial land, warehousing and office space. It focuses on the relevant geographic scale and areas, only discussing those geographies likely to see activity and effects. As with the assessment of impacts on community social infrastructure and services, the primary focus is the Project but, as appropriate, reference is made to the combined effects of it in combination with work on the refurbishment and upgrading of the *SeaRose FPSO*.

4.4.1 Housing

4.4.1.1 St. John's Area

Data collected by HMDC and the main project contractors indicated that the Hibernia project had a small effect on the St. John's Area housing market (Storey et al. 1996). Coming several years after the market had absorbed the initial Hibernia demand, the somewhat smaller demands of the Terra Nova and White Rose projects only had small additional effects on the St. John's Area housing market. The Project or even combined projects construction-related requirements will be yet smaller, and any direct effects are likely to be small and short-term. They will be beneficial from the perspective of home-builders and suppliers, home sellers and municipal tax authorities.

4.4.1.2 Isthmus of Avalon Area

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. However, CHMC House Price Surveys and resident surveys showed that Hibernia-related demand had little effect on overall demand or house prices, and that any such increases as were experienced were short-term (Jones 1998). Subsequent construction activity at Bull Arm has been of a much smaller scale. Workers have either commuted from their homes or found local accommodations with little or no effect on the local housing market. Project or combined projects construction activity will be of similar type and likely a lesser scale to those seen in the area in the past, and will have only minor effects on the local housing market.

4.4.1.3 Marystown Area

Hibernia and Terra Nova had little effect on the Marystown housing market and participants in the public consultation process for White Rose drew attention to the fact that there was 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, with some low income households experiencing affordability problems or being evicted.

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 AMKC. In addition, the company 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 (C.A. Molloy and G. Brenton, pers. com.).

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, leading to the displacement of some low-income households (Sgt. Fitzgerald, pers. com.). However, this was a short-term affect; various adjustments were made, including the construction of the new hotel, the renovation of basement apartments, and people moving into their summer cottages so as to rent their homes to project workers. 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 (G. Dominaux, pers. com.). Furthermore, there were positive effects for some locals who owned rental units, and for some other local residents with White Rose employment able to buy a home, and stop renting or living with other family members.

Given this experience (including the opportunity to learn from it, and ensure there is an adequate communication of information about prospective demands), together with housing vacancies resulting from continued out-migration, only minor short-term negative Project or combined projects housing impacts are expected.

4.4.2 Ports and Airports

The A. Harvey supply base, already used for White Rose and other offshore petroleum operations, can adequately support North Amethyst field development. However, should it be required, other potential supply base and marine support capability exists within the St. John's Harbour and in Bay Bulls. St. John's Harbour also has an adequate provision of efficient services, such as trucking, pilotage,

stevedoring, water supply, ship chandlery, repair and servicing shops, waste disposal and vessel traffic monitoring in support of field development, and Bay Bulls provides stevedoring, cargo marshalling, drillrig repair and shipyard services to the offshore oil and gas industry. No additional harbour traffic will result from Project or combined projects operations.

Only very limited helicopter support will be required by the Project or combined projects construction phase. They will generate a small amount of additional scheduled air passenger traffic, but the planned expansion program will allow considerably more traffic to be accommodated without difficulty and without adversely affecting existing users.

4.4.3 Industrial and Commercial Land, Warehousing and Office Space

4.4.3.1 St. John's Area

Growth of the offshore industry has resulted in the take-up of industrial land, particularly in Donovan's Industrial Park. Such developments are beneficial to the local economy in terms of the direct and indirect employment and income effects that they generate, including taxes to municipal and other authorities.

The offshore operators, industry suppliers and contractors have and will continue to take up warehouse and office space in the St. John's Area. Research in 2003 found that 18 operators and large contractors occupied offices and warehouses in the City of St. John's with a combined assessed value of \$50.8 million, Mount Pearl had 95 businesses largely or wholly operating in the industry, and Paradise had an additional 14 such businesses (PRAC 2003). Since the development of White Rose, there has also been establishment of a subsea test facility in St. John's.

The Project or combined projects will have minor construction phase effects on industrial and commercial land, warehousing and office space in the St. John's Area, and will have no additional operations phase effects. Accordingly, they will benefit the area and should not exceed its ability to meet demand.

