



HUMAN HEALTH AND COMMUNITY WELLNESS ASSESSMENT
for the
Whites Point Quarry and Marine Terminal
Environmental Impact Statement
Digby Neck, Nova Scotia

Submitted to:

Bilcon of Nova Scotia
P.O Box 2113
Digby, NL BOV 1A0

Submitted by:

AMEC Earth & Environmental
A Division of AMEC Americas Limited
P.O. Box 13216
St. John's, NL A1B 4A5

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IMPORTANT NOTICE

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EXECUTIVE SUMMARY

Bilcon of Nova Scotia, the Proponent, commissioned AMEC Earth & Environmental to undertake a human health and community wellness study of Digby Neck & Islands' communities. The Proponent is planning to construct and operate a basalt quarry and a marine terminal (the Project) at Whites Point on Digby Neck, Nova Scotia. As part of the approval process, the Proponent must meet environmental assessment requirements. The provincial and federal government initiated a joint-panel review to oversee the environmental assessment process. This study provides information relevant to the Proponent for integration to the environmental impact statement.

This report provides a baseline description of human health and community wellness conditions in the study area, as well as an assessment of the potential effects of the Project.

Baseline conditions were assessed using statistical data from regulatory authorities, as well as the results from a Quality of Life Survey and an Attitudinal Survey conducted in 2005 by AMEC. These two surveys provide additional information on the social component of community health and public perception of the Project. Qualitative information was also obtained from key informants and concerns raised by the public.

In summary, the baseline findings show that currently the population is declining in Digby Neck & Islands. The population is essentially Anglophone with a large majority born in the study area or Nova Scotia. Digby Neck & Islands is primarily homogenous, with a very low percentage of the population identifying ethnic ties with Acadians, Black Community, Metis or Aboriginal. Today, Loyalists are not an ethnic group in Statistics Canada surveys. However the Quality of Life survey noted above indicates that 4.2% of those surveyed identified themselves as having Loyalists ties. More out-migration than in-migration occurs, especially for individuals between 18 and 45 years old. Still, within the study area the population is geographically stable since the proportion of non-movers and mover non-migrants is quite high.

The health status of the population is similar to other parts of Nova Scotia. 81.9% of respondents to the Quality of Life Survey said that their health was good. When asked to identify what were the most important factors to their health, respondents identified air and water quality as the two most important issues, although they did not necessarily rank these factors' current conditions as excellent. 50% of the respondents said that their life was somewhat stressful. Important stress causing factors were identified as financial problems, children, health problems and lack of employment.

The availability of health services is adequate for the study area and sufficient infrastructure exists to deal with emergencies.

The labour force participation rate of individuals has increased since 1991, but at the same time the unemployment rate has also increased. The female participation rate is lower than for males. Moreover, primary industries usually tend to employ more men than women. Incomes in the study area are, on average, lower than the rest of Nova Scotia. Higher education is not necessarily associated with higher incomes on Digby Neck & Islands.

Individuals of the study area have a high sense of social cohesion, which is more prevalent for those who have lived in the area for longer, therefore older people. Levels of trust in others, provincial and federal government are extremely low.

Quality of life was also assessed by Digby Neck & Islands residents through a Quality of Life. Younger people did not rate their quality of life as high as did older people. Factors that were identified as being important for the more mature person in the area included a healthy environment, a safe environment, health care access, and good income and financial security. Satisfaction with current environmental conditions was lower than one would expect, considering the overall area's scenic beauty. It is difficult to assess what impact the project will have on people's quality of life. If some of the perceived negative project impacts occur (increased dust, decrease in the fishery, changes to the scenery) then the perceived quality of life would be seen as declining. If, however impacts on the environment and way of life are successfully mitigated and the area realizes an economic boost, the overall quality of life will be seen to not have declined.

The human health and community wellness assessment uses the population health approach and health determinants to characterize potential health effects associated with the Project, including measures of demographics, health status of population, deaths, human function, well-being, health and social services, employment and working conditions, income and social status, education and literacy, social capital, quality of life, environmental quality (i.e., air, soil, water and local produces), and individual factors.

The analysis of the current conditions of local health determinants and the effects of the Project on those conditions has determined that the Project overall will not have a significant adverse effect on human health and community wellness.

1.0 INTRODUCTION

Bilcon of Nova Scotia, the Proponent, commissioned AMEC Earth and Environmental to undertake a human health and community wellness study of Digby Neck & Islands' communities. The Proponent is planning to construct and operate a basalt quarry and a marine terminal (the Project) at Whites Point on Digby Neck, Nova Scotia. As part of the approval process, the Proponent must meet environmental assessment requirements. The provincial and federal government initiated a joint-panel review to oversee the environmental assessment process. This study provides information relevant to the Proponent for integration in the environmental impact statement.

The first part of this report provides a baseline description of human health and community wellness conditions in the study area (Sections 3, 4 and 5). It addresses human health and community wellness issues raised by the public and required by the environmental assessment guidelines. This baseline uses the population health approach and associated community health indicators to describe existing conditions found in the study area: i.e., prior to potential project construction and operation.

The second part of this report (Section 6) is the human health and community wellness assessment. The assessment investigates the interactions of the Project with the community health components and determines the significance of the interactions in the context of the overall environmental assessment). Also included in the second part of this study are recommendations for avoiding and minimizing adverse effects potentially associated with the Project's construction and operation phases.

This report deals with population health using an integrated approach. The use of independent sections, without adequate reference to the rest of the component report, could compromise the integrity of the report's findings.

2.0 COMMUNITY HEALTH INDICATORS

2.1 Determinants of Health

What makes a community healthy? The definition of health adopted herein is the World Health Organization definition (1948) where: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". This definition was expanded in 1984, adding: "the extent to which an individual or a group is able to realize aspirations and to satisfy needs, and to cope with change or cope with the environment". This definition means that the health of a population is broader than physical health and that one must recognize the influence of other determinants that are non-medical.

The use of determinants to understand the health of a population is also known as the population health approach, which was officially endorsed in 1994 by the Canadian Federal/Provincial/Territorial Advisory Committee on Population Health. The Public Health Agency of Canada (2005), the Nova Scotia Department of Health (Summer 2002) and the South West Nova District Health Authority (2005) are promoting the population health approach to improve the health of their population and reduce health inequalities. The population health approach is also suitable in the context of environmental impact assessment (Health Canada,

2005) where health determinants provide an approach to describe community health, predict health effects and suggest ways to mitigate potential health effects. As an integrated approach, it allows one to see human health and community wellness from a holistic point of view. Health determinants are typically identified (PHAC, 2005 and NSDOH, 2002) as follows:

- Income and social status;
- Social support networks;
- Education and literacy;
- Employment and working conditions;
- Social environment;
- Physical environment;
- Personal health practices and coping skills;
- Healthy child development;
- Biology and genetic endowment;
- Health services; and
- Gender and culture.

A good summary on how these determinants can affect health is found in Health Canada's *Canadian Handbook on Health Impact Assessment (2005)*.

2.2 Methodology

To prepare this community health baseline description, data has been gathered and organized into three categories identified as community health components, which are groups of health determinants. The components chosen are:

- Social and Economic Environment;
- Physical Environment; and
- Individual Factors.

Health determinants or indicators of community health components (see Table 1) have been selected to be representative of each component and to address key issues identified by stakeholders and are based on the availability of data. These indicators either provide an estimate of the health status, non-medical determinants of health, health system performance or provide information on community and their health system characteristics.



TABLE 1: Community Health Components and Selected Indicators

	Social and economic environment	Physical environment	Individual factors
Indicators	Demographics	Air quality	Personal health practices and coping skills
	Health status of populations	Water quality	
	Health and social services	Soil and sediments quality	
	Employment and working conditions	Noise and light	
	Income and social status		
	Education and literacy		
	Social capital		

2.3 Sources of Data

Primary and secondary sources of data were used to develop this baseline assessment.

2.3.1 Quality of Life and Attitude Surveys, and Public Concerns

Primary data sources include interviews with key health informants (SWHDHA and Community Health Board). As well, AMEC undertook a Quality of Life survey in the Digby Neck & Islands area in support of this Project and also a separate attitudinal Survey conducted in the larger Project area to identify the residents' main concerns regarding the Project and why they held certain opinions. The findings of these surveys are detailed below (see Appendix A for questionnaires administered).

Attitude Survey

The Attitude survey was conducted by AMEC on behalf of the Proponent to gather information on Digby Neck & Area residents' concerns about the Project. The survey was not specifically carried out for the human health and community wellness assessment. However, because of its interest, some data was included in this report.

The initial Attitude survey was conducted by telephone between October 12 and October 21, 2005 with a total sample size of 546, and 405 completed surveys. The areas selected for the survey included the Digby Neck & Islands area, some communities in the Annapolis Valley and some communities across the bay from the proposed White's Point quarry. The areas selected were based on the project's zone of influence as reflected in the submissions that were brought forth by residents and interest groups and from where they originated. The number of survey participants for each community was based on proportionate sampling based on population size, i.e. if a community represented 20% of the total population then 20% of respondents for the totals sample would be drawn from that community.

In this initial survey, there were some concerns that areas which would realize primary impacts from the project were not sufficiently represented. Therefore, it was decided to increase the sampling in this area so as to increase the reliability of the results and allow the proponent to better respond to communities' specific concerns. This area was best reflected by looking at the "834" telephone exchange which has a relatively small population and included the communities of Centreville, Freeport, Sandy Cove (includes Little River), Tiverton and Westport. Therefore,

from November 21-21 an additional 71 households in these communities were contacted and 52 surveys were completed for a total sample of 457 completed surveys.

The frequency of respondents (valid/completed survey) by community is as follow:

- Annapolis Royal, frequency: 51
- Barton, frequency: 3
- Bear River, frequency: 26
- Belliveau Cove, frequency: 8
- Centreville, frequency: 15
- Church Point, frequency; 13
- Clementsport, frequency: 6
- Clementsvale, frequency: 5
- Cornwallis, frequency: 16
- Deep Brook, frequency: 6
- Digby, frequency: 127
- Freeport, frequency: 28
- Granville Ferry: frequency: 9
- Little Brook, frequency: 10
- Plympton, frequency: 6
- Sandy Cove: frequency: 31
- Smiths Cove, frequency: 12
- Tiverton, frequency: 10
- Westport, frequency: 11
- Weymouth, frequency: 65

In terms of gender representation, 45% of respondents were male and 55% were female; samples from all major age groups were well balanced.

AMEC designed and finalized the survey in consultation with Bilcon of Nova Scotia. Ms. Kathy-Jane Elton, an associate with AMEC, with extensive expertise in designing and managing comparable survey projects provided the initial survey design. Ms. Elton's experience encompasses a position as Research Director with a leading St. John's market research company. She was a senior policy advisor with the Newfoundland and Labrador provincial government and has managed numerous similar initiatives. Additional input to the survey design was solicited from Dr. Keith Storey, a highly regarded social scientist and currently Chair of Memorial University of Newfoundland's Geography Department.

Administration of the survey was contracted out. Bids were solicited from three firms and evaluated and the contract was awarded to Market Quest Research Inc., a professional market research company serving Atlantic Canada. ASDE Survey Sampler, a professional "sampler" company located in Hull, Quebec, undertook the selection of the sample. ASDE uses a software program designed for objectively and randomly selecting telephone numbers, and therefore respondents, ensuring a balanced representation from all communities.

The sampling for the Attitude Survey provides a high level of reliability: plus or minus 5.0% at 96% confidence level. The confidence level for the QOL Survey is $\pm 7.3\%$, 19 times out of 20 or at the 95% confidence level.

A table reflecting all survey data for all questions in the attitude survey is included in Appendix A.

Quality of Life Survey

Human health and community well-being provincial and federal statistical data provided general information about the regional area, but not specifically the study area. After discussion with the Proponent, AMEC developed and commissioned a Quality of Life survey and this too was contracted to MarketQuest Research and conducted in October 2005. This survey was designed to gather additional information on Digby Neck & Islands residents' social environment. Some questions were taken from Health Canada's (2003) research paper on the assessment of social capital, some taken or adapted from Statistics Canada surveys, and others were developed based on Project-specific information needs. The questions were selected by AMEC and Gardner Pinfold (employment issues). Ms. Elton was also involved in the survey design. Market Quest Research Group Inc. administered the survey to 150 respondents over 18 years of age living on Digby Neck & Islands exclusively, of which:

- 93.7% reported being permanent residents of Neck and Islands ; and
- 83.6% had lived on Digby Neck & Islands for more than ten years, 5.9% between six to ten years and 9.0% less than one to five year s.

The survey area included Centreville West to Westport and communities in between. Specific communities surveyed for the QOL survey and the total sample for each community are provided below.

	Frequency	Percent
CENTREVILLE	11	7.2
FREEMPORT	42	28.3
SANDY COVE (includes Little River)	51	33.7
TIVERTON	26	17.1
WESTPORT	21	13.7
Total	150	100.0

The margin of error of the QOL Survey is ± 7.3%, 19 times out of 20 or at the 95% confidence level.

Public concerns

Public concerns identified from the panel review scoping sessions were also an important and valuable source of data; results were integrated into recommendations and findings.

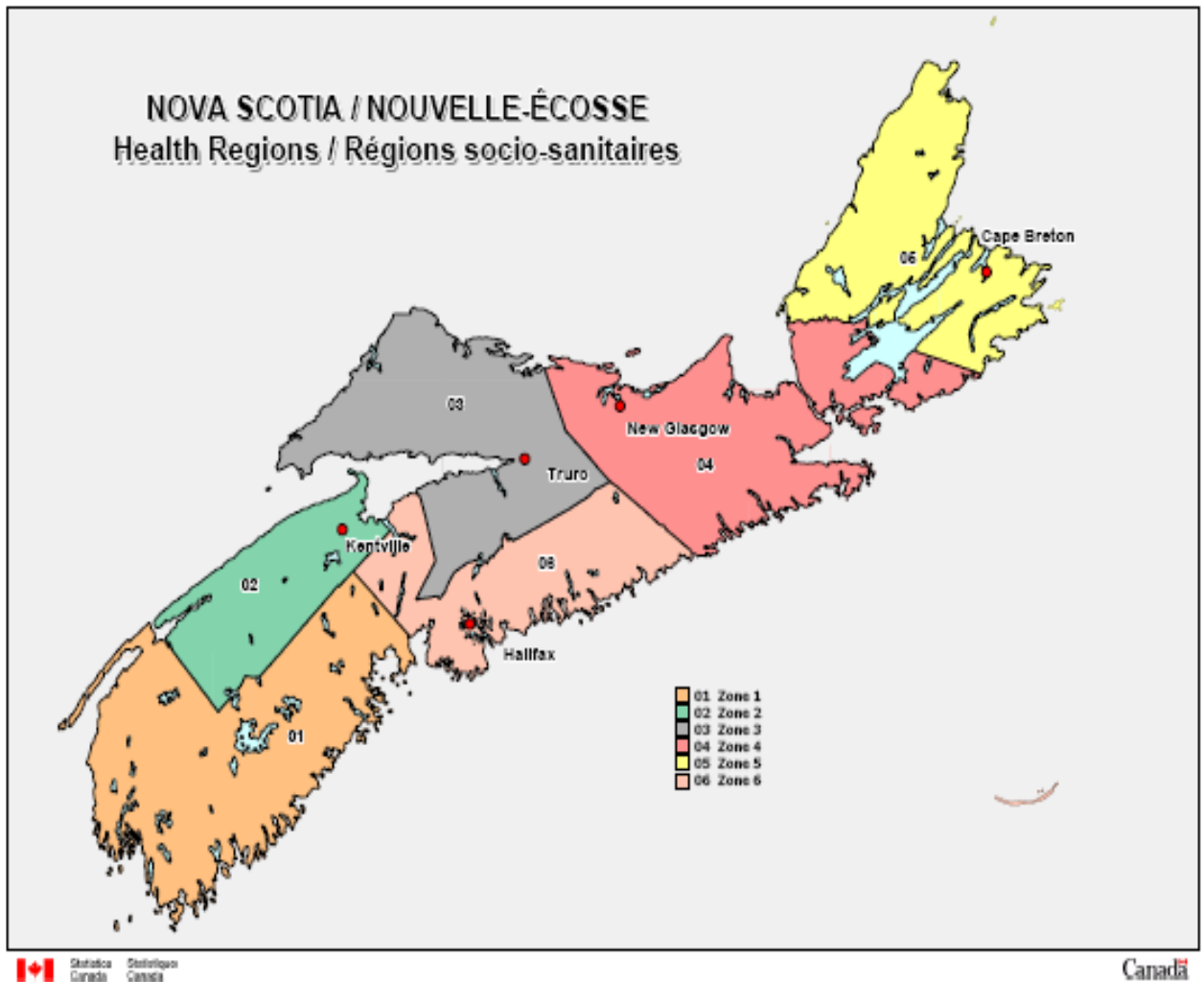
2.3.2 Statistical Data Sources

Sources of secondary data include, but are not limited to:

- Statistics Canada (including Canadian Community Health Survey and General Social Survey);
- Nova Scotia Department of Health (NSDOH); and
- South West Health District Health Authority (DHA 2).