4.4.3.2 Isthmus of Avalon Area

The Hibernia platform was constructed and assembled at the Bull Arm site. It also met the requirements placed upon it by the Terra Nova project and as a subsea test facility for White Rose, and the same is expected to be the case if the site is used for Project or combined projects construction activity. The Hibernia, Terra Nova and White Rose work was beneficial to the local as well as provincial economies and any use made of it for the Project or combined projects would continue these benefits. No construction activity-related demand for additional industrial land is expected in Clarendville, Arnold's Cove or other Isthmus Area communities, or as a result of Project operations.

4.4.3.3 Marystown Area

The Marystown Shipyard and the Cow Head facility proved capable of accommodating any demands placed upon them by the White Rose project. They would have no difficulty accommodating work on the Project or combined projects, which would be welcomed and would generate benefits for the area.

5.0 SUSTAINABLE DEVELOPMENT

As required under the C-NLOPB Development Application Guidelines (CNLOPB 2006), this section of the SEIS discusses Husky's approach to sustainable development.

Husky believes that sustainability is achievable and requires innovative thinking. For Husky, sustainability is a process for guiding the activities of society, businesses, institutions, governments and individuals in a resource-efficient manner so that their activities do not limit the ability of future generations to meet their own needs.

In support of this, Husky's activities and proposed projects, and their effects, are continually analyzed and improved so as to meet, and often exceed, industry and government regulatory requirements. The challenge for Husky is how to best use our initiative, leadership, and expertise to not only ensure that projects meet the needs of today's economy and society while not compromising the needs of future generations, but also contribute to the long-term development of a strong, vibrant economy and society.

The oil and gas industry provides energy for a growing and thriving Canadian economy. In addition to providing employment for thousands of employees and creating business opportunities for vendors and suppliers, Husky makes a substantial contribution to the economy, in Canada generally and especially in Newfoundland and Labrador. It also recognizes the impact and influence the operations of an energy company can have from both an environmental and social perspective. The health and safety of employees, contractors and the public, along with sound environmental stewardship, are fundamental core business values for Husky.

5.1 The Environment

Husky seeks to minimize the impacts of its operations for the benefit of the environment by conserving resources and practicing environmental stewardship. The company is committed to looking beyond the horizon for new ideas and approaches by applying innovation, creativity and resources for a future when energy production and consumption are sustainable.

The Husky Operations Integrity Management System (HOIMS) is a systematic approach towards operational excellence. It reflects Husky's commitment to achieve superior performance in safety, environmental protection and facility reliability and facilitates the adoption of industry best practices to achieve Husky's ultimate goal of an incident-free workplace. It has 14 elements encompassing aspects of leadership, accountability and performance assessment and improvement. Each element has a well defined aim and a clear set of expectations, and these guide employees in effectively managing the risks associated with business and creating a safe place to work.

One HOIMS element focuses specifically on the environment. Environmental Stewardship requires that Husky "operate responsibly to minimize the environmental impact of our operations" and "leave a positive legacy behind us when we leave". The Husky Operations Integrity Management System details how Husky will meet this aim, including through continual improvement.

5.1.1 Environmental Planning

Husky's environmental assessment of projects provides an effective means of integrating environmental factors into planning and decision-making processes in a manner that promotes sustainable development.

The Husky habitat compensation program has its roots in the regulatory requirements under the Fisheries Act. Glory holes are constructed in offshore projects to protect subsea equipment from the damaging effects of iceberg scour. This construction offshore is considered to result in harmful alteration, disruption or destruction of fish habitat. To compensate for this, enhancements to fish habitat have been undertaken in North Harbour, Placentia Bay. Husky also funded the construction of a slipway in North Harbour, one of only two in Placentia Bay and a significant convenience for local mariners. It is anticipated that the slipway could serve as a secondary staging area for oil spill response equipment in the bay.

The selection of site and habitat types was conducted in 2004 in consultation with the Department of Fisheries and Oceans and other environmental and community stakeholders. Two construction seasons, in 2005 and 2006, saw the creation of a 3,800 m² artificial rock reef and over 22,000 m² of scallop habitat. It is hoped that these areas will help promote the growth of juvenile fish and the recovery of local scallop stocks. Initial surveys in 2005 indicated that the new habitats are having a positive impact that exceeds the expectations of both Husky and other stakeholders.

5.1.2 Environmental Protection Tools

In 2005, a management system called OmniSafe was implemented to track and analyze spills, safety incidents, public complaints and regulatory non-compliances using root cause analysis. As part of this system, Husky evaluates its performance relative to its own standards and those set by regulators through regular safety and environmental audits. These ensure that necessary improvements are made to the company's systems to prevent injuries, illnesses, property damage, process losses and adverse environmental impacts.

Husky also has contingency plans that serve as the guides for its response to any emergency encountered during White Rose production. They outline the personnel, equipment, and logistics support requirements and the procedures needed so that any emergency incident is responded to in a safe, prompt and coordinated manner. The plans are distributed to those personnel who have designated responsibility for emergency response actions.

The emergency response structure relies on a strong team offshore which is in command of trained action teams to implement specific actions. Offshore personnel are supported and complemented by regional and corporate teams in the event that the incident escalates. The main role of the shore-based East Coast emergency response team is to provide support for operations taking place offshore and for developing larger-scale response plans. Husky also has a mutual aid agreement with other Grand Banks operators that provides for the release of personnel, vessels, and equipment for logistics support and exchange of operational information in the event of an emergency.

Husky undertakes a regular program of exercises to ensure the readiness of all personnel. These exercises train and familiarize personnel with emergency procedures, testing their preparedness, and provide a means of developing continued improvement to emergency procedures. Husky, East Coast

was the lead for Synergy 2006, an integrated oil spill exercise for all Grand Banks operators that included an on-water demonstration of capability with Eastern Canada Response Corporation (ECRC) and an onshore Emergency Response Team support function.

The White Rose Environmental Effects Monitoring (EEM) Program monitors the effects of the project on the marine environment. It is part of a multiyear study to evaluate the project-related effects on the benthic environment, water column and fish in the White Rose field. To date, Husky has invested over \$1.7 million in this initiative.

Husky recognizes the unique importance of the Grand Banks to seabird populations at various times of the year and their special sensitivity to oil spills. As a result, Husky has also put in place initiatives to improve understanding of the distribution of seabirds and to ensure appropriate measures are available to rehabilitate any that are affected by oil spills.

Since 2000, Husky has funded beached bird surveys at nine locations on the South Coast of Newfoundland at an annual cost of \$15,000. This research is complementary to that carried out by the Canadian Wildlife Service (CWS) for other areas and the results are provided to, and used by, CWS to monitor seabird mortality due to oiling. As part of ongoing operations, Husky also has personnel on the Rowan Gorilla VI drilling rig conduct seabird observations daily for 20 minutes at three intervals. This information is also provided to the CWS for analysis.

5.1.3 Minimizing Environmental Impacts

Greenhouse gas emissions are a significant byproduct of both the energy industry's operations and consumer activity. Developing strategies to reduce emissions associated with all aspects of energy production and consumption is a major environmental challenge, requiring widespread collaboration and a long-term commitment of resources, talent, creativity and willpower.

Husky is addressing the challenge of climate change by improving the energy efficiency of existing operations, providing consumers with environmentally friendly fuels, and identifying and developing new technologies that will lead to substantial improvements in energy efficiency and emission reductions in the future. Husky launched an internal Energy Efficiency Task Force in 2003 to reduce its corporate energy consumption per unit of oil and gas production and reduce emissions and operating costs. Through this initiative Husky has audited its major facilities and identified opportunities for significant energy reductions. The Task Force audits four to six facilities per year, identifying energy and emission reduction opportunities averaging 10 percent per facility.

Since 2000, Husky has also been reporting production, environmental, health, safety and social performance data to the Canadian Association of Petroleum Producers (CAPP) under its Stewardship Initiative. For Husky and other CAPP members, this initiative provides a framework for reporting and encouraging transparency, fostering continuous improvement, and ensuring that the most useful and pertinent performance indicators are measured and reported.

Minimizing environmental impacts also requires focus on continuous improvement. Husky's 2006 plan for continuous improvement in environmental performance sets out the framework for an Environmental Stewardship Program for Husky's White Rose operations that addresses the management of chemicals, wastes, emissions, compliance requirements and environmental events.

5.2 Economy and Society

As is noted in the Canada-Newfoundland and Labrador Development Plan Guidelines, a major concern with respect to sustainability is that offshore petroleum activity produce 'a lasting economic legacy for the people of the Province' (CNLOPB 2006, p6).

Husky's approach to delivering benefits, including its approach and principles, have been described in Section 4.1.1. Together with other corporate initiatives and contributions directed at different groups and regions in the Province, they are designed not to simply create work or address immediate problems but to contribute to positive and sustainable economic and social change. This section documents these initiatives and contributions, and the ways in which they are already producing, and will continue to produce, such change and such a legacy.