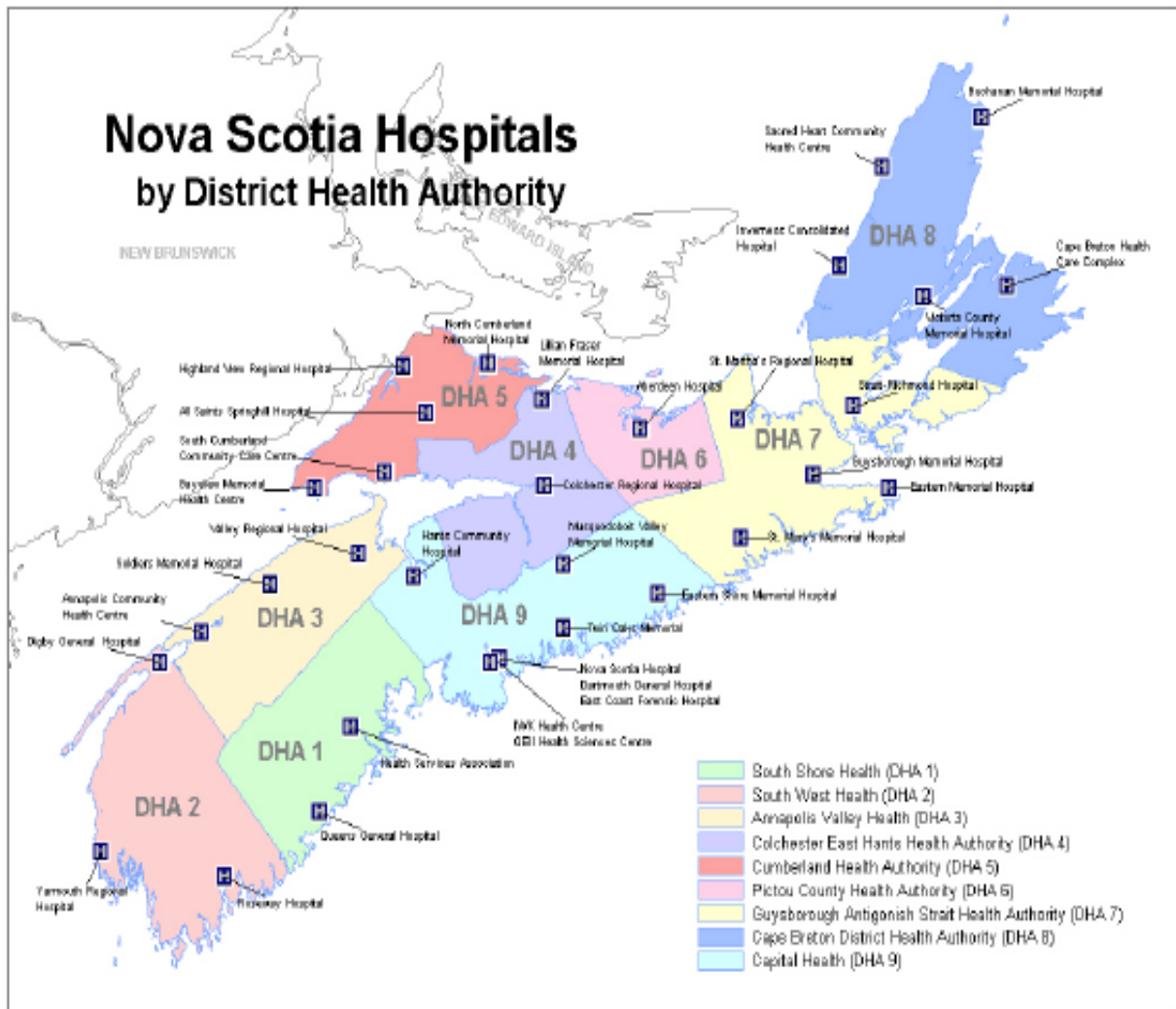
Provincial and federal authorities disclose their health statistics for dissimilar geographical units. The federal government generally provides information by health zone, and sometimes by County. Digby Neck is part of federal Zone 1 (see Figure 1). The provincial government provides information by District Health Authority (DHA), and sometimes by County as well. Digby Neck and County are part of provincial DHA 2: South West Health District Health Authority (SWHDHA) (see Figure 2). Federal Zone 1 covers a larger territory than does DHA 2.

FIGURE 1 Nova Scotia Health Regions (Federal)*



* Note: The population of federal health region Zone 1 in 2003 was of 97,244 inhabitants (Statistics Canada, 2004).

FIGURE 2 Nova Scotia District Health Authorities and Hospitals (Provincial)*



Nova Scotia Department of Health, January 2004

* Note: The population of the provincial DHA 2, in 2002 was approximately 62,000 inhabitants (NSDOH, 2003).

Statistical data representative of local conditions was used as available, i.e. at the level provided by provincial and federal authorities. High-level comparisons were made between the study area's statistics and regional, provincial and national statistics.

Additional caution must be used when interpreting the data since the available regional study area health statistics (e.g., from federal and provincial bodies, e.g., at the level of the District Health Authority) may not always be reliable for smaller areas (e.g., small sample size to represent a much larger group of population). However, the regional statistics are still representative of conditions in local and regional units (e.g., Digby County), because they share health characteristics with Digby Neck & Islands. Therefore, rates for regional units can be used as valid indicators for the study area.

Besides, data for medical determinants of health is not made available for smaller areas because of privacy issues.

As a last note of caution, it was pointed out by the SWHDHA's Decision Support Analysis (pers. com. September 22, 2005) that although most people are treated at their local health facilities, some travel further away to obtain services not readily available in their DHA (e.g., adjacent health authorities hospital). For example, an estimated 75% of hysterectomies of the Digby Neck and Islands are conducted in other districts.

2.4 Study Area

The study area is Digby Neck & Islands (referred to as Digby Neck), Digby County. Digby Neck includes the communities of Westport, Freeport, Central Grove, Tiverton, East Ferry, Tiddville, Little River, Mink Cove, Sandy Cove, Centreville, Waterford, Rossway and Gullivers Cove. Digby County includes the Clare Municipal District, Digby Municipal District, the town of Digby and the Bear River Reserve.

The study area of Digby Neck was selected because of the Project components and their potential for interactions with human health and community wellness (see Section 6.2.1). First Nations are excluded from the human health and community wellness baseline because they are located outside of the study area and were not identified as currently practicing traditional activities at the Project site.

3.0 SOCIAL AND ECONOMIC ENVIRONMENT

3.1 Demographics

3.1.1 Population Estimates

Currently, the population is declining in Digby Neck, as in Digby County.

Population changes and stability depend upon components such as births, deaths and population immigration and emigration within counties, provinces and countries. In industrialized countries, birth rates are declining overall. This is also true for Nova Scotia, where the excess of births over deaths has decreased significantly over the past decades. For example, in 1961-1965, a natural increase of 16.4/1000 was registered. In 1990, the natural increase had dropped to 6.1/1000 and to 0.6/1000 in 2003. The decline is even more severe for Digby County, which registered a natural decrease of -5.6/1000 in 2003 (Nova Scotia Vital Statistics Annual Report, 2003).

Table 2 and Figure 3 show total population counts and trends in the study area and surrounding areas. In summary:

- Digby County's total population decreased by 6% between 1996 and 2003;
- Digby Municipal District had a significant population decrease of 9.5% between 1996 and 2003; and
- Digby Neck lost 16% of its population (350 inhabitants) between 1991 and 2001 and 8.9% between 1996 and 2001.

TABLE 2: Population Count Trends for the Period 1996-2003

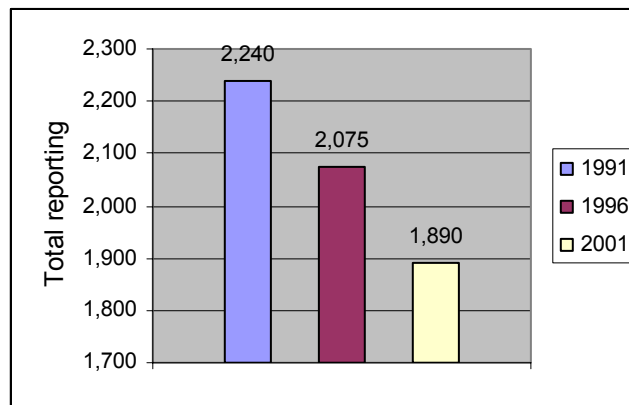
Geographical unit	1996	2001	2003	Change 1996-2003* (%)
Nova Scotia Southern Region	127,717	125,191	124,299	-2.7
Digby County Total	20,981	20,067	19,727	-6.0
Clare Municipal District	9,522	9,308	9,229	-3.1
Digby Municipal District	9,133	8,501	8,265	-9.5
Digby Neck & Islands	2,075	1,890	n/a	-8.9
Town of Digby	2,247	2,167	2,137	-4.9
Bear River Reserve**	79	91	96	+21.5

Source: Nova Scotia Finance (2004) & Source: Nova Scotia Community Counts Web page – data modeled from Statistics Canada, Census of Population 1991, 1996 and 2001.

Notes: * 1996-2001 for Digby Neck & Islands

** Not including individuals living off reserve. Including the population off reserve, the total population is of 277 individuals (INAC profile, July 2005).

FIGURE 3: Total Population on Digby Neck & Islands for 1991, 1996 and 2001

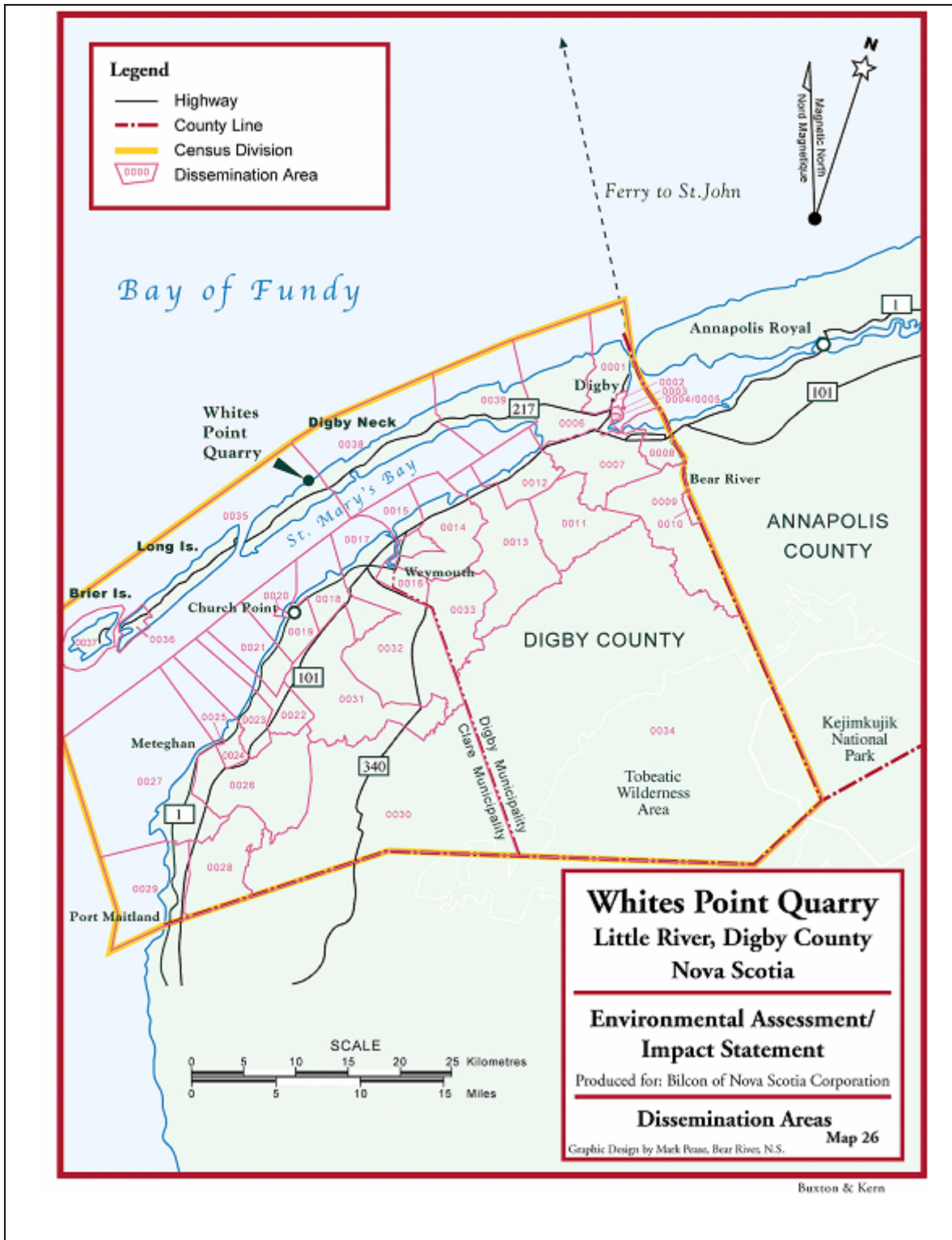


Source: Nova Scotia Community Counts web page – data modeled from Statistics Canada, Census of Population 1991, 1996 and 2001.

As a note of caution, the demographic data collected by regulatory authorities does not necessarily account for temporary residents, such as summer residents, living on Digby Neck. As an approximate estimate of temporary residents, in the AMEC 2005 survey conducted strictly on Digby Neck in October 2005, 6.3% reported not being permanent residents of Digby Neck. Since this is outside the summer season and Digby Neck is a popular summer area, this figure would under estimate the summer population.

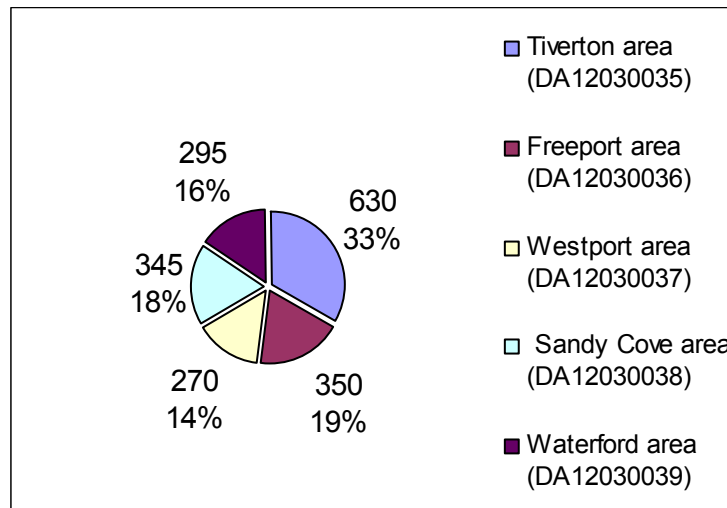
Supplementary detailed demographic statistics were obtained for the five dissemination areas (DA) that compose Digby Neck (see Figure 4). Names were attributed to DAs in order to facilitate the interpretation of data. The Tiverton area represents the immediate study area, which is also the most populated DA on Digby Neck (Figure 5).

FIGURE 4: Map of Digby Neck Dissemination Areas



Source: Bilcon of Nova Scotia, 2006

FIGURE 5: Repartition of Population per Digby Neck Dissemination Area (2001)



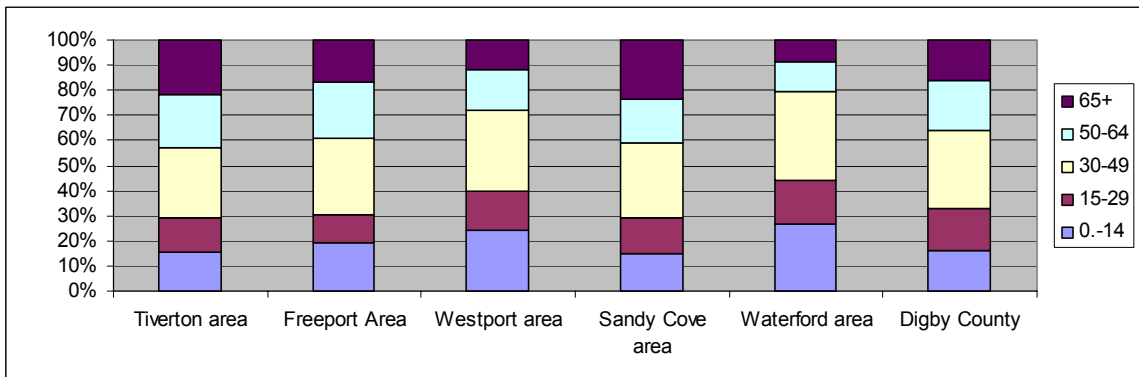
Source: Data derived from Statistics Canada, Census of population, 2001

The Digby Neck DAs differ one from another in terms of composition of population by age group (Figures 6 and 7). The variability can be explained to some degree by differences between the areas, but also by the small sample size as well as by Statistics Canada practice of rounding up by unit of 5 to ensure confidentiality.

Some population characteristics of the DAs by age groups are outlined below:

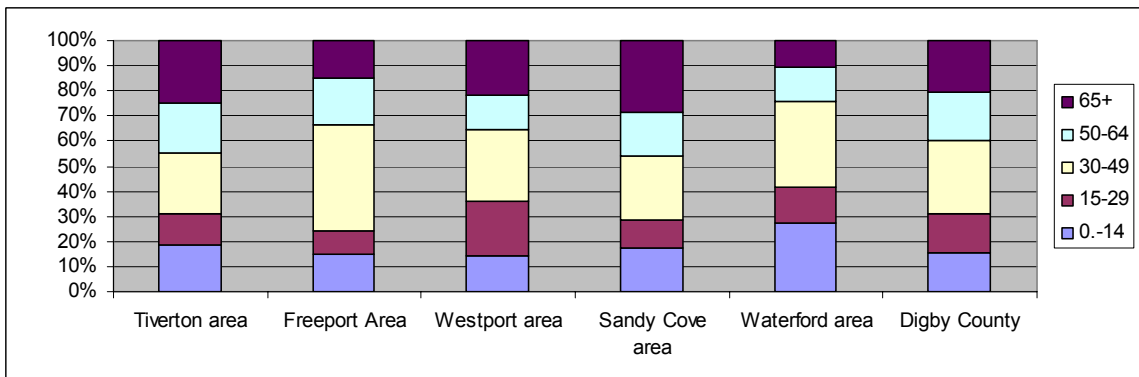
- The Waterford area, closer to the town of Digby, has more individuals aged 0 to 14 years compared to other areas and Digby County;
- The population aged 15-29 is fewer in most DAs than in Digby County;
- The population aged 30-49 is higher in the Freeport and Waterford areas compared to other DAs and Digby County. The Westport, Tiverton and Sandy Cove areas have a lower proportion of their population in this age group;
- The percentage of population aged 50-64 years is lower in the Tiverton, Sandy Cove and Waterford areas, but similar or slightly higher in the Westport and Freeport areas when compared to Digby County;
- The active population (15-64 years of age) is larger in the Freeport and Waterford areas compared to Digby County;
- The Westport and Sandy Cove areas have a larger proportion of population aged 65 years and over compared to Digby County; and
- The female population 65 years and over is more numerous than the male population for overall Digby Neck and Digby County.

FIGURE 6: Percentage of Male Population per Age Group, Comparison by Digby Neck's Dissemination Areas and Digby County (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001

FIGURE 7: Percentage of Female Population per Age Group, Comparison by Digby Neck's Dissemination Areas and Digby County (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001

3.1.2 Cultural Demographic Statistics

The review of cultural data for each dissemination area (Statistics Canada, Census of Population 2001) of Digby Neck shows that in 2001:

- The population is essentially Anglophone, with approximately 98% of the population listing English as their mother tongue;
- A few respondents listed their mother tongue being French, Dutch or Urdu;
- The majority of the population is of Canadian citizenship, with a few American citizens. A few individuals on Digby Neck have immigrated from the United Kingdom, United States, Hong Kong or the Netherlands and now have Canadian citizenship; and
- The following individuals were born in Nova Scotia as represented by percentages:
 - 89% from the Tiverton area;
 - 83% from the Eastport area;
 - 89% from the Westport area;
 - 94% from the Sandy Cove area;
 - 95% from the Waterford area;
 - 87% from Digby County; and

- 78% from Nova Scotia.

Respondents on Digby Neck have reported being of the following ethnic origins (first, second or third generation): Canadian, English, French, Scottish, Irish, German, Italian, North American Indian, Dutch, Norwegian, Welsh, Jewish, Métis, American, British and Acadian (single and multiple responses).

Table 3 presents statistics of the ethnic origin for selected groups: Acadians, Blacks, Aboriginals (Métis and North American Indian) and Americans. Residents of Digby Neck have the stronger ties with the cultural group of Acadians.