5.2.1 Employment and Training

The petroleum industry in Newfoundland and Labrador is working at the technological frontier, seeking to find and produce oil and gas in a harsh environment and increasingly deep waters, using wells of record lengths and production systems of great complexity. This has resulted in the development of new education and training programs and facilities at Memorial University, the Marine Institute, the College of the North Atlantic, and private training institutions. These institutions, together with cutting edge work experience, have produced large numbers of highly-skilled Newfoundlanders and Labradorians.

Husky has honored both the spirit and the intention of the Atlantic Accord in its commitment to working with residents of Newfoundland and Labrador, and has been a strong proponent of recruiting locally and developing local talent. Husky ensures first consideration in hiring is given to qualified residents of Newfoundland and Labrador and Canada, and over 75 percent of East Coast Operations staff are Newfoundlanders and Labradorians.

In addition to Husky's practices in this regard, it has worked with contractors to share best practices and encourage the development of local personnel. It is also represented on the Petroleum Industry Human Resources Council (PIHRC), a collaborative forum that addresses human resources issues within the petroleum industry, and on the provincial government-led Skills Task Force, a partnership of business, labour, education and other key stakeholders mandated to ensure responsive training, education and supports to develop the Province's workforce.

Husky has been a supporter of Skills Canada, a program that promotes skilled trades as a career, and of the Techsploration program, contributing \$20,000 annually. The latter program introduces Grade 9 girls to opportunities in oil and gas technology industries. A number of Husky staff members have served as Techsploration mentors.

In May 2006 Husky sponsored its first forum for disabled youth in St. John's to showcase careers available in the industry and the skill sets required. Husky also provides sponsorship to the MATE remotely operated vehicle (ROV) international competition, in which high school and university students compete to design, build and operate an ROV. Husky also routinely provides surplus computer and other equipment to area schools.

Consistent with Husky's practice of hiring and developing local talent, it has supported the co-op programs at Memorial University, the Marine Institute and the College of the North Atlantic since its St.

John's office opened in 1997. Husky hires approximately 40 work term students per year for placement in such areas as Engineering (Drilling, Operations, Subsea, HSEQ, Facilities), Business (Accounting, Canada-Newfoundland and Labrador Benefits, Public Affairs), Information Technology, Environment, Geosciences and Document Control. Many of these co-op students have had opportunities to gain out of Province experience at other Husky operations in Canada, and Husky's New Graduate program helps provide students with opportunities for full-time employment and transfers based on their co-op performance. In 2006, Husky hired five new graduates from Memorial University.

Husky is a learning organization where employees are encouraged and supported through continued education and development. Husky has a formal policy on employee learning and development, which covers internal learning and development (e.g., business skills courses, diversity, technical learning), external learning and development (courses, seminars, conferences), apprenticeship, executive learning, career development, professional/occupational association memberships, education leave, tuition aid, and masters degree support.

Husky has an intensive Leadership Development Program that is structured in three streams: Leadership development for Managers, for Supervisors, and for new frontline Supervisors. Husky also offers an intensive professional development program in project management. The Advanced Project Management Program consists of a series of 12 modules that are delivered over time, culminating in the Project Management Professional examination preparation workshop.

Through Husky's Masters Degree Support Program selected employees are provided a 100 percent reimbursement of the tuition costs of pursuing Masters-level degrees. The same opportunity is offered for external courses and apprenticeship training. Husky also supports employee participation in Memorial University's Masters in Oil and Gas Studies program; to date, three Husky employees have taken it.

Husky's education and training initiatives are not solely directed at meeting the petroleum industry's labour requirements. For example, in May 2005 Husky announced the \$30,000 *SeaRose* travel bursary for students in the arts program at Sir Wilfred Grenfell College. Awarded at an amount of \$2,000 per year for 15 years, it enables students to travel to MUN's Harlow Campus in the United Kingdom to continue their studies. This initiative reflects an important facet of Husky's vision for sustainability by contributing to the development of a vibrant arts community within Newfoundland and Labrador.

Husky also encourages the children of permanent employees to pursue post-secondary education, by providing financial assistance to students through the Dependent Scholarship Program. It encourages and recognizes scholastic achievement, extra-curricula activities and community involvement. Employees' children were awarded scholarships totaling \$90,000 in 2006.

5.2.2 Research and Development

Sustainability demands a full commitment to researching new and better ways of producing energy and exploring sources of renewable energy. Husky's commitment to local and global communities reflects a responsibility to contribute to humanity's overall health and quality of life. It is for this reason that Husky has taken a leadership role in creating research opportunities at institutions and universities across the country.

A significant amount of petroleum industry research and development work is being done in Newfoundland and Labrador. Every year, operators, contractors, government agencies, industry

groups and research organizations support or participate in numerous studies related to petroleum activities in Newfoundland and Labrador. This includes work in such areas as engineering and design (e.g., vessel design, mooring options), operational studies (e.g., seismic survey techniques, vessel offloading, safety equipment and procedures, ice detection and response) and environmental investigations (e.g., wave and current studies, beached bird surveys, fish habitat compensation).

This work, which has primarily occurred at Memorial University, the Marine Institute and the Institute for Marine Dynamics, has helped sustain and further build the local research and development community, assisting it in serving local interests in the petroleum and other industries. It has also helped develop Newfoundland and Labrador as a center of excellence in such topics as cold oceans engineering, hull testing, and marine science.

Husky provided an initial \$2 million to establish an endowment for the first endowed research chair at Memorial University, the Husky Energy Chair in Oil and Gas Research, and another contribution of \$500,000 was made in 2007. The Chair is currently engaged in research into the use of seismic imaging to enhance the interpretation of porosity and permeability within oil and gas reserves. Ultimately the work will help optimize recovery of oil and gas from offshore reservoirs. In addition, Husky has supported through a long-term lease arrangement the establishment of the Cameron Subsea Test Facility in St John's. It increases the ability of the local supply and support community to fully participate in subsea systems testing.

Husky is an active supporter of C-CORE, a research and development organization with expertise in petroleum exploration, ice engineering and harsh environment technology. Husky has wholly, or as part of joint industry studies, funded research related to ice management and ice scour studies. Husky is also an active member of such research organizations such as the Centre for Marine Compressed Natural Gas and Petroleum Research Atlantic Canada, with Husky's Vice-President for East Coast Operations sitting on the Boards of all three organizations. The establishment and success of this regional capacity contributes to the development of a knowledge-based economy which can continue to thrive into the future.

5.2.3 Building the Business Community and Economy

Husky has been active in Newfoundland and Labrador since the 1980s, when it first began exploration on the Grand Banks, and it continues to be one of the most engaged operators in the region, with more than one million acres of exploration lands. Husky has always been proactive in seeking to involve and benefit the local business community; for example, it opened an office in St. John's four years before sanction of the White Rose project and ensured activities such as engineering, project management and, wherever possible, construction and fabrication were done in the Province. As has been discussed above, North Amethyst and other future projects will employ the same approach and principles.

The East Coast business unit operates within a corporate structure that allows it to customize corporate initiatives to meet the needs of local employees and requirements. The tools employed to enhance development of local capacity include Husky's Canada-Newfoundland and Labrador Benefits Reporting and Procedure Manual, which outlines benefits and contract language policies and procedures that require sub-contractors to adhere to Husky's benefits principles. Husky also ensures open and timely communication to the supply community about upcoming opportunities, focuses on providing employee training using local training facilities, and encourages subcontractors to do the same.

Through these activities, Husky has been and will continue to be a very important contributor to the growth of Newfoundland and Labrador's offshore petroleum industry. The size and significance of the impacts of this industry on Newfoundland and Labrador has been clearly documented in reports for Petroleum Research Atlantic Canada (PRAC 2003, 2005). They demonstrate that the industry has created a new economic sector, led to exports of petroleum expertise and capabilities and sales of them to other industries, and delivered increased entrepreneurship, self-confidence and ambition.

New Economic Sector: A sector of the provincial economy that hardly existed 40 years ago is now responsible for almost a quarter of the Province's GDP. Oil companies are also contributing to the provincial economy by paying very substantial taxes and royalties; the provincial government has estimated that these would be the largest single contributor to the treasury in 2006, representing almost 19% of all revenues, exceeding the contributions made by personal income taxes, equalization payments or sales tax. These revenues provide the government with new flexibility in providing public services and infrastructure and supporting economic development initiatives.

Exporting Petroleum Expertise: The new equipment, personnel and business practices required for petroleum work have made local firms highly competitive and affected their business cultures, attitudes, morale and ambition. Furthermore, links developed through relationships with the petroleum industry locally have provided them with an invaluable means of marketing themselves nationally and internationally. These factors have helped companies to find work on other petroleum projects in Atlantic Canada and around the world. A survey of 65 St. John's companies involved in the industry in the 2001 to 2003 period found that slightly more than a quarter of them exported products and/or services outside the Province.