TABLE 3: Total Percentage of Population 15 years and Over by Selected Ethnic Origins (2001)

Geographical unit	Acadians (%)	Black (%)	Métis (%)	North American Indian (%)	Americans (%)
Tiverton area			0.030		0.019
Freeport area	0.071				
Westport area					0.140
Sandy Cove area					
Waterford area				0.111	
Digby County	0.135	0.008	0.015	0.036	0.010
Nova Scotia	0.015	0.004	0.006	0.039	0.006

Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

Data from the Statistics Canada 2001 Census per dissemination area reports few individuals from the visible minority population group. The data does not show the presence of Black people on Digby Neck, which could be either because of the absence of black residents or due to individuals not captured by the Census long form. However, Black people represent 600 individuals in Digby County. The only minority group reported for Digby Neck was South Asian (Sandy Cove Area, 10 individuals reported, rounded data). The data on the Aboriginal identified population for Digby Neck shows the presence of 15 Métis in the Eastport area and 10 North American Indian in the Waterford area (Statistics Canada 2001 Census, rounded data).

The AMEC 2005 survey, conducted with 150 respondents of Digby Neck only, found that respondents identified themselves as being from the following cultural groups:

- 5.8% as Acadians;
- 0.6% as Aboriginals;
- 0% as from the Black Community;
- 4.2% as Loyalists.

From a demographic point of view, it is important to note that Loyalists are not a cultural group for which statistics are usually reported. The term “Loyalist” was used to designate an estimated 75,000 (including 10% of African Americans) Americans that immigrated to Canada in the wake of the American Revolution. Almost half of them relocated to Nova Scotia. Loyalists were considered in older censuses (e.g. 1665 to 1871; Statistics Canada Catalogue 98-187-XIE).

It is difficult to quantify the number of loyalist descendants in the study area, unless it is assumed that all Anglophones born in Nova Scotia are from Loyalist descent, which would likely

be an overestimation. Moreover, the identification of ethnic origin from respondents indicates various ethnic backgrounds.

3.1.3 Migration Demographic Statistics

Population migration statistics (Table 4) show that a negative migration balance exists in Digby County. In other words, more out-migration occurs than in-migration. This is different than for Nova Scotia overall where the migration balance is positive. This out-migration negative balance can be observed for age groups of 18-24 years, 24-45 years and 65+ years.

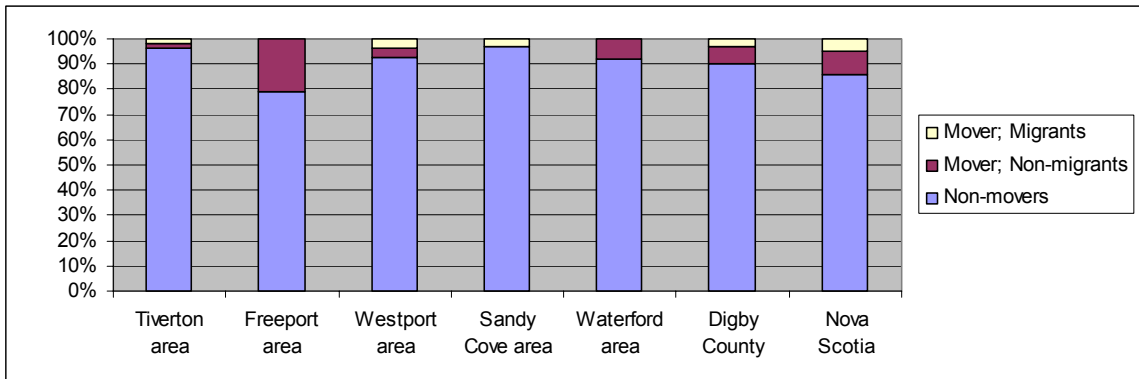
TABLE 4: Population Migration (1997-2002)

	Digby County			Nova Scotia		
	In	Out	Net	In	Out	Net
0-17	724	699	25	38,043	36,459	1,584
18-24	512	695	-183	32,184	36,103	-3,919
25-44	1,097	1,241	-144	68,617	67,037	1,580
45-64	582	420	162	22,243	19,938	2,305
65+	269	287	-18	8,605	8,356	249
Total	3,184	3,342	-158	169,692	167,893	1,799

Source: Statistics Canada, Small Area Administrative Division, 2002 in NSDOF (2004) Digby County Statistical Profile

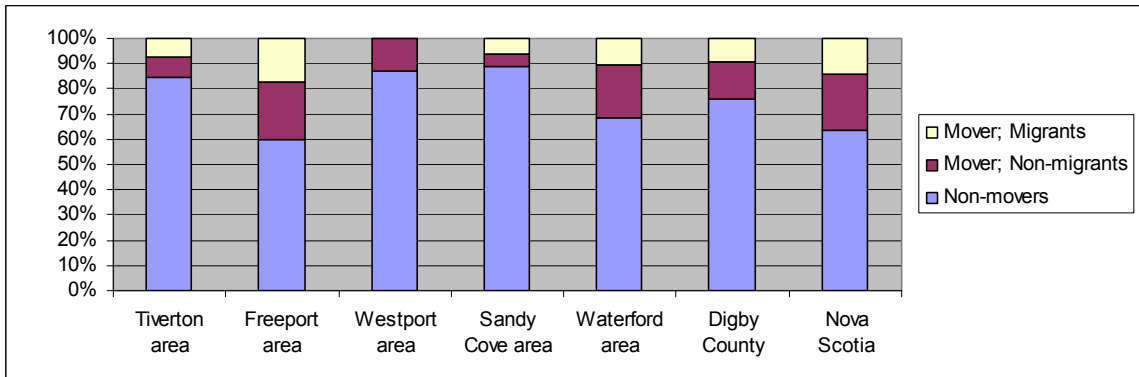
Despite the out-migration in Digby County, the Digby Neck population is geographically stable. The non-movers and mover non-migrants (i.e. moved in same area) (Figures 8 and 9) proportion is quite high. The mobility status of individuals between 1996 and 2001 shows that between 59% (Freeport area) and 88% (Sandy Cove area) of the population were non-movers while the Digby County averaged at 76% and the provincial average at 63%. The Freeport area has the highest number of migrants. These statistics do not include summer residents or other individuals for whom Digby Neck is not the primary residence.

FIGURE 8: Total Population by Mobility Status, 1 year Prior to 2001 Census



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

FIGURE 9: Total Population by Mobility Status, 5 years Prior to 2001 Census



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

A study conducted on Digby Neck regarding rural education and out-migration using surveys of individuals who attended elementary schools on Digby Neck and high school in the town of Digby between 1963 and 1998, noted that despite chronic high-rates of village-level out-migration, most migration trajectories were short-range (Corbett, 2005). The study used four categories to describe the spatial status of former students:

- Non-migrants:
 - Stayers – living on Digby Neck in 2000
 - Around here – living within 50km of Digby Neck in 2000
- Migrants:
 - Not far – living more than 50 km but not more than 250 km from Digby Neck in 2000
 - Away – living more than 250 km from Digby Neck in 2000

The study estimated that 61.1% of former students were non-migrants, 21.6% were living not far away and 17.4% were living away. Furthermore, it noted that women were more mobile than men in terms of leaving Digby Neck, but that their migration was short-range, which was explained by limited opportunities for young women on the Digby Neck in fishing operations and limited opportunities for well-paid local employment.

3.2 Health Status of the Population

The health status of a population (medical determinants of health) can be assessed using the following indicators: health conditions, deaths, human functions and well-being.

Mental health issues were reported as rather high in Digby County (pers. com. Decision Support Analyst, SWHDHA, September 22, 2005). 6.7% of the population of the SWHDHA is estimated to be suffering from mood disorders, and 12.2% from anxiety disorders (SWHDHA, June 2004). The review of the Joint-Panel Review Panel scoping sessions minutes identified the Stirling County Studies as addressing mental health diseases in the study area.

This study, which for more than 50 years has provided insight into the realm of mental illness, with a particular focus on the more common disorders of depression and anxiety, Was started in 1948 by Dr. Alexander Leighton. This work was undertaken in three phases (1952, 1970 and

1992) and may well be the longest running survey of the inhabitants of a rural region in Atlantic Canada about their personal mental health status.

Overall, the area included in this project has realized an increase in the standards of living with improved health care delivery and other amenities. However, primary industries have declined as has reliance on family and religion while crime and drug use have increased. One factor that hasn't changed in the area is the overall rate of depression. While medical professionals believe the incidence of depression to be generally increasing, from 1952 to 1992 the rate of depression in the County remained relatively stable at about 5 percent. Between 1970 to 1992 changes occurred in how depression was distributed among the population with a two-fold increase among women under age 45. This was offset by concomitant declines among older women and men of all ages. Changes also occurred in how men experienced depression. However, overall, incidence of depression in the area did not exceed 5%.

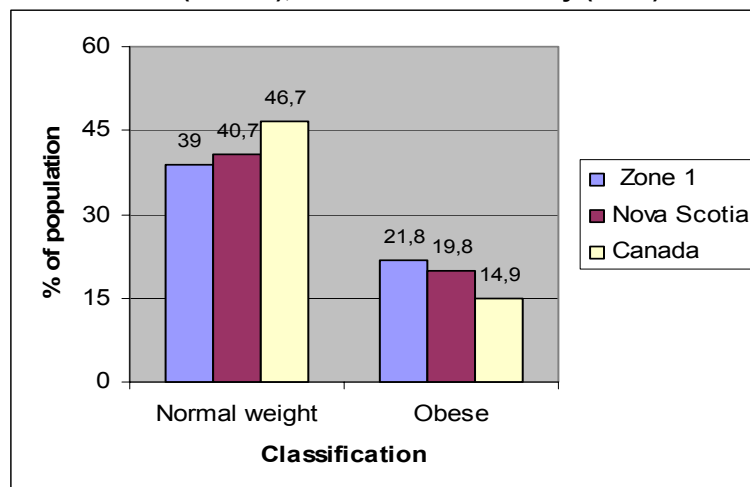
3.2.1 Health Conditions

Indicators selected to describe health conditions are the body mass index; population with arthritis/rheumatism, diabetes, asthma, high blood pressure; healthy child development and cancer occurrence.

3.2.1.1 Body Mass Index

The body mass index (BMI) is a method to classify body weight according to health risks. The index can be used to identify the individuals that are overweight or obese as well as their associated health risks respectively of high health risks and very high health risks. The values shown below are only for the population aged 18 years and over and exclude pregnant women. The population of Zone 1 (study area, Nova Scotia Health Region (Federal) as per Figure 1) has less individuals of normal weight and more obese individuals (see Figure 10) than for the rest of Nova Scotia and Canada as a whole.

FIGURE 10: Body Mass Index, Comparison by Study Area (Zone 1), Province and Country (2003)



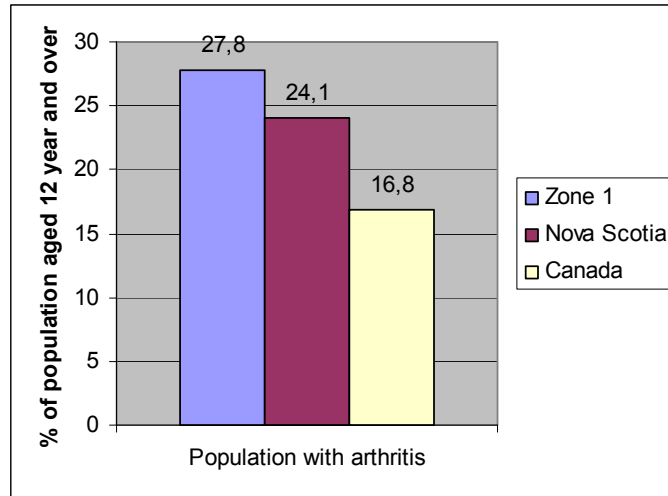
Source: Statistics Canada Catalogue no 82-221, Vol. 2004, No. 1

* Note: In Nova Scotia, health regions are known as "health zones" and relate to the province's administrative health region boundaries.

3.2.1.2 Arthritis/Rheumatism

The population in the study area with arthritis/rheumatism is much higher than Nova Scotia and Canadian averages (see Figure 11).

FIGURE 11: Population with Arthritis, Comparison by Study Area (Zone 1), Province and Country (2003)

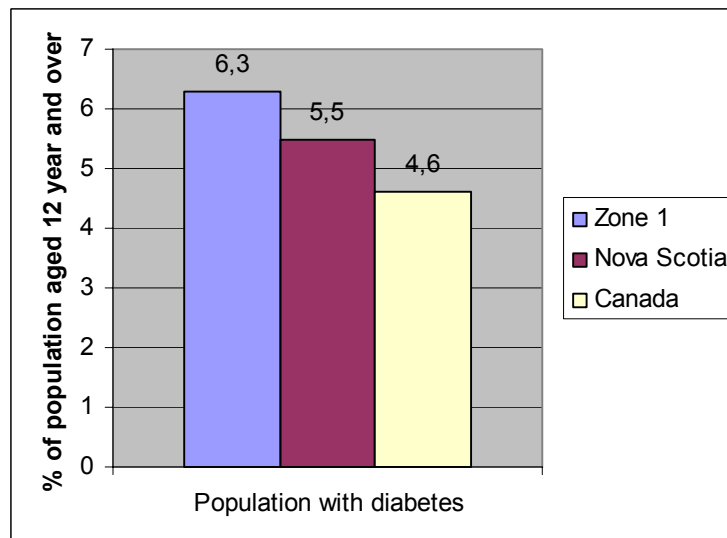


Source: Statistics Canada, Catalogue no 82-221, Vol. 2004, No.1

3.2.1.3 Diabetes

The population with diabetes in the study area, although higher than Nova Scotia and Canada as a whole (see Figure 12), may not be statistically different than from provincial estimates (NSDOH, October 17, 2002). Therefore, the incidence of diabetes in the study area is comparable to provincial and national rates.

FIGURE 12: Population with Diabetes, Comparison by Study Area (Zone 1), Province and Country (2003)

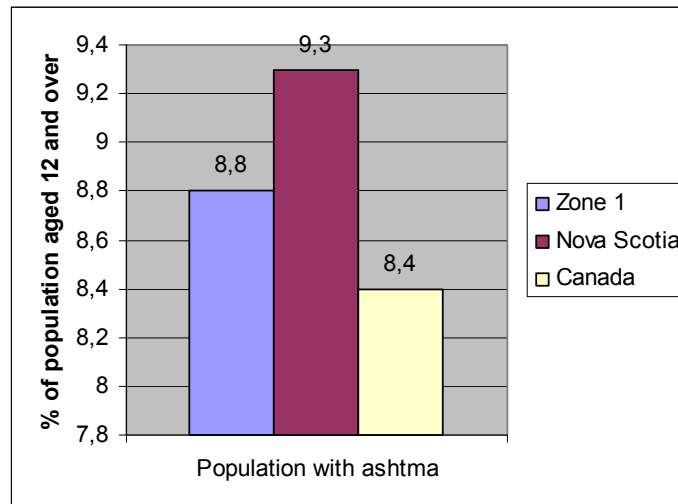


Source: Statistics Canada, Catalogue no 82-221, Vol. 2004, No.1

3.2.1.4 Asthma

The population with asthma in the study area is slightly lower than the provincial average, but above the national average (Figure 13). According to the SWHDHA (pers. com. Decision Support Analysis, September 22, 2005), elevated rates of asthma in the study area are recorded. Although causes have not been established, it has been suggested that environmental pollution from south of the Canadian Border is a contributing factor since there are no heavy industries in the study area. No data was found to confirm this assumption.

FIGURE 13: Population with Asthma, Comparison by Study Area (Zone 1), Province and Country (2003)

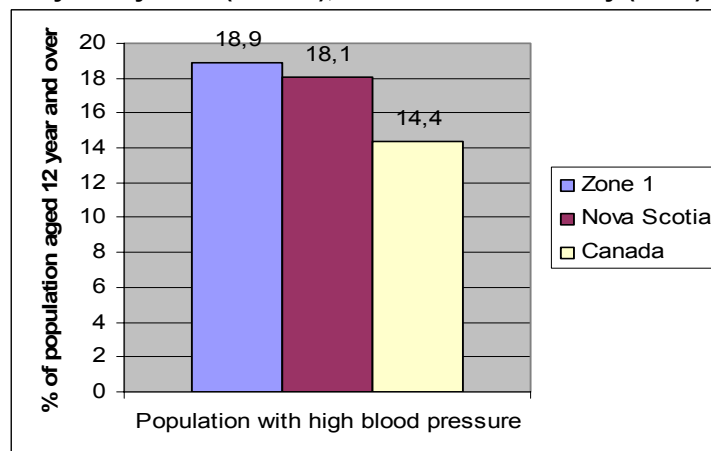


Source: Statistics Canada, Catalogue no 82-221, Vol. 2004, No.1

3.2.1.5 High Blood Pressure

The population with high blood pressure in the study area is slightly higher than the provincial average and much higher than Canadian average (see Figure 14).

FIGURE 14: Population with High Blood Pressure, Comparison By Study Area (Zone 1), Province and Country (2003)



Source: Statistics Canada, Catalogue no 82-221, Vol. 2004, No.1

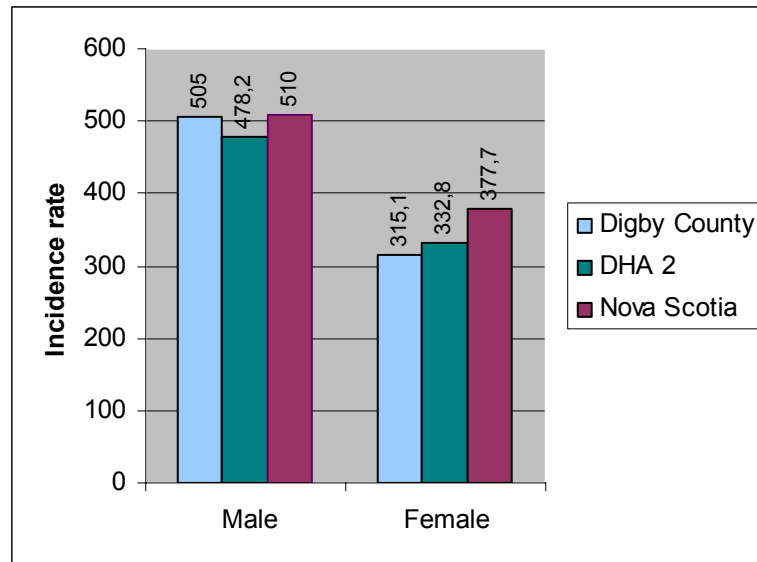
3.2.1.6 Healthy Childhood Development

When evaluating factors that could impact healthy childhood development by District Health Authority in Nova Scotia (NSDOH, October 2002), study area (DHA 2) practices on intake of folic acid before pregnancy, breastfeeding, smoking or drinking during pregnancy were reported to be similar to provincial practices. In 2003, the SWHDHA reported that for low birth weight, mothers less than 35 years gave birth to low birth weight babies less often when compared to the provincial rate. However, for mothers over 35 years, the rate was approximately double the provincial rate.

3.2.1.7 Cancer Occurrence

Incidence rate of all cancer causes varies in Digby County, DHA 2 and the province. In 2000, the incidence rate for males was similar to the provincial rate while for females it was lower than the DHA and the provincial rates (see Figure 15). Table 5 shows the same data for 2002, but the confidence interval is a 95% confidence interval range.