Diversifying from Petroleum Expertise: Having been successful in the petroleum industry, many local companies have been able to apply their capabilities in, or adapt them to, other industries. This has happened in local, national and international markets. Investments in research and development infrastructure for the petroleum industry have also supported work for other industries, and thereby furthered economic diversification.

Entrepreneurship, Self-confidence and Ambition: The success of local companies in the petroleum and other industries has encouraged or (through the competition they pose) required other Newfoundland and Labrador firms to become more competitive. In terms of such things as business practices and ambition, local petroleum industry companies have become role models to the business community as a whole.

Furthermore, new and improved offshore petroleum-related industrial infrastructure, such as resulted from White Rose-related investments in Marystown, is reducing the costs of, and increasing likelihood of, potential Newfoundland and Labrador benefits from further projects, as well as finding application in other industries. At the same time, petroleum industry-related research, development, education and training infrastructure is creating a core of expertise and learning in this Province in a range of marine and engineering-related areas. Again, while put in place to support local activity, these facilities and capabilities are increasingly undertaking work for clients outside the Province and outside the oil industry, further developing and diversifying the economy.

These changes are clearly sustainable in that, while they result from local offshore petroleum activity, they are developing capabilities applicable in other places and industries. While any decline in petroleum industry activity in the Newfoundland and Labrador offshore would have negative effects on these companies and the economy as a whole, these companies and individuals likely would continue

to succeed in the petroleum industry elsewhere and in other industries. Furthermore, the increased self-confidence and ambition that has been created is arguably having effects throughout the local economy and society. The North Amethyst project will further contribute to this process of transforming Newfoundland and Labrador.

5.2.4 Diversity

Husky has been very active in promoting and supporting workplace diversity within the local oil and gas industry, by introducing a diversity culture within the company and by encouraging major contractors to make a diverse workforce part of their operations. In order to facilitate this, and pursuant to commitments made in the White Rose Development Plan, Husky developed the White Rose Diversity Plan (Husky Energy, 2002).

Through this vehicle, Husky has worked with a range of diversity groups: for example, Husky's annual Diversity Workshop attracts approximately 80 business and community partners from a variety of organizations and highlights both the challenges and successes of developing a diverse workplace. Husky participates in a working group with the Coalition for Persons with Disabilities, and maintains an ongoing dialogue with such interest groups as the Canadian National Institute for the Blind (CNIB) and Women in Resource Development. Husky has also supported an Apprenticeship Program in which subcontractors are paid to take on skilled tradeswomen for apprenticeships.

5.2.5 Community Investment

Education and health are the cornerstones of Husky's community giving program. Investing in these, and other charitable causes, helps people, organizations and communities grow and succeed. Husky's commitment to community unites the company, strengthens the company's reputation and creates important partnerships. This commitment extends directly from senior management to all employees.

Husky's approach is to provide direct and lasting benefits to the broadest possible audience with a special focus on health and education, arts and culture, the environment and community service. Community service organizations in Newfoundland and Labrador have been among the primary beneficiaries of the donations program, including Big Brothers/Big Sisters, the CNIB, Iris Kirby House, the Seniors Resource Centre, the Independent Living Resource Centre, and area food banks. Husky has also provided funding to such environmental initiatives as the Rennie's River Restoration Project, to such arts and cultural organizations as the Newfoundland Symphony Orchestra, the International Women's Film and Video Festival and the Newfoundland and Labrador Arts Council's *Arts Smart Program*, and to such educational groups as Future SET.

These efforts extend beyond the St. John's Area. For example the FOCUS program, initially used in Husky's offshore drilling and completions program, was expanded to the Cow Head Fabrication Yard in Marystown during the fabrication and commissioning of the *SeaRose FPSO*. In order to promote a safe work environment, Husky married health and safety with community investment. As certain safety targets were achieved, funds were put into a 'bank' that ultimately distributed \$40,000 among ten Burin Peninsula communities for projects bringing positive long-term benefits to residents. The communities used the funds on projects ranging from environmental initiatives to the development of walking trails and recreation facilities. In 2006, the Town of Marystown opened a ten-stage Fitness Park using some of the FOCUS monies. The only one of its kind on the Burin Peninsula, it can be used by individuals or

teams, and all ages and skill levels, permitting everyone from beginners to experts to participate at their own pace.

There has also been community investment in healthcare. In one example, Husky donated \$100,000 to the purchase of a CT scanner for the Burin Peninsula Health Care Foundation of Newfoundland to commemorate the sail away of the *SeaRose FPSO*. Husky also gave \$230,000 to the Health Sciences Centre Give to Feel Good campaign in 2003, and \$250,000 to the Newfoundland and Labrador Easter Seals campaign in 2007.

5.2.6 Employee Participation

As was noted above, Husky staff volunteer with and serve on the boards of numerous local community and professional organizations. This extends throughout the company, from Vice-President Ruud Zoon's work as a member of the Board of the CNIB to staff members giving personal and work time to support such groups as the Kid's Help Phone. Husky employees in St. John's also join forces with other oil and gas operators in the annual Oil and Gas Industry Food Drive; in 2006, they collected 2,250 kg of food. Other community initiatives have ranged from participation in the annual CIBC Run for the Cure and Operation Christmas Child, to volunteering at local food banks and shelters, and participating in a shoreline clean-up and tree planting programs.

6.0 CONCLUSION

The North Amethyst Satellite Tie-back Project is the latest of a series of offshore petroleum development projects that Newfoundland and Labrador has experienced since 1990. While it is smaller than the White Rose and Terra Nova projects, let alone the Hibernia project, it represents another important step in the development of the Province's offshore oil and gas industry.

The Project will deliver a range of economic benefits to the Province, including the provision of local employment, training, business and R&D. More generally, the Project will result in the further development of provincial expertise and capabilities, contributing to sustainable economic development and thereby helping generate a lasting economic legacy for the people of the Province.

This will include benefits to rural Newfoundland and Labrador. The areas surrounding Project construction activity will receive direct and multiplier employment and business benefits, and the yard(s) engaged in this work will further develop their capabilities. However, the scale of construction activity in these areas will be less than was experienced on earlier offshore petroleum projects and, given that they did not result in any substantial social services and infrastructure or physical infrastructure problems for local communities, it is anticipated that they will be able to absorb the smaller demands that result from the Project.

Similarly, the approaches and policies Husky has adopted at the corporate level, and the Project-specific policies, practices and initiatives that reflect them, will minimize the Project's bio-physical impacts. This represents sound environmental stewardship and resource conservation, to the long-term benefit of the Province and all its citizens.

7.0 APPENDIX A: FISHERIES

7.1 Introduction

The following is a summary of the findings of the recent fisheries assessment.

7.2 Presence of Structures

The establishment of safety zones would preclude fishing in these areas. These zones will also contain the areas affected by excavation and any areas within which drill cuttings would be deposited. The artificial reef created by the surface and underwater structures may attract some species and life stages of fish. This artificial reef effect, while it represents an interaction with fish (potentially positive in some respects such as increased food and protection), was considered negligible at most.

Because fishing will not be safe within these zones, the effect of exclusion will be potentially *negative*. However, since the zones will be located in areas where commercial fishing does not typically occur, this is not expected to have any operational or economic impact on fish harvesters. Based on past harvesting data, the areas where the new drill centres will be constructed do not appear to be particularly productive for commercial species. In this general area (Unit Area 3Lt), there are also many other alternative locations of equal productivity available to fishers should they wish to harvest them. Considering the drill centre locations in relation to harvesting areas, the effects of the presence of the safety zones on fish harvesting would be *not significant*.

Effects will be additive with other projects (e.g. Hibernia and Terra Nova safety zones) and the current White Rose safety zone but the safety zones of the three projects will still not overlap, and their additive cumulative effect will not exceed the *not significant* rating. The artificial reef effect would not have an effect on fishing activity, per se, as it would likely be confined within the excluded areas. However, if it results in the creation of enhanced habitat for commercial or prey species, the effect could be positive for fishing success on a very small scale in the long term.

7.3 Sediment Excavation

Fishing will not be possible within the area of sediment removal and deposition while these activities are occurring. However, as these areas (and associated effects) will be contained within the excluded (safety zone) area, and since the original spoils area will be used for sediment deposition, there will be no further effects on fish harvesting activities beyond those considered for the safety zone. Therefore, the potential effects of sediment excavation on commercial fisheries are *not significant*.

No overlap of glory hole excavations is expected to occur during the project. Cumulative effects of excavation work on fish harvesting would not be additive beyond the extent of the safety zones, and thus will not change the overall effects rating.

7.4 Ships and Boats

Ships and boats associated with the project could interfere with fish harvesting activities if they interfere with the operation of fishing ships, or – more probably – if their operations conflict with fishing gear.

Such conflicts are more likely to involve fixed fishing gear (e.g. crab pots), and might result in gear damage, gear loss, loss of catch and increased operational expenses for harvesters.