FIGURE 15: Incidence Rate of All Cancer, Comparison by Digby County, District Health Authority 2, and Nova Scotia



Source: Cancer Care Nova Scotia, 2000

TABLE 5: All Cancer Incidence Rates* for Males and Females (2002)

Geographical Area	All Cancers	
	Males	Females
Digby County	308.9-525.9	248.2-443.3
South West Health Authority	386.9-521.2	317.9-434.4
Nova Scotia	481.3-520.6	373.0-405.2

Source: Cancer Care Nova Scotia, Annual District Specific Cancer Information (2004)

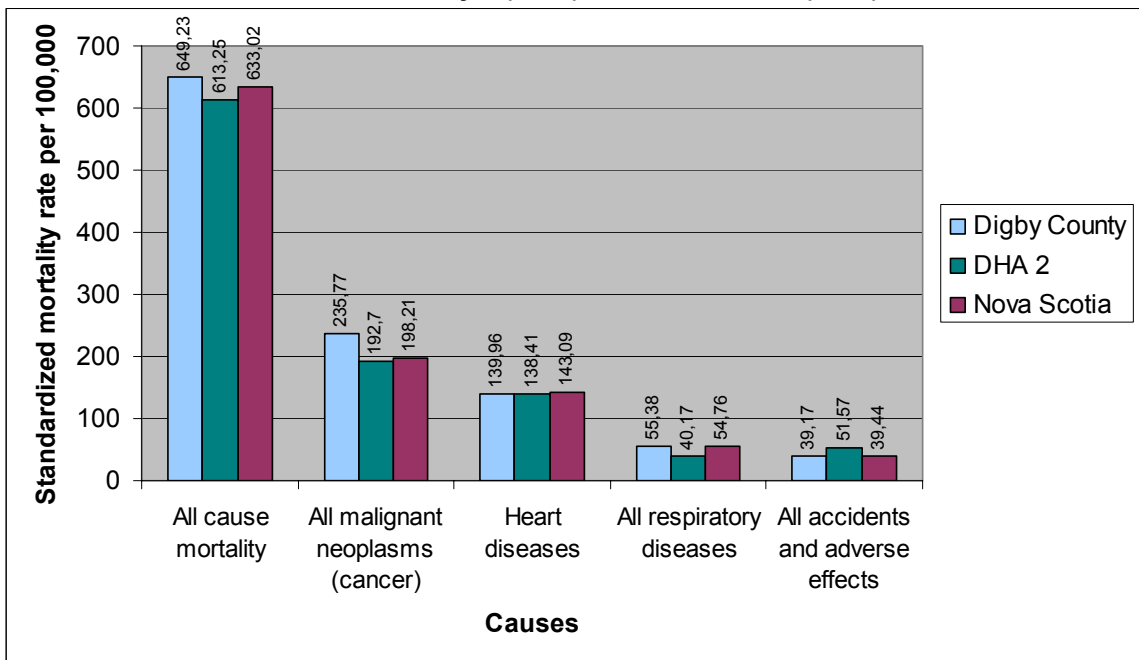
* 95% confidence interval.

3.2.2 Deaths

Deaths are expressed with standardized mortality rates. Death rates for all causes, including cancer, heart diseases, respiratory diseases and breakdown for asthma, bronchitis, emphysema and influenza, pneumonia as well as accidents and adverse effects are presented.

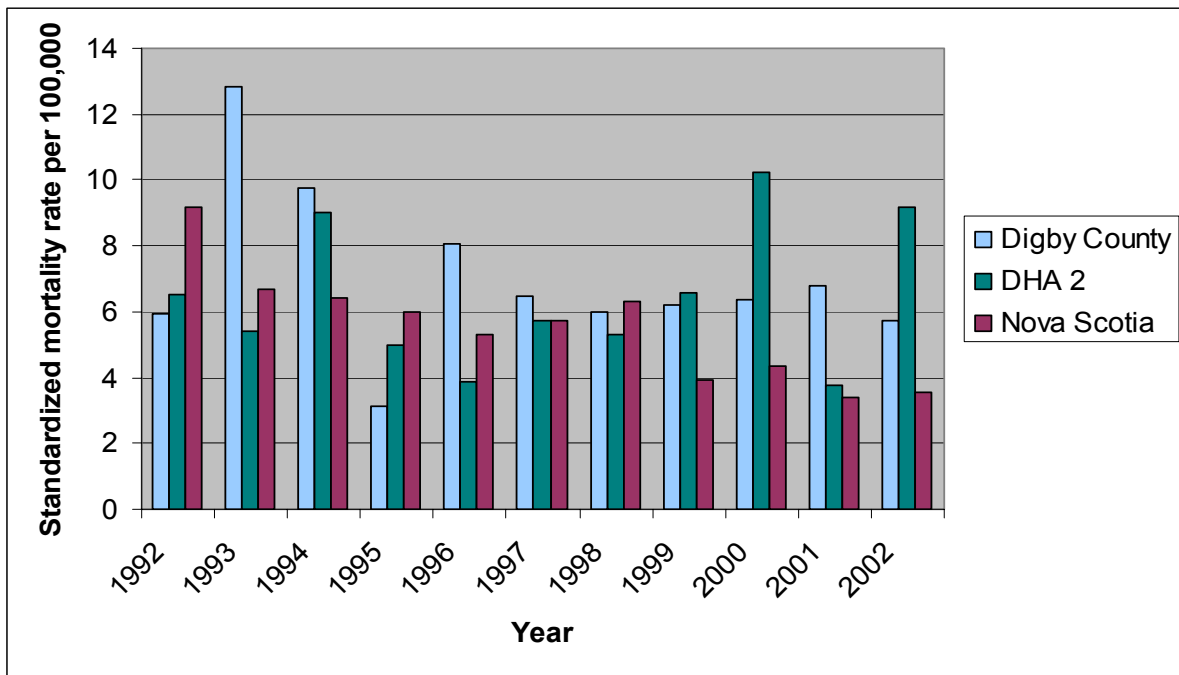
Deaths from cancer in Digby County appear to be lower than in DHA 2 and the province as a whole. The same scenario exists for respiratory diseases (Figure 16). Further detail on mortality rates from respiratory disease can be found in Figures 17 and 18. Heart diseases and accidents and adverse effects are a more important cause of mortality in the study area than for the DHA and the province.

FIGURE 16: Standardized Mortality rates, Comparison by Digby County, District Health Authority 2 (2003) and Nova Scotia (2002)



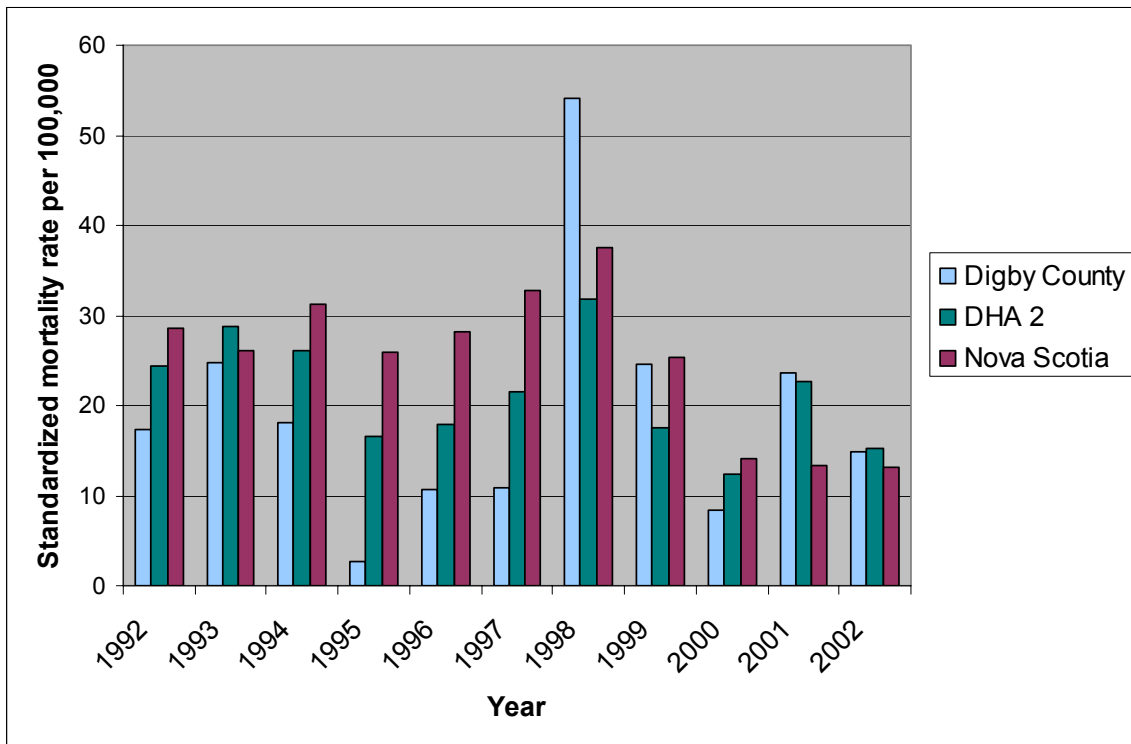
Source: NSDOH (October 2002) and NSDOH Information Analysis and Reporting (2005)

FIGURE 17: Standardized Mortality Rates for Asthma, Bronchitis and Emphysema, Comparison by Digby County, District Health Authority 2, and Nova Scotia (2002)



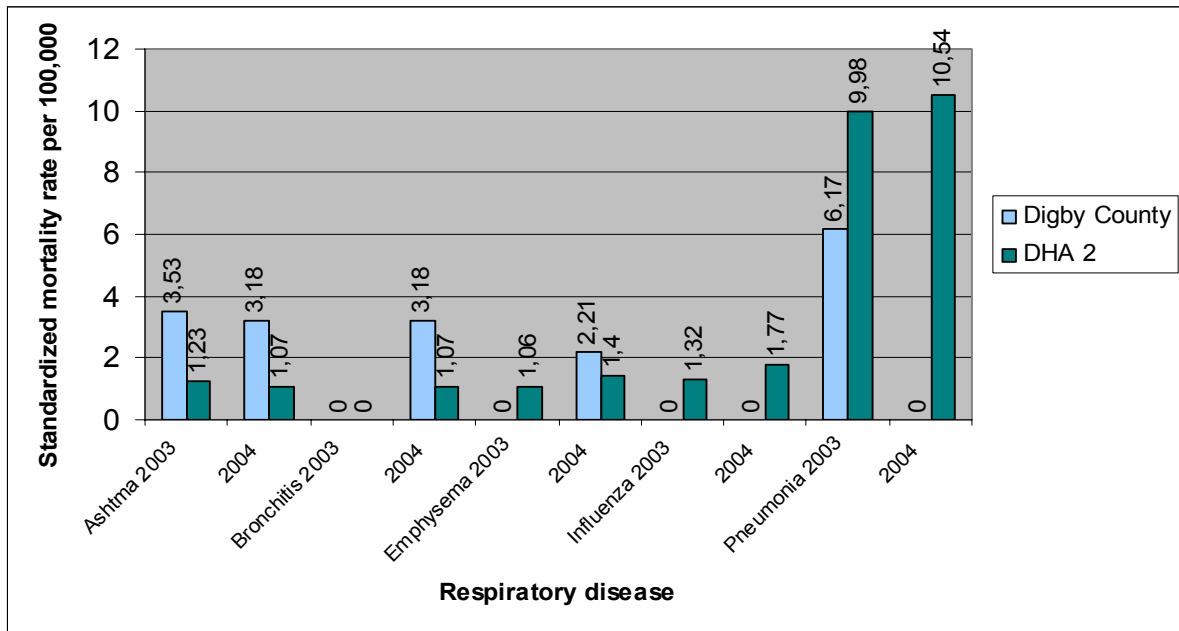
Source: NSDOH (October 2002)

FIGURE 18: Standardized Mortality Rates for Influenza and Pneumonia, Comparison by Study Area (Digby County & District Health Authority 2) and Nova Scotia (2002)



Source: NSDOH (October 2002)

FIGURE 19: Standardized Mortality Rates for Respiratory Diseases, Comparison between Digby County and DHA 2 for Fiscal Year 2003/2004 and 2004/2005



Source: NSDOH Information Analysis and Reporting (2005)

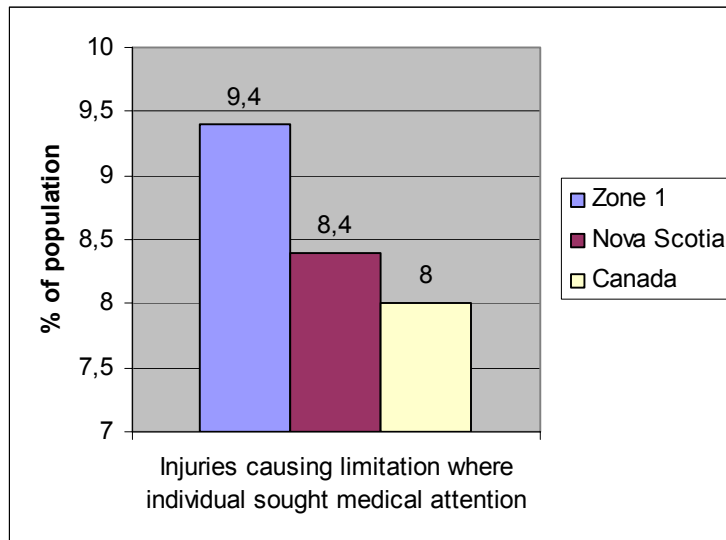
3.2.3 Human Function

Indicators selected for human function are activity limitation and life expectancy.

3.2.3.1 Activity Limitation

More people have reported being limited in their activities due to injuries in the study area than in the province and country as a whole (see Figure 20).

FIGURE 20: Activity Limitation, Comparison by Study Area (Zone 1), Province and Country (2003)

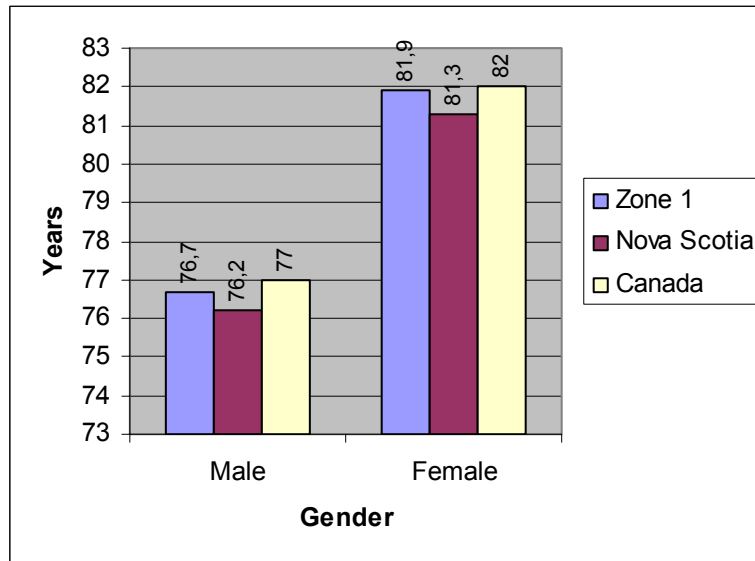


Source: Statistics Canada, Catalogue 82-221, Vol. 2004, no. 1

3.2.3.2 Life Expectancy

Life expectancy in the study area is higher than provincial expectancy, but lower than national expectancy (see Figure 21). According to the NSDHA, life expectancy is lower in Nova Scotia due to working conditions in primary industries and risks associated with these jobs (pers. com. Decision Support Analyst, September 22, 2005).

FIGURE 21: Life Expectancy at Birth, Comparison by Study Area (Zone 1), Province and Country (2001)



Source: Statistics Canada, Catalogue 82-221, Vol. 2005, no. 1

3.2.4 Well-being

3.2.4.1 Self-rated Health

Self-rated health is an indicator of the overall health status of an individual. It can reflect aspects of health that are not captured by other health indicators.

The *Quality of Life Survey* (AMEC, 2005) asked 150 Digby Neck residents to rate their health, including the absence of disease or injury as well as mental and social health. Respondents said their health was:

- Excellent – 16.9%;
- Very good – 31.5%;
- Good – 33.5%;
- Fair – 14.5%; and
- Poor – 3.8%.

When asked to identify the importance of certain factors/issues to their health (Table 6), respondents ranked air and water quality as the two most important factors (based on choices offered).

TABLE 6: Importance of Factors on Health (%) (2005)

Factors/Issue	Don't know / No answer	Not at all important	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Really important
Quality of air	-	-	-	2.3	8.7	89
Quality of the water	-	-	-	.9	7.8	91.3
Quality of housing	-	-	-	4.5	13.9	81.6
Quality of food	-	-	-	1.5	10.9	87.6
Regular exercise	-	1.4	1.5	11.8	23.1	62.1
Surrounding noise levels	.6	.9	5.2	11.3	18.8	63.1
Healthy eating	-	-	-	6.5	14.7	78.7
Industrial night lighting	5.9	7.5	2.2	16.8	7.2	60.4
Consumer products	2.8	1.6	4.6	20.8	24.9	45.3

Source: AMEC, 2005

The respondents were then asked to assess the current condition of the two factors that they had previously identified (see Table 6) as being the most important ones for their health (Table 7). 93.8% of respondents rated the quality of their air as good or excellent, and 88.2% rated the quality of their water as good or excellent.

TABLE 7: Assessments of Current Conditions of Factors/Issues on Health (%) (2005)

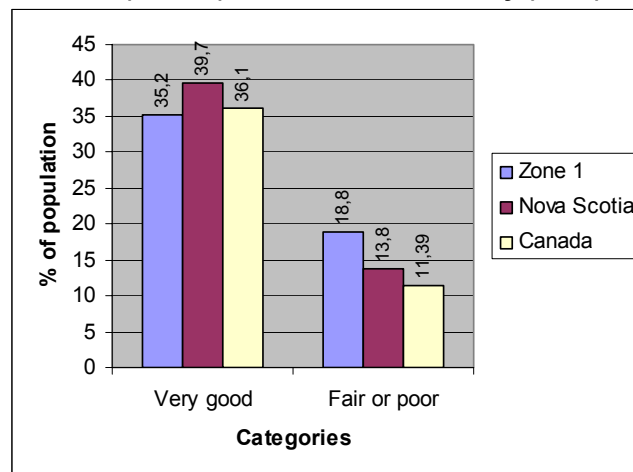
Factors/Issue	Don't know / No answer	Poor	Somewhat poor	Neither good nor poor	Good	Excellent
Quality of air	-	-	.5	5.7	33.4	60.4
Quality of the water	.6	.5	2.2	8.4	29.7	58.5
Quality of housing	-	-	.5	10.0	40.5	49.0
Quality of food	-	-	1.6	4.2	41.7	52.6
Regular exercise	2.8	.9	6.1	16.8	37.2	36.2
Surrounding noise levels	-	1.7	4.7	5.6	23.2	64.7
Healthy eating	-	.5	1.7	4.2	35.7	57.9
Industrial night lighting	3.2	4.2	2.7	7.0	13.9	69.0
Consumer products	1.1	.6	6.2	25.4	35.3	31.4

Source: AMEC, 2005

Another source of information regarding the importance residents place on various health related factors/issues is the Digby & Area Community Health Board Mail Out (Digby and Area Health Board, 1997). When asked what factors contributed the most to good health and wellness in their community, individuals stated social capital indicators first (trust and respect among community members, support from community organizations and individuals, etc). Exercise came second and a safe and clean natural environment third. When asked the question, what contributes most to poor health and illness in their community, unemployment came first, followed by poor nutrition and political exploitation came third (e.g., effect of cutbacks, for example on health care).

The NSDOH (October 2002) found that the Zone 1 data on the self-perceived health status of DHA 2 was not statistically significantly different than the Nova Scotia data (see Figure 22).

FIGURE 22: Self-rated Health, Comparison by Study Area (Zone 1), Province and Country (2003)

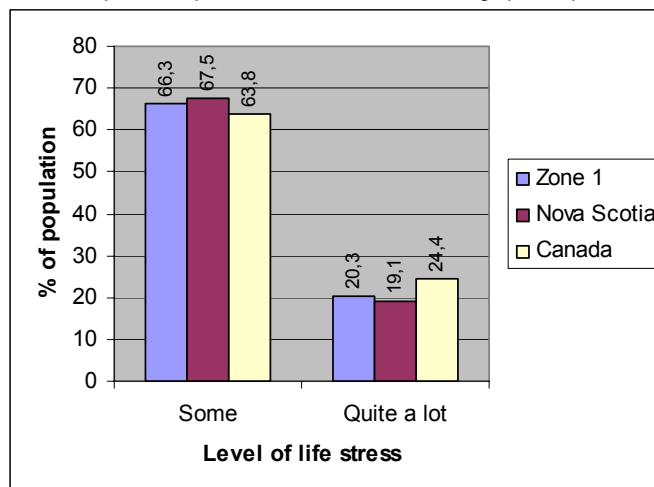


Source: Statistics Canada, Catalogue no 82-221, Vol. 2004, No.1

3.2.4.2 Life Stress

Respondents in the study area reported having less stress (quite a lot) than the national average, but more than the provincial average (Figure 23).

FIGURE 23: Life Stress, Comparison by Study Area (Zone 1), Province and Country (2003)



Source: Statistics Canada Catalogue 82-221, Vol. 2004, No. 1.

The *Quality of Life Survey* asked 150 Digby Neck residents to assess the stress in their life on most days. They indicated the following in order of importance:

- Not at all stressful – 30.4%;
- Not very stressful – 19.5%;
- Somewhat stressful – 38.9%;
- Extremely stressful – 9.6%; and
- Refused / Don't know – 1.5%.

According to the *Quality of Life Survey*, the reasons (not mutually exclusive) why residents' lives (excluding respondents that rated their life as not all stressful) were stressful included:

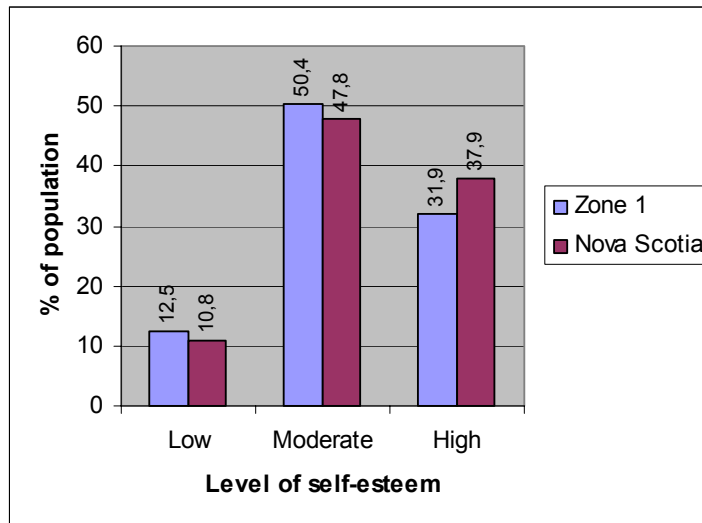
- Financial problems – 31.5%;
- Marital / Relationship problems - 0.9%;
- Children – 21.8%;
- Lack of employment – 9.2%;
- Poor quality housing – 1.4%;
- Lack of social community services – 5.0%;
- No social network/friends – 2.1%;
- Current employment not satisfactory – 6.6%;
- Health problems – 17.1%;
- Family problems – 9.0%; and
- Others – 56.7%.

The survey indicates that financial, health, employment and family problems were important stress causing factors.

3.2.4.3 Self-esteem

Levels of high self-esteem are lower in the study area (zone 1) compared to the province (see Figure 24).

FIGURE 24: Self-esteem, Comparison by Study Area (Zone 1) and Province (2001)



Source: Statistics Canada, Catalogue 82-221, Vol. 2004, No. 1

3.3 Health and Social Services

The South West Health District Health Authority (SWHDHA) operates in three counties: Shelburne County, Yarmouth County and Digby County. The SWHDHA area is largely rural in nature consisting of a number of small towns and villages (SWHDHA, 2003).

Digby General Hospital, the only hospital in Digby County is located in the town of Digby and serves a geographically rural area. The hospital offers cardiology, day surgery, emergency, physiotherapy, mental health, social work and support services as well as community-based services (e.g. nurse practitioners). Table 8 lists statistics for the Digby General Hospital. The Digby & Area Community Health Board provides additional services to local communities (SWHDHA, 2005).

In 2003/2004 an estimated 131.5 physicians per 100,000 population (MSI Annual Statistics Table, extracted by NSDOH Information Analysis and Reporting) provided services on the SWHDHA territory. The number of registered nurses was 60-79.9 per 100,000 population in 2002/2003 (Annual Statistical Report Fiscal, NSDOH Information Analysis and Reporting).

TABLE 8: Digby General Hospital Statistics (2003)

Statistics	Percentage
Elective surgery performed on same day of admission	97
Unplanned readmissions to the same hospital within one week of discharge	2.1

Ambulatory care sensitive conditions admissions to hospital	2.5
Occupancy Intensive Care Unit	92
	Number
Total visits per operating day ambulatory care clinic functional centres	71
Average visits per Calendar Day Emergency Services	100
Average daily census Intensive Care Units	7

Source: NSDOH, 2003

Since no hospital is located on Digby Neck, the closest is the Digby General Hospital. However, a nurse practitioner practices on Brier Island (pers. com. Decision Support Analyst, NSDOH, September 22, 2005 and Digby & Area Community Health Board, November 4, 2005). Emergency services are also provided through EMS (pers. com. Decision Support Analyst, NSDOH, September 22, 2005).

3.4 Employment and Working Conditions

Unemployment is generally linked to poorer health. Labour force activity in Digby Neck has evolved between 1991 and 2001 (see Table 9). The participation and employment rate of adults of 15 years and older has increased, but at the same time the unemployment rate has also increased.

TABLE 9 Participation, Employment and Unemployment Rates for Digby Neck (2001)

Characteristics	1991 Census Total	1996 Census Total	2001 Census Total
Participation rate	51.1%	54.7%	56.5%
Employment rate	45.8%	45.0%	48.4%
Unemployment rate	12.0%	18.7%	14.4%

Source: Nova Scotia Community Counts web page – data modeled from Statistics Canada, Census of Population 1991, 1996 and 2001.

Despite a relatively stable population (see Section 3.1), out-migration still occurs for individuals aged 18 to 44 years resulting in a declining local workforce. This cannot be explained by a single factor, although one that influences migration is the availability of employment. Table 10 and Figure 25 show the labour force activity by individual area on Digby Neck. In 2001, the population not in the labour force was higher in the Tiverton, Freeport and Sandy Cove area than in Digby County. However, the population not in the labour force may include children and retired individuals.

TABLE 10: Population 15 Years and Over by Labour Force Activity (2001)

	Tiverton area	Freeport area	Westport area	Sandy Cove area	Waterford area	Digby County	Nova Scotia
Total	525	285	215	285	230	16,105	732,365
In the labour force	295 (56%)	120 (42%)	150 (70%)	150 (53%)	155 (69%)	9,330 (58%)	451,380 (62%)
Employed	260	105	100	135	145	8,115	402,295
Unemployed	30	20	50	15	10	49,805	1,215
Not in the labour force	230 (44%)	165 (58%)	65 (30%)	140 (47%)	70 (31%)	6,775 (42%)	280,990 (38%)

Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

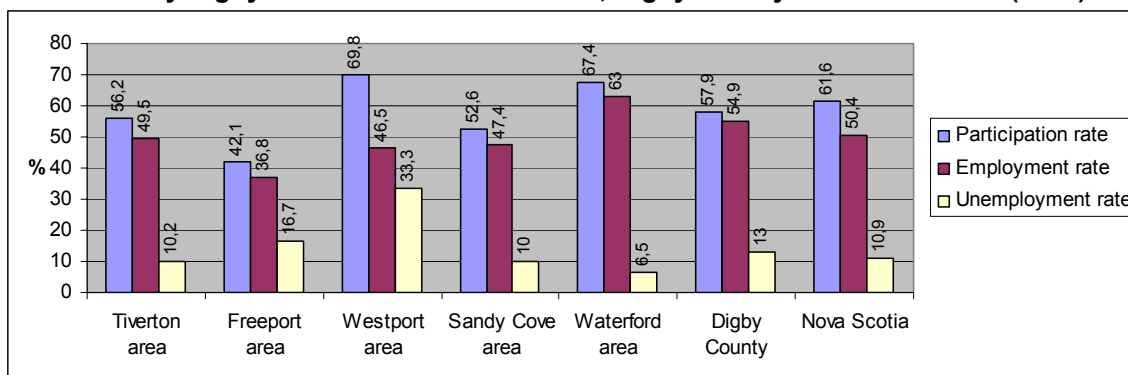
NB: Number may not add up due to rounding.

Figure 25 shows the participation, employment, and unemployment rates for Digby Neck. Definitions used are as follow:

- Participation rate: total population 15 years and over in the labour force / total population 15 years and over;
- Employment rate: Number of employed / total population 15 years and over; and
- Unemployment rate: Number of unemployed / number of individuals in the labour force.

The participation rate on Digby Neck ranges from 42.1% to 69.8% (Figure 25). Among the labour force population, the employment rate varies between 36.8% and 63%. The unemployment rate varies between 6.5% and 33.3%. Table 11 shows that generally more females than males are not in the labour force and more males are reported as being unemployed. Figures 26 to 31 show that females participation rate is lower for all individual areas, the same phenomenon occurs in Digby County.

FIGURE 25: Participation Rate, Employment Rate and Unemployment Rate for Both Sexes by Digby Neck Dissemination areas, Digby County and Nova Scotia (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).
 NB: Number may not add up due to rounding.

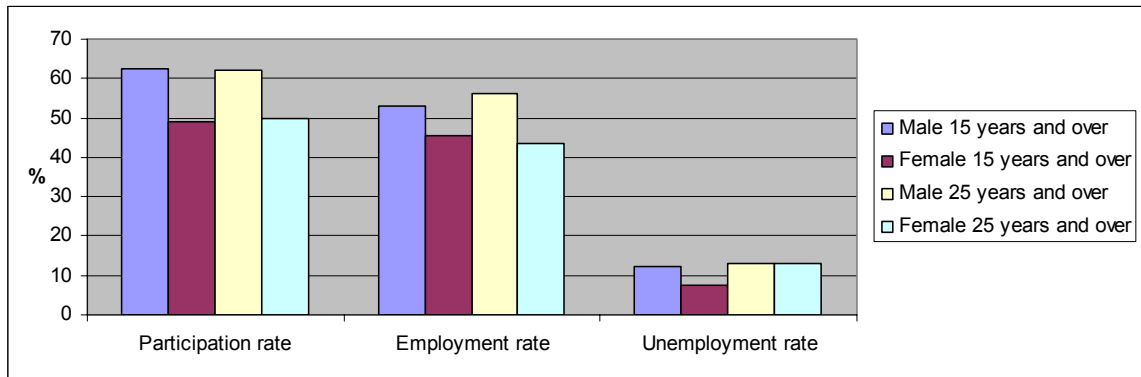
TABLE 11: Total Population 15 Years and Over in Labour Force (2001)

	Tiverton area		Freeport area		Westport area		Sandy Cove area		Waterford area		Digby County	
	M	F	M	F	M	F	M	F	M	F	M	F
Total population 15-24	265	265	145	135	100	110	150	140	120	105	7,840	8,265
In the labour force	165	130	80	40	75	65	90	55	80	75	5,030	4,300
Employed	140	120	75	25	55	40	80	55	75	70	4,425	3,695
Unemployed	20	10	0	10	20	30	15	0	10	0	605	605
Not in the Labour force	100	130	65	100	25	45	55	80	40	30	2,805	3,970
Total population 25 years and over	250	230	130	110	90	105	130	130	105	85	6,720	7,305
In the labour force	155	115	70	40	70	70	90	55	65	60	4,380	3,695

	Tiverton area		Freeport area		Westport area		Sandy Cove area		Waterford area		Digby County	
Employed	140	100	70	30	55	40	80	55	60	55	3,900	3,170
Unemployed	20	15	10	15	10	30	15	0	0	10	485	520
Not in the labour force	90	120	55	70	20	35	45	75	40	25	2,340	3,620

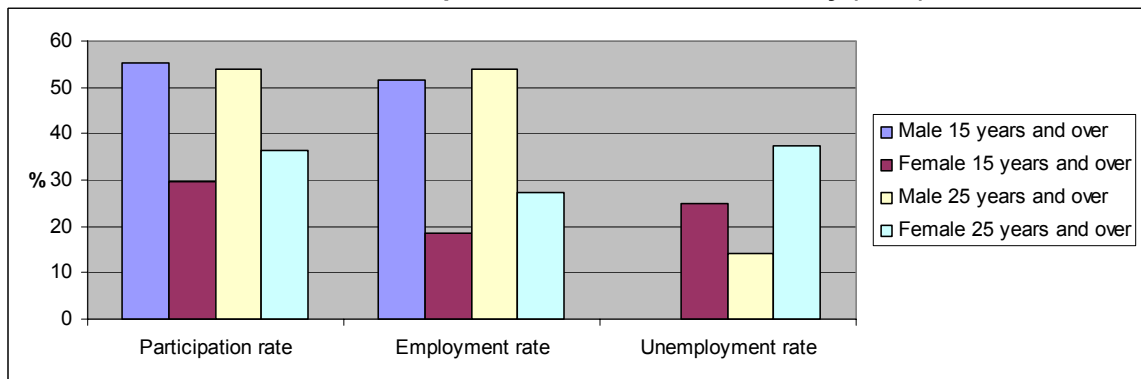
Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).
 NB: Numbers may not add up due to rounding

FIGURE 26: Tiverton Area Labour Force Activity (2001)



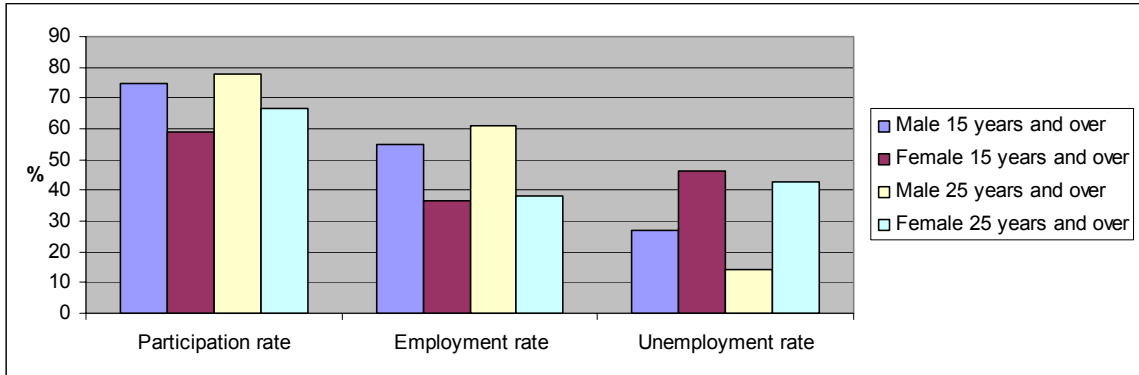
Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).
 NB: Numbers may not add up due to rounding.

FIGURE 27: Freeport Area Labour Force Activity (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).
 NB: Numbers may not add up due to rounding, when a bar is not shown value = 0

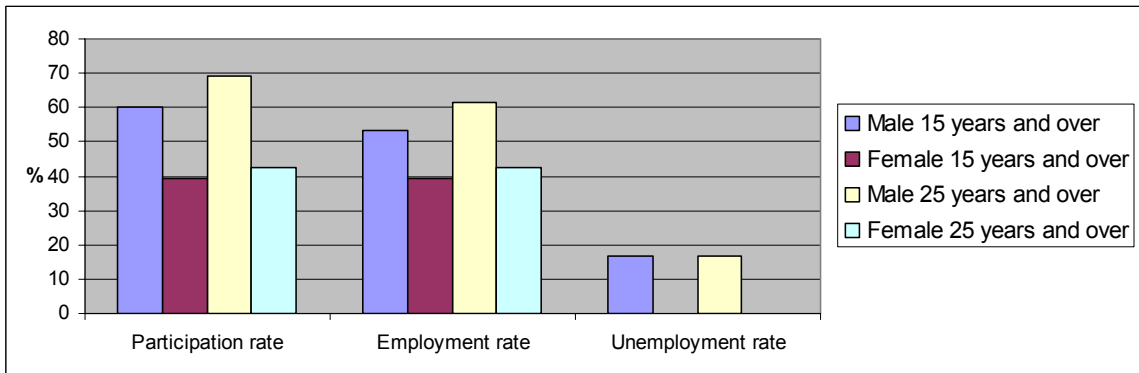
FIGURE 28: Westport Area Labour Force Activity (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Numbers may not add up due to rounding, when a bar is not shown value = 0

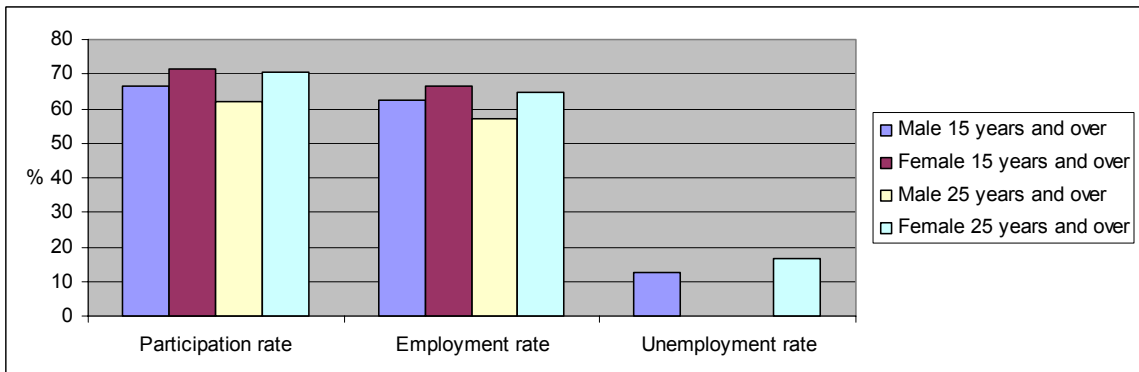
FIGURE 29: Sandy Cove Area Labour Force Activity (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Numbers may not add up due to rounding, when a bar is not shown value = 0