While supply vessels and support ships pose minimal risk to fishing gear (no more than other ocean-going ships or other fishing vessels in the area), surveys (including vertical seismic profiling (VSP) and geohazard surveys, which might occur during drilling activities do pose more of a specific risk if the seismic equipment is towed through the water. Seismic survey/fishing gear conflicts do occur sometimes once or twice a year in Atlantic Canada, although not usually as the result of localized VSP surveys, which are very small scale (i.e., on the order of a few km). As well, the CNLOPB *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* provide guidance aimed at minimizing any impacts of VSP/well-site surveys on commercial fish harvesting.

With these mitigations in place (including compensation if a conflict with gear were to occur), and in light of the localized nature of VSP surveys, their small footprint, short duration (12 to 36 hours), and the lack of past harvesting activities in and near the new drill centre locations, the potential effect of ships and boats on commercial fisheries is *not significant*.

Project-related ship activity would be additive to other existing shipping, but these effects are not expected to be large enough to change the overall effects rating. During operations, there will be no additional supply vessels required (i.e., the supply vessels currently servicing White Rose will continue to do so). Cumulative effects with respect to other shipping activities on the Grand Banks are not considered to be large enough to change the overall effects rating.

7.5 Noise

As noted previously, noise from shipping (e.g. project support vessels), dredging, drilling, the FPSO, and VSP surveys can affect fish and invertebrates. Project-related noise will occur during all project phases, although the most concern for potential effects on fish harvesting might be during drilling activities (VSP surveys).

Snow crab is the species that would be of concern to fishers nearest the White Rose area, although harvesting is not recorded close to the new drill centre locations. For this species, recent studies do not indicate significant effects on catch rates or behaviour related to seismic surveying. Based on these considerations, the effects of noise on the commercial fishery are *not significant*.

In terms of cumulative effects, fishing itself is one of the more notable contributors to the total Grand Banks anthropogenic background sound (e.g., from ships' engines, generators, winches and bottom-tending mobile gears such as dredges and trawls). Other existing sources of sound in the general area of the Project are related to petroleum exploration and production, and marine transportation (commercial, military, and recreational).

Naturally-occurring noise (e.g. from wind, waves, ice, marine animals) also exists throughout the Grand Banks, and is quite variable. Given the level of ambient sound, masking of much anthropogenic sound would be expected to occur. Also, sound itself does not "accumulate" in the environment and it ceases when the sound source stops.

Thus, the cumulative effects on fish harvesting activities of the additional localized contribution of sound from project construction and operations will be *negligible*, especially given the lack of harvesting recorded in areas close to most project activities.

7.6 Accidental Events

With respect to commercial fish harvesting, the present assessment concurs with the White Rose Comprehensive Study that effects on fish populations due to an oil spill or blow-out would be *not significant*. That study concluded that a large (>10,000 bbl) oil spill or blow-out would not cause significant effects on fish and fish habitat or result in tainting of fish flesh. Thus, effects on commercial fisheries as a result of physical effects on fish an accidental spill are considered to be *not significant*.

Although physical effects on fish from a spill are deemed not significant, economic impacts might occur in the event of a spill, if the spill prevented or impeded a harvester's ability to access fishing grounds (because of areas temporarily excluded during the spill or spill clean-up), caused damage to fishing gear (through oiling) or resulted in a negative effect on the marketability of fish products (because of market perception).

If a spill slick were to reach this area when fisheries were active, it is likely that fishing would be halted, owing to the possibility of fouling the buoy lines, or the crab pots if these were raised through the slick. Because potential release sites within the White Rose area would be some distance from the snow crab fishing grounds, there would be time to notify fishers of the occurrence and prevent the setting or hauling of gear and thus prevent or minimize gear damage.

Exclusion from a spill area would be expected to be short-term, as typical sea and wind conditions in the area would promote fairly rapid evaporation and weathering of the slick, and fishing vessels would likely be able to return within several days. An interruption could result in an economic impact because of reduced catches, or extra costs associated with having to relocate crab harvesting effort.

Effects due to market perceptions of poor product quality (no buyers or reduced prices, etc.) are more difficult to predict, since the actual (physical) impacts of the spill might have little to do with these perceptions. It would only be possible to quantify these effects by monitoring the situation if a spill were to occur and if it were to reach snow crab harvesting areas.

Such economic effects (caused by loss of access, gear damage or changes in market value) could be considered *significant* to the commercial fisheries. However, the application of appropriate mitigative measures (e.g. economic compensation) would reduce the potential impact to *not significant*.

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