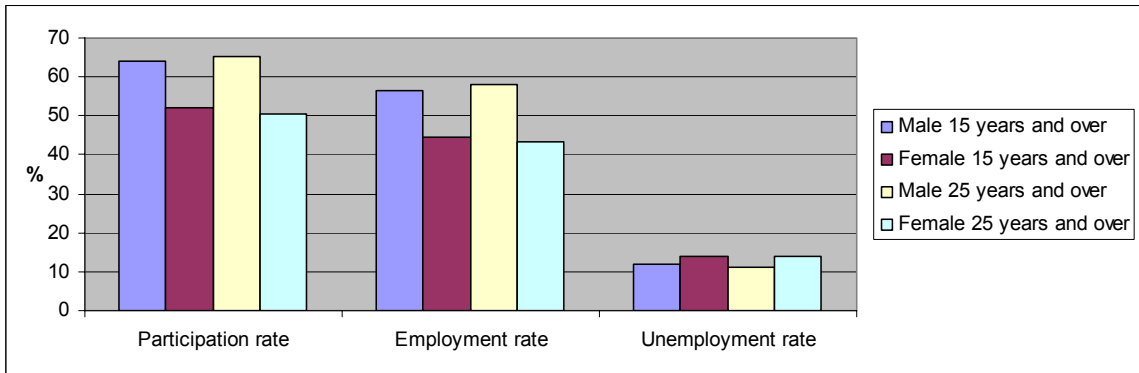
FIGURE 30: Waterford Area Labour Force Activity (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Numbers may not add up due to rounding, when a bar is not shown value = 0

FIGURE 31: Digby County Labour Force Activity (2001)

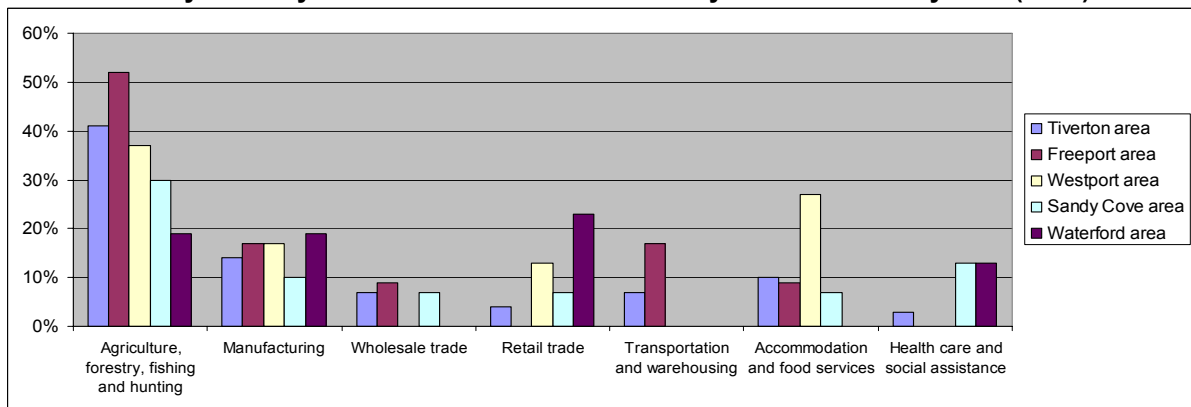


Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Numbers may not add up due to rounding, when a bar is not shown value = 0

Primary industries (fishing) are the most important employers on Digby Neck (Figure 32), followed by manufacturing industries, accommodation and food services and retail trade.

FIGURE 32: Selected Industries, Total Labour Force 15 Years and Over by Industry -- 1997 North American Industry Classification System (2001)



Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Number may not add up due to rounding, when a bar is not shown value = 0

3.5 Income and Social Status

Digby County income statistics (median total income) show that incomes are lower in the study area when compared to Zone 1 and Nova Scotia (Table 12).

TABLE 12: Income Statistics for Digby County, Zone 1 (Health Region) and Nova Scotia (2001)

Area	Median total income (15 years and over)
Digby County	\$15,499
Zone 1 (Health Region)	\$16,271
Nova Scotia	\$18,735

Source: Statistics Canada, Census 2001

In terms of income adequacy, a measure of household income relative to household size, the NSDOH (October 2002) has identified that DHA 2 has significantly fewer households that have surplus after meeting their basic needs.

As shown in Table 13, in 2000, the average individual income varied between \$17,779 and \$24,080 on Digby Neck, with the highest averages occurring in the two areas (Sandy Cove area and Waterford area) closest to the town of Digby. Average and median, total and family incomes are lower in the study area than in Nova Scotia. In addition, a higher rate of people receiving government transfer payments occurs in the study area than in Digby County or Nova Scotia.

TABLE 13: Total Population 15 years and Over by Sex and Presence of Income (2001)

	STUDY AREA					Digby County	Nova Scotia
	Tiverton area	Freeport area	Westport area	Sandy Cove area	Waterford area		
Total population	530	285	215	285	225	16105	732365
Without income	9.4%	3.5%	7.0%	10.5%	8.9%	9.4%	5.6%
Average 2000 total income (\$)	20,498	17,779	19,703	21,184	24,080	20,029	25,297
Median 2000 total income (\$)	14,957	13,184	15,965	13,842	16,667	15,499	18,735
Average 2000 family income (\$)	41,865	36,807	39,121	39,583	48,860	42,162	54,786
Median 2000 family income (\$)	30,308	38,503	37,343	33,905	31,447	36,822	46,523
Employment income (%)	62.9%	60.5%	63.4%	64.9%	78.3%	65.4%	71.4%
Government transfer payments (%)	30.4%	38.8%	25.9%	25%	16.8%	24.2%	16.1%

Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Number may not add up due to rounding.

A Digby Neck study (Corbett, 2005) has shown that for the study area, a higher education level of the population did not necessarily correlate with a higher income. This may be due to the nature of the occupations available in the study area (e.g., fishermen need skills that a graduate student may not have).

3.6 Education and Literacy

Depending on the dissemination area within Digby Neck, rates of schooling level varies. When compared to Digby County and Nova Scotia, fewer individuals from the study area had a college certificate or diploma or university degree (see Table 14).

TABLE 14: Total Population 20 Years and Over by Highest Level of Schooling Completed (2001)

	STUDY AREA					Digby County	Nova Scotia
	Tiverton area	Freeport area	Westport area	Sandy Cove area	Waterford area		
Total population	495	255	190	265	210	14970	670930
Less than grade 9 (%)	26%	7.8%	7.8%	15%	29%	18.6%	9.5%
High school graduation certificate	9.1%	15.7%	15.7%	13.2%	19%	9.8%	9.8%
Colleges certificate or diploma	7%	5.9%	5.3%	11.3%	9.5%	15.9%	10.9%
University degree with certificate or diploma or bachelor's degree or higher	8%	7.8%	5.3%	7.5%	12%	10.9%	18%

Source: Data modeled from Statistics Canada, Census of population, 2001. Above data is derived from the Census long form (20% of population surveyed).

NB: Numbers may not add up due to rounding.

The AMEC 2005 survey asked 150 respondents from Digby Neck to report their highest level of schooling:

- 18.5% completed Grade 9;
- 37.8% completed high school;
- 19% completed a college diploma;
- 5.9% completed some university classes;
- 9.4% completed university graduate; and
- 5.0% completed a master's level diploma.

3.7 Social Capital

Social capital is defined as the characteristics of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefits (Putman 1995 in Health Canada, 2003). Indicators that can be used to measure social capital are trust, social cohesion, social support, civic engagement, income distribution and health status (Health Canada, 2003). The two latter have been considered under other sections (3.5 and 3.2) of this report.

3.7.1 Social Cohesion

The sense of belonging to one's community in Canada is fairly strong with 19% of Canadians describing their sense of belonging as very strong and 49% as somewhat strong (Statistics Canada, 2004). Moreover, strong feelings of community belonging were more prevalent among individuals who had lived in their area for longer periods of time and even more for individuals residing in rural areas or smaller towns. Section 3.1.3 indicates a very low mobility rate of residents in the rural study area and the study area. Therefore, social cohesion would be expected to be quite high in Digby Neck and Digby County.

The *Quality of Life Survey* asked 150 Digby Neck residents to describe their sense of belonging to their local community. Table 15 shows results by age group in Table 15. Individuals from 18-60 years of age do not feel a sense of belonging to the local community as strongly as people above 60 years and older. This confirms the Statistics Canada (2004) findings that the strong feeling of belonging was more prevalent among individuals who had lived in their area for longer periods of time. This is reinforced by the low migration rates.

TABLE 15: Sense of Belonging to Local Community, by Age Group (%) (2005)

Age group	Very weak	Somewhat weak	Neither weak nor strong	Strong	Very strong
18-30 (12)	-	25.0	16.7	25.0	33.3
31-40 (22)	-	4.5	4.5	59.1	31.8
41-50 (34)	-	.0	17.6	50.0	32.4
51-60 (39)	-	5.1	15.4	41.0	38.5
61-70 (22)	-	9.1	9.1	18.2	63.6
Over 70 (21)	-	4.8	.0	19.0	76.2
Total (150)*	-	6.0	11.3	38.0	44.7

Source: AMEC, 2005

* Considering age weighting

3.7.2 Trust

In 2003, 60.4% of Nova Scotians and 53% of Canadians said that people could be trusted (Statistics Canada, 2004). Individuals with higher incomes and education were more likely to say that people could be trusted. The size of the city in which an individual lived could be associated with level of trust. As an example, expectations of a stolen wallet or purse being returned were least prevalent among individuals in large urban centres.

The *Quality of Life Survey* (AMEC, 2005) asked 150 Digby Neck residents to comment on statements regarding people's trust in each other and in institutions (Table 16). Trust levels in each other and the provincial government was fairly low. Trust levels in the federal government were very low.

TABLE 16: Agreement on Statement of Trust (%) (2005)

Statement	Don't know / No answer	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Most people can be trusted	-	4.5	4.8	32.9	28.1	29.7
The federal government acts in everybody's best interest	3.1	35.1	20.5	27.5	12.3	1.4
It's best to be careful when dealing with people	-	1.6	4.2	18.0	29.2	46.9
The Nova Scotia government acts in people's best interests	-	23.4	23.6	28.1	21.7	3.1

Source: AMEC, 2005

3.7.3 Social Contacts / Social Support

Being part of social networks provides various benefits to individuals including exchange of information and emotional support (Statistics Canada, 2004). The percentage of Canadians who knew people in their immediate neighborhoods was 54.2% in rural and small town areas compared with 29.8% in cities with less than 50,000 inhabitants. From reviewing primary data gathered for this Project, such as scoping minutes and interviews, social networks appeared to be numerous and knowledge of neighborhoods was high. This was confirmed through the *Quality of Life Survey*.

When asked how often they were engaged in certain activities, Digby Neck residents reported spending a lot of time (each week) with their close family or other relatives and friends (Table 17).

TABLE 17: Social Contacts (%) (2005)

Statement	Each week	Once or twice a month	A few times a year	Never
Spending time with close family or other relatives	75.4	13.0	9.7	1.9
Spending time with friends	82.5	12.8	4.2	.6
Spending casual time with co-workers or colleagues	32.8	15.0	8.2	44.0
Spending casual time with people in recreational and community activities	31.9	28.4	22.6	17.0

Source: AMEC

3.7.4 Civic Engagement

Involvement in organizations, political or religious activities is an indicator of civic engagement. In 2003, 61% of Canadians belonged to organizations while 38% did not (Statistics Canada, 2004). Based on project related primary data and the Digby & Area Community Health Board Internet resources listings, a significant number of organizations are found to be active in the study area (e.g., tourism, community development, fishing, ecology, historical activities, school activities, health).

The *Quality of Life Survey* asked 150 Digby Neck residents to tell whether or not they were involved in a volunteer and/or services organization. 47.2% said yes and 52.8% said no. The level of volunteerism in organizations was lower in the study area than in Canada. However, the extent to which people are serving their community on an individual basis was not assessed (e.g., helping an elderly neighbour).

3.8 Quality of Life

Quality of life can be defined as a physical and psychological human state that gives the feeling of being satisfied in a particular environment (International Council of French Language in André and Bitondo, 2001). Quality of life results from a social construct developed over time and are based on a sense of place, experience and expectations. The social construct is forged through perceptions and attitudes relating to quality of life (André and Bitondo, 2001). Therefore, quality of life varies for each individual.

The *Quality of Life Survey* (AMEC, 2005) asked 150 Digby Neck residents to rate their overall quality of life (Table 18). Quality of life was rated differently for various age groups. For

example, individuals between 18-30 years of age did not rate their quality of life as excellent, while 41% of people aged 51-60 rated their quality of life as excellent.

TABLE 18: Rate of Overall Quality of Life in Digby Neck, by Age Group (%) (2005)

Age group	Poor	Fair	Good	Very good	Excellent
18-30 (12)	8.3	8.3	41.7	41.7	0
31-40 (22)	9.1	27.3	27.3	27.3	9.1
41-50 (34)	0	17.6	38.2	26.5	17.6
51-60 (39)	5.1	10.3	25.6	17.9	41.0
61-70 (22)	4.5	13.6	31.8	36.4	13.6
Over 70 (21)	0	9.5	19.0	42.9	28.6
Total (150)*	4.0	14.7	30.0	29.3	22.0

Source: AMEC,

* Considering age weighting

To find out if individual's quality of life had fluctuated over the past six months, a question was asked to that effect:

- 5.5% reported that it had improved;
- 77.1% reported that it had stayed the same; and
- 16.5% said that it had gotten worse.

To better understand people's definition of quality of life, they were asked to identify the importance of various quality of life factors (Table 19).

TABLE 19: Importance of Factors on Quality of Life (%) (2005)

Statement	Don't know / No answer	Not at all important	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Really important
Access to education	-	12.7	2.5	8.9	8.6	67.3
Access to healthcare	-	-	-	4.1	7.9	88.0
Access to recreational activities	-	4.7	6.9	27.4	22.4	38.6
A strong network of community services	-	.9	.5	9.4	20.3	68.9
A healthy environment	-	-	.5	5.2	4.6	89.7
An environment that is safe	-	-	-	2.5	8.6	88.9
Respect for your culture	-	2.3	1.3	8.5	12.8	75.1
Ability to preserve your culture	-	2.5	0.5	10.4	17.1	69.7
Presence of family	0.5	0.9	1.1	5.5	8.4	83.6
Good income and financial security	-	-	0.5	5.3	9.6	84.6
A network of friends	-	-	-	5.6	14.2	80.1
A good working environment	3.2	8.4	.5	7.7	12.9	67.3
Ability to achieve personal goals	0.5	2.8	2.3	4.4	18.9	71.1

Source: AMEC, 2005

The following factors were ranked as really important:

- Healthy environment – 89.7%;
- Safe environment – 88.9%;
- Access to health care – 88.0%; and

- Good income and financial security – 84.6%.

Healthy environment, access to health care and good income and financial security) are three factors that were also cited to cause stress (see Section 3.2.4.2).

Ranked as somewhat important and really important, the same four are leading but in a different order:

- Safe environment – 97.5%;
- Access to health care – 95.9%;
- Healthy environment – 94.3%; and
- Good income and financial security – 94.2%.

People were then asked to rate how satisfied they were with these factors in their daily life (Table 20).

TABLE 20: Satisfaction with Factors that Can Have an Effect on Quality of Life (%) (2005)

Statement	Don't know / No answer	Not at all satisfied	Somewhat unsatisfied	Neither insatisfied nor unsatisfied	Somewhat satisfied	Very satisfied
Access to education	9.7	1.7	4.4	29.8	28.7	25.7
Access to healthcare	0.5	11.2	11.9	28.5	26.7	21.2
Access to recreational activities	4.9	14.1	26.0	33.3	11.0	10.7
A strong network of community services	3.0	6.7	7.3	30.4	28.2	24.4
A healthy environment	-	0.5	2.8	16.2	24.7	55.8
An environment that is safe	-	3.2	4.4	7.8	28.1	56.4
Respect for your culture	1.5	1.9	0.6	18.9	27.2	49.9
Ability to preserve your culture	1.5	2.5	3.8	18.2	28.4	45.6
Presence of family	0.9	1.4	2.9	11.2	22.3	61.2
Good income and financial security	-	5.9	5.4	18.9	29.1	40.6
A network of friends	-	0.5	1.7	8.3	27.0	62.5
A good working environment	17.8	4.4	4.9	13.7	27.8	31.5
Ability to achieve personal goals	6.7	0.9	8.1	21.8	29.9	32.7

Source: AMEC

The very satisfied factors are ranked in order of importance as follows:

- Network of friends – 62.5%;
- Presence of family – 61.2%;
- Safe environment – 56.4%; and
- Healthy environment – 55.8%.

The somewhat satisfied to very satisfied factors are ranked in order of importance as follows:

- Network of friends – 89.5%;
- Safe environment – 84.5%;
- Presence of family – 83.5%; and
- Healthy environment – 80.5%.

4.0 PHYSICAL ENVIRONMENT

Human health is also dependent on the natural environment elements because of our daily interactions with the air we breathe, the water we drink or bath in, the food we eat and other elements we come in contact with such as soil. Noise, odour and lights also can affect the well-being of a population. Therefore, environmental factors play an important role in determining human health.

No outstanding environmental health issues were identified in the study area. Digby Neck is a relatively clean environment in an enjoyable natural setting, which is one of the likely reasons why people, including summer residents, live there. 80.5% of Digby Neck residents have ranked their healthy environment as being somewhat satisfying to very satisfying (see Section 3.8). Moreover, people value a healthy environment and its importance to their health, as well as believe that environmental components, such as clean water and air, are necessary to achieve a healthy environment (see Section 3.2.4).

5.0 INDIVIDUAL FACTORS

5.1 PERSONAL HEALTH PRACTICES AND COPING SKILLS

Personal practices and coping skills are important health factors. Smoking habits, exposure to second hand smoke, drinking habits, dietary practice and physical activity are all indicators of personal health practices (Table 21). Overall:

- More smokers and more exposure to second hand smoke occurs in the study area and in Nova Scotia than in the rest of Canada;
- Heavy drinking appears to be less common in the study area and in Canada as a whole than for Nova Scotia;
- The study area has a higher percentage of population physically inactive compared to Nova Scotia and Canada as a whole; and
- Fruits and vegetables consumption is less common in the study area than in Nova Scotia and Canada as a whole.

TABLE 21: Personal Practices and Comparison between Study Area (Zone 1), Province and Country (2003)

Personal practice	Zone 1	Nova Scotia	Canada
Smoking status (% of daily smokers for population aged 12 year and over)	22.8	19.7	17.8
Exposure to second hand-smoke (%)	12.6	12.5	10.5
Frequency of drinking in past 12 months (% of population who never has 5 drinks or more on one occasion)	47	44.9	51.8
Physically inactive people (% of inactive aged over 12 year old)	54.4	49.7	46.9
Individual consumption of fruits and vegetables less than five time per day (%)	68.3	62.2	55.2

Source: Statistics Canada Catalogue 82-221, Vol. 2004, No. 1.

6.0 HUMAN HEALTH AND COMMUNITY WELLNESS ASSESSMENT

6.1 Issues and Concerns Addressed

Project related potential human health issues outlined in the Environmental Impact Statement (EIS) guidelines and identified by the public are identified below.

6.1.1 Panel-Review Environmental Assessment Guidelines

The panel review has identified the following issues to be addressed in the EIS:

- “Describe and evaluate the potential effects of the Project on human health and community wellness. Consider effects on physical, mental and social health and well-being (using measure of health);
- Address issues of concern about potential changes in the quality of life as a result of the Project;
- Consider how project-related changes in the quality of food may affect health and community wellness; characterize possible sources of contaminants, exposure pathways and consumption patterns that may generate health impacts. Describe and evaluate potential health impacts that may arise from changes in water quality and quantity;
- Describe and evaluate the effects of the Project on the health and safety of project workers, and those working in areas affected by the Project, including the possible effects of any accidents or spills; and
- Consider any potential effects of air emissions associated with the Project on human receptors within the region. Describe and evaluate any potential effects of project-generated noise or blast-generated materials on human receptors within the region; and
- Consider implications on resident’s perceptions of quality of life and sense of place. Describe and evaluate potential impacts on social relations between residents, among generations, and between seasonal and full-time residents, among those who are employed and unemployed, and among those who support and oppose the Project”.

6.1.2 Public Health Concerns

Public Health concerns associated with the Project were identified through the review of public consultation records and other documents provided by the proponent or originating from the environmental assessment process (see Table 22). Additional consultation was held by AMEC (see AMEC Report on Public Consultation), including interviews with local health authorities (see References).

TABLE 22: Consultation Records Reviewed

Responsible for consultation	Period of consultation	Consultation records
Whites Point Project Personnel through the Community Liaison Committee	July 2002 to October 2003.	Meeting minutes (13 meetings organized)
Elgin Consulting and Research	September 2003 to May 2005.	Notes from meetings with Digby and Area Board of Trade (February 13, 2003), Whites Cove Lobster fishermen (November 4, 2003, February 11, 2004 and March 10, 2004), Bear River First Nations (January 4, 2005), Tourism Sector (February 15, 2005) and Weymouth Fall CDS Black Community (May 12, 2005)
		Over 60 interviews with business and community stakeholders (2003-2005)
		57 traditional knowledge interviews with older citizens who had knowledge of the site and local area
		Open Houses (December 15, 2003 and December 7 & 8, 2004)
Joint-review panel	January 2005	Scoping session minutes and presentations to panel-review members (four sessions held)

Human health and community wellness concerns raised by the public include:

- Degradation of environmental quality and consequences on health:
 - Operations activities such as blasting could have an effect on the groundwater table, and therefore, local residents' drinking water source; and;
 - Dust releases and their potential effect on respiratory diseases.

- Social health:
 - Increased noise, that could be a disturbance and cause lack of sleep;
 - Increased individual stress caused by disagreements about the Project;
 - Increased tensions between individuals and communities caused by disagreements about the Project; and
 - Increased stress caused by worrying about the potential environmental effects of the Project on the local economy and livelihoods (tourism and fisheries industries).

- Occupational health and safety issues for workers:
 - Workers' health.

6.2 APPROACH TO ASSESS PROJECT POTENTIAL INTERACTIONS AND EFFECTS ON HUMAN HEALTH AND COMMUNITY WELLNESS

The following approach was used in assessing the Project's potential effects on human health and community wellness.

1. Identification of project components and activities;
2. Identification and description of project interactions with human health and community wellness (using population health approach, see Section 2.0);
3. Identification of mitigation measures; and
4. Determination of likelihood and significance of impacts

6.2.1 Identification of Project Components and Activities

The following list of project components and activities originates from the project description that was submitted to the Canadian Environmental Assessment Agency by Global Quarry Products in March 2003 and the Joint-Panel Environmental Impact Statement Guidelines.

The Project consists of a basalt quarry of approximately 380 acres (150 hectares) and a marine terminal to transport the rock aggregate. About 2 million tonnes of aggregate per year or 40,000 tonnes per week would be produced. The nearest residential structures are located about 800 meters from the proposed Project location.

6.2.1.1 Construction Phase

A physical plant for construction aggregate processing and the marine terminal for ship loading of the aggregate will be built. Activities associated with the construction of these structures include the erection of on land aggregate equipments, conveyors and wash water pumping systems. For the marine terminal, construction activities would include the anchoring of pile support structures to the basalt rock extending off shore. See the Bilcon of Nova Scotia Project description for more details on the construction phase, its schedule, and projected employment.

Environmental control processes will be implemented during the construction phase (e.g., drainage channel, sediment retention ponds and land restoration).

Once built, the land based permanent structures will occupy approximately 27 acres and include:

- Rock crushers
- Screens
- Closed circuit wash facilities
- Conveyors
- Load out tunnel
- Support structures (shop, office, fuel tanks)
- Environmental control structures
- Other equipments such as heavy mobile gear (e.g. loaders, trucks, excavators).

Marine facilities will occupy approximately 10 acres (on exposed bedrock) and include:

- Conveyor
- Ship loader
- Berthing dolphins
- Mooring buoys

6.2.1.2 Operations Phase

Land-based activity will be year-round; aggregate will be stockpiled for ship loading once per week. Ship loading is expected to take 10 hours depending of the length of the ship.

Drilling, blasting of basalt rock, loading, hauling, crushing, screening, washing and stockpiling of rock aggregate will be done on-site. Blasting will take place every two weeks.

Explosives will be used for blasting (Bulk Emission; Dyno Gold Lite 70/30), but will not be stored on site. Explosive loading, hauling, handling and blasting will be contracted to a certified third party and be conducted in compliance with provincial regulations.

Processed aggregate will be washed before shipment using a closed wash water circuit.

Electrical energy, fuel (would be stored on-site) and water (from on-site source) will be necessary.

Reclamation Plan of previously quarried areas will take place every five years. See the Bilcon of Nova Scotia reclamation plan for more details.

See the Bilcon of Nova Scotia project description for more details on the operation phase.

6.2.1.3 Decommissioning

After 50 years, the infrastructure will be decommissioned and most quarried areas will have been reclaimed. See the Bilcon of Nova Scotia reclamation plan for more details on the decommissioning phase.

6.2.2 Identification and Description of Project Interactions with Human Health and Community Wellness

Potential interactions, positive and negative, of the Project with human health and community wellness were assessed looking at project component (see Section 6.2.1) interactions with community health component indicators (see Section 2.0). Where interactions are identified, these are assessed further to determine effects and their significance (see Table 23).

TABLE 23: Project Interactions with Community Health Components

Community Health Components	Indicator (health determinant)	Construction	Operation	Decommissioning	
Social and economic environment	Demographics	Creation of 38.5* direct jobs in Digby County that could contribute to retain people in the study area, but if not filled locally could also result in temporary in-migration.	Creation of approximately 43* direct jobs that could contribute to retain people in the study area, but if not filled locally could also result in temporary in-migration.	After 50 years, some jobs will be created to decommission the sites' infrastructures.	
	Health status of populations	Potential health effects (i.e., respiratory diseases) for nearby residents associated with dust produced from construction, operation and decommissioning activities.			
	Health and social services	Potential demand for increased services if an accident or malfunction takes place (e.g., worker's injury).			
	Employment and working conditions	Creation of employment. Occupational health and safety issues (e.g., risk of accidents).			
	Income and social status		Benefits for households and local businesses from construction employment and GDP impacts (45 direct and spin-off total employment, and \$2.42 million GDP in Digby County yearly).	Benefits for households and local businesses from construction employment and GDP impacts (51.8* direct and spin-off total employment and \$2.64* million GDP in Digby County yearly).	Creation of some construction jobs, plus indirect benefits for local businesses.
			No Project effects were identified on existing industries (tourism and fisheries), and no effect on local residents livelihood are predicted. Therefore, it is not assessed further.		
	Education and literacy	Bilcon has made a commitment to hire locally and to train these employees at the company's expense This could be significant investment as some positions that will be established are highly skilled.			
	Social capital	Effect on local communities' social cohesion, social support, civic engagement and inter individual trust.			
	Quality of life	Local residents change in feeling of being satisfied in a particular environment and possible effect of increased noise levels on individual's quality of life.			
Physical environment	Air quality	Potential for release of dust (increased in total suspended particulate matter)**.			



Community Health Components	Indicator (health determinant)	Construction	Operation	Decommissioning
	Water quality	Effects of the project on the groundwater resource was assessed under another section, and concluded no effects will occur on water quality. *** Therefore, it is not assessed further.		
	Soil and sediments quality	The Project will not release Contaminants of Potential Concern (COPCs) **** into the surrounding environment nor have an effect on soil and sediments quality. Therefore, it is not assessed further.		
	Food quality	The Project will not release COPCs*** into the surrounding environment nor have an effect on local produces. Therefore, it is not assessed further.		
	Noise	The Project will create some noise due to blasting and processing operations**.		
Individual factors	Personal health practices and coping skills	No interactions identified		

* Source: Gardner Pinfold Economic Profile, January 2006

** Source: Jacques Whitford Noise and Air Quality Study at Whites Point Quarry, October 26, 2005

*** Source: "Geology and Groundwater Assessment Whites Point Quarry Site", John Lizak, Mineral Valuation and Capital Inc., December 2005

**** Source: Pers. Com. Bilcon of Nova Scotia, November 4, 2005.

6.2.3 Effect Analysis and Mitigation

Interactions and their potential effects on human health and well-being were assessed as positive or adverse, and described using the following effect attributes definitions (see Table 24).

TABLE 24: General Definitions of Effects Attribute

Attribute	Definition
Direction	
Adverse	Effect deteriorates human health or community well-being or is not desirable.
Positive	Effect improves human health or community well-being or is desirable.
Magnitude	
Low	Does not have a measurable effect on human health and well-being.
Moderate	Has a measurable effect on human health and well-being, but is of short duration.
High	Has a measurable and sustained adverse effect on human health and well-being.
Geographic extent	
Local	Effect is limited to Digby Neck.
Regional	Effect extends to Digby County and area.
Duration	
Short term	Effect occurs once.
Medium term	Effect lasts throughout construction phase.
Long term	Effect extends throughout operations (post-remediation) or beyond.
Frequency	
Rare	Effect infrequently occurs and is difficult to predict.



	(e.g. as accidents and malfunctions).
Intermittent	Effect infrequently occurs, but its occurrence can be predicted (e.g., blasting).
Constant	Effect occurs continuously (e.g. noise from machinery throughout the day).
Reversibility	
Reversible	Human health and well-being is capable of returning to an equal, or improved, condition once the disturbance has ended.
Irreversible	Human health and well-being is not capable of returning to an equal, or improved, condition once the disturbance has ended.

Mitigation measures are proposed as appropriate where an adverse effect is identified.

6.2.4 Determination of Likelihood and Significance of Impacts

A **significant** adverse effect is where human health and wellness is adversely impacted by an irreversible change that the Project would have on local health determinants.

A **positive** effect is where human health and wellness is positively impacted by the Project and its effect on local health determinants.

6.3 Social and Economic Environment

6.3.1 Demographics

Effect Analysis

As outlined in Section 3.1.1, the population of Digby Neck is declining. Digby Neck has lost – 8.9% of its population between 1996 and 2001. The causes are most likely out-migration (see Section 3.1.3); especially for the age group 18-45, declining birthrates and the aging of the population (see Section 3.1.1). 30% of some communities (e.g., Sandy Cove) are aged 65 years and over (see Section 3.1.1). The availability of employment elsewhere is expected to be one of the main reasons why young people migrate and young Digby Neck women are most likely to migrate (Corbett, 2005), in part due to limited employment opportunities for them in the fishing industry.

On the one hand, considering current trends of individuals from Digby Neck (see Section 3.1.3) to be geographically stable, long-term employment offered to local residents (approximately 37 jobs in the study area) would contribute to retain young individuals on Digby Neck, and to the stability of Digby Neck population. This would result in a positive effect on demographics.

On the other hand, in the past some retired people moved to Digby Neck full or part-time (summer), but they may decide to move away or potential new residents may decide not to move to Digby Neck because of the fear that their quality of life may be jeopardized by the Project. This would have a negative effect on demographics.

However, the creation of employment is of high magnitude for Digby Neck and will most likely retain more people than cause people to move away or not move to the Neck. Furthermore, the certainty of the first occurs over the second. Also, the Project is not expected to have significant adverse effects on the quality of life of Digby Neck residents

because environmental conditions will not change nor Project activities will cause significant disturbance for local residents (see Section 6.3.7 on quality of life).

Mitigation Measure

Ensure local residents (Digby Neck), particularly women, are given hiring priority for all employment opportunities provided.

6.3.2 Health Status of the Population

Effect Analysis

Digby Neck health conditions were assessed in Section 3.2. Section 6.2.1 presents information on the Project. The only interaction identified between health conditions and Project activities is the potential for effects on respiratory diseases (e.g., if air quality deteriorates due to increase levels of particulate matters (dust)).

In 2001, Digby County asthma incidence rates were slightly higher than overall Nova Scotia (see Section 3.2.1), although not statistically significant. Trends in standardized mortality rates (SMR), for various respiratory diseases from 1992-2002, show fluctuations in rates (Section 3.2.2), but not necessarily higher rates. One reason that can explain this fluctuation is the small population of Digby County (less than 20,000 when the SMR is reported on 100,000).

Increased levels of particulate matter could be as a result of project activities such as exhaust gas emissions due to incomplete combustion from diesel compression engines, road dust, wind erosion on storage piles, blasting activities (every two weeks), conveyors, crushing operations, screening operations, material handling, and material transport and truck loading/unloading (Jacques Whitford, October 26, 2005).

Suspended particulate matter levels will be controlled using various mitigation measures, such as mechanized work process mitigation (e.g., application of dust suppressant), speed limit on site pathways, maintenance of particulate control measures, or an environmental protection plan (Jacques Whitford, October 26, 2005).

In addition, air emissions will be monitored and compared to strict human health based guidelines protective of the most sensitive receptors (see Section 6.4.1). If guidelines are exceeded, activities at the quarry will be stopped.

Moreover, a complaint resolution program will also be put into place whereby public concerns communicated to the quarry are tracked and resolved in a suitable and timely manner (Jacques Whitford, October 26, 2005).

Consequently, the Project will not have an effect on the incidence of asthma among the population, including young people and elderly, nor will the Project have an effect on SMR for respiratory diseases.

Because of the nature of the industrial activities that will be conducted at the proposed quarry site, occupational health and safety hazards for on-site workers exist. Industrial work is typically associated with higher risks for injuries (e.g., due to accidents from use of machinery) which could affect workers temporarily or for the long term. This is also true for workers in other

primary industries, including fishing. Therefore, regions where these industries predominate can have higher rates of accidents or mortality rates and/or lower life expectancy (Decision Support Analyst, SWHDHA, September 22, 2005). Occupational health and safety issues are addressed further under Section 6.3.4.

The health status of the population can be, in addition to quantitative measures, assessed using qualitative measures such as self-reported health status (see Section 3.2.4.1). 150 individuals surveyed on Digby Neck (AMEC, 2005) reported their health as:

- 16.9% - excellent;
- 31.5%- very good;
- 33,5% - good;
- 14.5% - fair; and
- 3.8% - poor.

Additionally, an attitude survey conducted in Digby County (AMEC, 2005), asked respondents to identify if they believed the quarry project would be a good project for Digby County. Based on a sample of 457 respondents that were aware of the Project, 132 said yes (mostly because of job creation) and 325 said no, 7.3% because of concerns over air and water pollution, and 4.3% because of concerns over noise levels. The level of concern on deterioration of air quality is expected to be higher for people living in communities adjacent to the proposed quarry. Moreover, when asked if they believed that the Project could have an effect on Digby County's natural environment, of those who answered yes, 1.9% raised concerns over health problems (3.4% males and 0.7% females).

Therefore, a potential exists for a negative effect on self-assessment of health because of perceived risks and stresses on individuals who do not trust or clearly understand the health information associated with the Project.

Nevertheless, this potential effect is of low magnitude since health issues associated with this Project are unlikely to be measurable on indicators of health conditions, mortality rates and well-being rating in the study area. The effect is also local and limited to Digby Neck.

Mitigation Measure

Risk Communication

As a preventive measure, because risk perception will be an issue for some individuals living on Digby Neck, health related information (i.e., air quality, water quality and noise) should be made widely available through a risk communication initiative to the public prior to the beginning of construction activities. This should be done in a written and oral form (e.g., flyer and radio message) to account for people with reading difficulties.

6.3.3 Health and Social Services

Effect Analysis

Under the scenario of an accident (e.g. workers' injuries), which would be a rare event, emergency health services would have to be provided. EMH can provide emergency services

on Digby Neck as long as the site and the injured are accessible (Elgin Consulting, July 8, 2005). The Digby General Hospital, located about half an hour drive from the quarry site, can provide additional treatment, as necessary. Emergency procedures are outlined as part of the Occupational Health and Safety Plan. Because an accident is a rare event, the Project will not have a measurable effect (low magnitude) on human health and well-being. If an accident occurred, it would also be a short-term effect on the capacity of local services to provide services.

Mitigation Measure

None proposed

6.3.4 Employment and Working Conditions

Effect Analysis

Employment

The Project will create 38.5 direct temporary jobs in Digby County during the construction phase and 43 direct jobs during the operation phase. Spin-off employment will also be created in Digby County: 6.6 person-years for the construction phase, and 8.8 for the operation phase (Gardner Pinfold, January 2006).

Digby Neck unemployment rates are high (see Section 3.4) compared to Nova Scotia. In 2001 (Statistics Canada), they were at 14.3%. Some communities have higher unemployment rates than others on the Neck (see Figure 25). Government transfer payments are also higher in Digby Neck compared to the rest of Nova Scotia.

Female unemployment rates are also higher on Digby Neck (Figures 26 to 30) than elsewhere in Nova Scotia.

The local economy is based on the availability of resources (e.g., fisheries), as well as services to tourists. Therefore, the employment rate is susceptible to fluctuations depending on external factors (e.g., state of the resource, price of the resource, Canadian exchange rates, and fuel prices).

Because Bilcon has committed to hiring residents of Digby and Annapolis counties first, the effect on employment is positive, of high magnitude, of regional extent and long term duration.

Working Conditions

Because of the nature of the activities conducted at the site, construction and industrial work, occupational health and safety hazards for on-site workers exist (also see Section 3.4). In order to eliminate or reduce the potential for work related accidents, an occupational health and safety plan will be developed by Bilcon. Related training will be provided to employees. Therefore, considering this mitigation measure, no significant adverse effect on working conditions is expected.

Mitigation Measure

Ensure local residents (Digby Neck), particularly women, are given priority hiring for all employment opportunities provided.

An Occupational and Safety plan, developed by Bilcon, has been included in Section 11 of the EIS.

6.3.5 Income and Social Status

Effect Analysis

The Project will pay workers (see Section 6.3.4) at a rate two to three times higher than minimum wages (i.e., \$12.50 to \$20 an hour). Since Digby Neck incomes (see Section 3.5) are lower than those in Digby County and Nova Scotia, a positive effect on local residents' income is expected.

Mitigation Measure

None recommended

6.3.6 Social Capital

Effect Analysis

Potential project interactions with social capital include the Project's effect on local communities, social cohesion, social support, inter individual trust in a way that reduces coordination and cooperation for mutual benefits.

Section 3.7 provides Digby Neck baseline information on social capital characteristics (trust, social cohesion, social support, civic engagement).

Social cohesion

Individuals who have lived on Digby Neck for a certain time (e.g., residents aged 50 years and over) have a stronger sense of belonging to their community than other residents (see Section 3.7.1). Overall, all age group respondents from Digby Neck rated their sense of belonging as (AMEC, 2005):

- Very strong – 44.7%;
- Strong – 38.0%;
- Neither weak nor strong – 11.3%;
- Somewhat weak – 6.0%.

This indicates a fairly high level of social cohesion, which can be in part explained by the low mobility of residents and the fact that communities on Digby Neck are small in size.

In addition, to a sense of belonging to a community, a sense of place can also be linked to peoples' attachment to a local area (e.g., where they have been born, raised, or have experienced valuable times). Interviews conducted by Elgin Consulting (April 15 to May 15,

2005) on local traditional knowledge indicate the value some local individuals place on Digby Neck and Island, including Whites Point. Therefore, the proposed quarry site could disturb that sense of place for those who previously conducted some activities there (e.g. picnicking, wood gathering). Dulse harvesting along the shoreline will still be allowed.

The review of public concerns, interviews and the traditional knowledge study public consultation material (see Table 1) indicates that the Project is also seen by local residents as an invasion of American interests and that they (i.e., Nova Scotia) should be compensated for the extraction of provincial natural resources.

The Digby Neck population is divided over the Project, some would welcome employment and others would rather keep Digby Neck as is, unspoiled and as an ecotourism destination. The population is also divided depending on whether: local residents can or cannot obtain employment from the Project; live in proximity or away from the quarry; moved to Digby Neck to retire; or make their livelihood from the fishery and tourism industries. As is the case with many large scales projects in rural communities, the reasons for and against a project are numerous and often contentious. Moreover, if change is not initiated from within a rural area, where people have a higher sense of cohesion, and when decisions are made outside of community networks, a community can feel a loss of control over their territory.

Project activities (construction or operation) themselves will not likely have as great an effect on social cohesion, as will the discussions on the approval or rejection of the Project through the environment assessment process. Individuals, with different objectives, are currently interacting and discussing the potential effects of the Project resulting in disruption of local communities' social cohesion. Involvement ranges of none to highly active (e.g., reports of intimidation by some individuals against the Project).

Therefore, the environmental assessment process itself will temporarily have an adverse effect on social cohesion. The Project activities (construction and operation) are not expected to have an adverse effect on social cohesion.

Social Support and Individuals Networks

Most individuals on Digby Neck have good social networks, with 75.4% of respondents indicating time spent with close family members or relatives and 82.5% with friends at least once a week (AMEC, 2005, see Section 3.7.3). As for social cohesion, it is not expected that the Project activities will have an effect on social support and individual network. However, the environmental assessment process will temporarily have an adverse effect on some individuals' networks because of conflicting interests (for or against the Project).

Trust

Trust in others on Digby Neck is not high. Trust in the provincial government is low, and even lower for federal institutions (see Section 3.7). Regarding the statement: "The federal government acts in everybody's best interest", only 12.3% of respondents somewhat agreed and 1.4% strongly agreed. Regarding the question of whether the Nova Scotia government acts in people's best interest, 21.7% somewhat agreed and 3.1% strongly agreed.

Considering the low level of trust in the two levels of government, this Project's federal/provincial environmental assessment panel review process may not involve a significant

portion of community members. This feeling was reinforced by the interviews conducted with community members who said they did not believe in the environmental assessment process.

Low levels of trust were also experienced by AMEC during interviews conducted in the local area (e.g., an important local group refused to discuss the Project with AMEC).

Mitigation Measure

Engage Residents

Despite the low level of trust in government and its processes, every effort must be made to engage residents and groups that may be affected by the Project. Therefore, Bilcon will continue trying to meet with groups and individuals to provide Project information and resolve outstanding issues (see Section on public consultation).

6.3.7 Quality of Life

Effect Analysis

Quality of life refers to the feeling of being satisfied in a particular environment (see Section 3.8). There is no single definition for quality of life because of the broad scope of factors that can affect an individual's quality of life. Individual needs and perceptions are different and changing. For example, noise levels that are acceptable to one person may not be for someone else.

The quality of life of residents from Digby Neck was rated as (AMEC, 2005):

- Excellent – 22.0%;
- Very good – 29.3%;
- Good – 30.0%;
- Fair – 14.7%;
- Poor – 4.0%

Considerable differences in ratings were found among different age groups (see Table 18). Younger people reported their quality of life as lower, while older people gave a higher rating to their quality of life (e.g., the age group 51-60 reported having the best quality of life).

The most important factors contributing to quality of life were a healthy and safe environment, access to health care and a good income and financial security (see Table 19).

One Project related indicator affecting quality of life is noise (see Section 6.4.2). For some, this inconvenience, even if below guidelines, could be perceived as disturbing or not, because individual tolerance levels vary. An occasional blast, once every two weeks, that is below guidelines will hardly be noticed by some or will be treated similarly to the noon day gun or airplane passing overhead, but for others it becomes a major disturbance. Therefore, the Project will have an effect on some local residents' quality of life more than others, especially residents living nearby (e.g. Sandy Cove or Little River). In addition, notification of blasting activity will be forwarded to residents in the immediate vicinity of the blasting zone (Jacques Whitford, October 26, 2005).

The Project will not have a significant adverse effect on air quality (see Section 6.4.1) and noise (see Section 6.4.2). However, it will have an adverse effect on some individuals' quality of life because of various level of tolerance to disturbance, especially those living adjacent to the quarry and Digby Neck residents.

The Project will not have an effect on the access to health care, but it will provide financial security to employees working at the quarry, therefore, improving some individuals' quality of life.

Mitigation Measure

In addition to mitigation measures proposed under Section 6.4 to mitigate potential effects on air quality and noise levels, a noise complaint process is proposed.

Noise Complaint Process

A noise complaint process will be established by Bilcon so that public concerns are addressed in a timely manner, and to prevent individuals' quality of life to be adversely affected.

6.4 Physical Environment

6.4.1 Air Quality

Effect Analysis

Project blasting and processing will create dust, and therefore, suspended particulate matter (i.e. particles in air that remain suspended and do not settle out easily).

The Project design has features to avoid release of dust from processing into the existing environment, such as the building of an enclosure to process the quarried rock (Jacques Whitford, October 26, 2005).

Project related emissions will be monitored, if required, to ensure dust levels cannot reach a level that could affect the health of the nearby population, such as children, elderly and people with respiratory diseases (e.g. asthma). As previously identified (see Section 3.2.1.4), the population with respiratory diseases in the study area is expected to be similar to the Southwestern District Health Authority rates, and are within a normal range of incidence of asthma for Nova Scotia.

Mitigation Measure

Compliance with Nova Scotia Department of the Environment Pit and Quarry Guidelines, Revised May 1999, section VI on Suspended Particulate Levels.

Dust emissions and particulate matter will be monitored, if required, (Jacques Whitford, October 26, 2005) beyond the property boundary of the pit or quarry and will not exceed the maximum limit:

- 60-70 $\mu\text{g}/\text{m}^3$ annual geometric mean;
- 120 $\mu\text{g}/\text{m}^3$ average concentration over a 24 hr period

The limit of 120 $\mu\text{g}/\text{m}^3$ is consistent with the National Ambient Air Quality Objectives (NAAQOs) & Guidelines in Canada. At that level, the effect would be a decreased visibility. At that level, the quarry activities will be stopped.

To note, the NAAQOs' maximum tolerable level for total suspended particulate is of 400 $\mu\text{g}/\text{m}^3$. At that level, effects would include decreased visibility, soiling evident, increased frequency and severity of lower respiratory disease in children. Therefore, the monitoring acceptable average concentration is conservative and protective of nearby residents, including sensitive receptors.

6.4.2 Noise

Effect Analysis

Noise from operations and blasting will be produced at the quarry site. Noise could disturb nearby residents if levels are above acceptable limits. Noise from blasting can produce higher sounds than ongoing operations noises, although infrequently (i.e. approximately once every two weeks). A qualified person will conduct blasting on-site.

Mitigation Measure

1) Compliance with Nova Scotia Department of the Environment Pit and Quarry Guidelines, Revised May 1999, section VII on Sound Level Limits.

Noise levels will be monitored, (Jacques Whitford, October 26, 2005) and will not exceed limits (sound level limits at the property boundaries) established by the Nova Scotia Department of the Environment of:

- Night (23:00-07:00, all day Sunday and Statutory Holidays) – 55 dBA;
- Evening (19:00-23:00) – 60 dBA; and
- Day (07:00-19:00) – 65 dBA

2) Compliance with Nova Scotia Department of the Environment Pit and Quarry Guidelines, Revised May 1999, section VIII on Blasting.

“Air blast (concussion) for blasting on site will not be allowed for above 128 dBA within 7 m of the nearest structure not located on the property where the blasting occurs.

Ground vibration limit is of 0.5 in. sec (12.5mm/s) Peak Particle Velocity measured below grade or less than 1 m above grade in any part of the nearest structure not located on the property where blasting occurs.

There will be no blasting on Sunday and Statutory Holidays, nor any day between 18:00 and 08:00.

Monitoring results will be provided to the Nova Scotia Department of the Environment on a monthly basis.

As per provincial permit, under certain conditions blasting cannot take place (e.g. if a thermal inversion is anticipated”).

In addition, Bilcon of Nova Scotia will notify nearby residents of the blasting zone of blasting to take place (Jacques Whitford, October 26, 2005 and John Lizak, December 2005).

6.4.2.1 Determination of Significance

The analysis of the current conditions of local health determinants and the effects of the Project on those conditions allows us to predict that the Project construction and operations activities will not have a significant adverse effect on human health and community wellness.

6.5 Follow-up and Monitoring

The Project's effect on individual's well-being should be confirmed by measuring later (in three years) Digby Neck residents self-rated health assessment (including physical, mental and social well-being).

6.5 Cumulative Effects

Cumulative environmental effects can be defined as the "effect on the environment which results from effects of a project when combined with those of other past, existing and imminent projects and activities" (CEAA, 1999). In the context of this project, no other past, existing or imminent industrial projects have occurred or are envisioned for Digby Neck with the exception of two other small quarry projects located closer to the town of Digby and the ongoing transport of large quarried rocks for use on local breakwaters.

REFERENCES

AMEC 2005, *Report on Public Consultation for Proposed Whites Point Quarry and Marine Terminal Project, Digby Neck, Nova Scotia*, St. John's, NL. Prepared for Bilcon of Nova Scotia

AMEC 2005a, *Attitudinal Survey*, St. John's, NL. Prepared for Bilcon of Nova Scotia

AMEC, *Quality of Life Survey on Digby Neck*, St. John's, NL. Prepared for Bilcon of Nova Scotia

André, Pierre and Dieudonné Bitondo (2001), *Development of a Conceptual and Methodological Framework for the Integrated Assessment of the Impacts of Linear Infrastructure Projects on Quality of Life*, Research supported by the Canadian Environmental Assessment Agency's research and Development Program.

Cancer Care Nova Scotia (2000), *Cancer Statistics in Nova Scotia, A focus on 1995-1999*. Nova Scotia.

Cancer Care Nova Scotia (2004), *Annual District Specific Cancer Information Distributed in 2004*. Nova Scotia.

Colman, R. (August 2004), *Development & Application of Community Health Indicators*, GPI Atlantic.

Corbett, M. (2005), *Rural Education and Out-Migration: The Case of a Coastal Community in Canadian Journal of Education* 28, 1 & 2: 52-72.

Digby & Area Community Health Board (December 1997), *Community Health Plan and Appendix C (Mail Out Results)*, Digby, NS.

Elgin Consulting (2005), *Traditional Knowledge Interviews*, Digby, NS.

Gardner Pinfold (January 2006), *Digby Neck/Islands Economic Profile (Draft)*, Halifax, NS.

"Geology and Groundwater Assessment Whites Point Quarry Site", John Lizak, Mineral Valuation and Capital Inc., December 2005

Health Canada (2005), *Canadian Handbook on Health Impact Assessment, Volumes 1 to 4*, CD-ROM, ISBN 0-662-69046.

Health Canada (March 2003), *Social Capital as a Health Determinant, How is it measured?* Health Policy Research Working Paper Series, Working Paper 02-08

Health Canada (March 2003), *Social Capital as a Health Determinant, How is it defined?* Health Policy Research Working Paper Series, Working Paper 02-07

INAC profile for Bear River Band (July 2005)

www.aboriginalcanadaportal.ca

Jacques Whitford (October 26, 2005), *Noise and Air Quality Study at Whites Point Quarry*, Darmouth, NS. Prepared for Bilcon of Nova Scotia

Nova Scotia Department of Finance (NSDOF) (2004) *Nova Scotia Statistical Review*, Division of Economics and Statistics

Nova Scotia Department of Finance (2004), *Digby County Statistical Profile*, Division of Economics and Statistics

Nova Scotia Finance (2004) & Source: Nova Scotia Community Counts Web page – data modeled from Statistics Canada, Census of Population 1991, 1996 and 2001.

Nova Scotia Department of Health (NSDOH) (June 2004), *Social Anxiety in Nova Scotia*, Canadian Community Health Survey Cycle 1.2

NSDOH (2003), *Nova Scotia Department of Health Annual Statistical Report 2002-03*, Performance Measurement and Health Informatics Information Management Branch

NSDOH (October 17, 2002), *Canadian Community Health Survey: Summary Report to the District Health Authorities*, Performance Measurement and Health Informatics Information Management Branch, NS.

NSDOH (Summer 2002), *Healthy People, Healthy Communities Using the Population Health Approach in Nova Scotia*, NS

Public Health Agency of Canada (accessed in 2005), *The Population Health Approach*, <http://www.phac-aspc.gc.ca/ph-sp/phdd/>

Service Nova Scotia and Municipal Relations (2003), *Nova Scotia Annual Report on Vital Statistics*.

South West Health District Health Authority (2005), *Population Health in Action*, <http://www.ssdha.nshealth.ca/population%20health.htm>

South West Health District Health Authority (September 2003), *South West Health Profile*.

Statistics Canada (July 2004), *2003 General Social Survey on Social Engagement Cycle 17, An Overview of Findings*, Catalogue 89-598-XIE

Statistics Canada (June 2004), *Health Indicators*, Catalogue 82-221-XIE.

Statistics Canada (2004), *Canadian Community Health Survey 2.1*, Table 105-0200.

Statistics Canada Community Profile (2001), Statistics Canada, www.statscan.ca

World Health Organization (1948), Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

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Bilcon of Nova Scotia
January 13, 2006



Personal Communications

Decision Support Analyst, Southwestern District Health Authority, Yarmouth, NS, September 22, 2005

Assistant, Digby & Area Community Health Board, Digby, November 4, 2005

Information Analysis and Reporting, NSDOH, September 2005, request for more recent abstracted health data at the District Health Level Authority



APPENDIX A
AMEC 2005 Surveys

**White's Point Quarry:
Attitude Survey**

Good Day. My name is _____ and I work for..... Today we are calling you to ask you to take part in a public opinion survey our firm is undertaking in Digby County concerning industrial development projects. We are not trying to sell you anything and we are asking only for about 15 minutes of your time. May I speak to a member of your household who is 18 years or over and who is one of the key decision makers in your household?

Can you participate?

- Yes → Continue
- No → Disconnect

REPEAT INTRODUCTION IF NECESSARY

1. Have you heard of the White's Point Quarry project?
 - Yes → **CONTINUE TO QUESTION 2**
 - No → **GO TO QUESTION 26**

2. From which of the following sources have you received MOST of your information about the White's Point project? → **TICK ALL THAT APPLY**
 - Local newspaper
 - Word of mouth
 - Other → SPECIFY _____
 - Refused
 - Environmental Lobby Group
 - Community group
 - Radio

3. Can you name the company that is developing the White's Point Quarry?
 - Yes, Name: _____
 - No

4. Do you know where the company comes from?
 - Canada
 - United States
 - Other → _____
 - Don't Know

5. Now I will ask some questions about the White's Point Project.
 - (a) What kind of project is it? _____
 - Don't Know

 - (b) Where will it be located? _____
 - Don't Know

 - (c) How many jobs will be created? _____
 - Don't Know



(d) How long will the project last? _____
 Don't Know

(e) What area will the project cover? (i.e. number of acres) _____
 Don't Know

(f) Where will the end product be shipped? _____
 Don't Know

RECORD ANY OTHER COMMENTS _____

6. Do you know if Digby County will receive any financial or other benefits from the project?

- Yes → **SPECIFY** _____
- No
- Don't know

7. Have you heard any opinions expressed about the project?

Yes → Could you please tell us what issues you have heard about?

→ **DO NOT PROMPT**

→ **TICK ALL THAT APPLY / RECORD COMMENTS**

- Impact on fishery _____
- Impact on lobster fishery _____
- Impact on water quality _____
- Impact on tourism _____
- Impact on whales _____
- Ballast water _____
- Noise, dust _____
- Increased marine traffic _____
- Disturb the natural landscape and beauty of area _____
- It will create jobs _____
- Other _____

- No
- Don't know
- Refused

Now I would like to ask questions on your personal views of the project.

8. Overall, do YOU think the White's Point is a good project for Digby County?



- Yes → **GO TO WHY / WHY NOT**
- No → **GO TO WHY / WHY NOT**
- Don't Know
- Refused

Why / Why Not _____

Don't Know

9. Do YOU believe the jobs created by the project will be important to Digby County?

- Yes → **GO TO WHY / WHY NOT**
- No → **GO TO WHY / WHY NOT**
- Don't Know
- Refused

Why / Why Not _____

Don't Know

10. In YOUR opinion will the White's Point project affect the natural environment of Digby County?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

Don't Know

11. In YOUR opinion will the project affect the overall well-being and quality of people's lives in Digby County?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

Don't Know

12. In YOUR opinion will the project affect tourism opportunities in Digby County?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

- Don't Know

13. In YOUR opinion will the project affect local traditional activities?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

- Don't Know

14. In YOUR opinion will the coastline near the project be affected by the project?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

- Don't Know

15. In YOUR opinion will the project have an affect on the local lobster fishery?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

- Don't Know

16. In YOUR opinion will the project affect Digby County's economy?

- Yes → **GO TO HOW**
- No
- Don't Know
- Refused

How _____

- Don't Know

17. In YOUR opinion can concerns that people have expressed about the project be addressed so that the project can proceed?

- Yes
- No → **GO TO WHY NOT**
- Don't Know
- Refused

Why Not _____

- Don't Know

18. If a job at the White's Point Quarry were available for which you were qualified would you apply?

- Yes
- No
- Don't Know
- Refused

19. Based on what you know about the White's Point Project, do you support the project?

- Yes
- No
- Don't know
- Refused

20. Have you participated in any events regarding this project?

- Yes → **PLEASE INDICATE WHAT AND WHEN** → _____

- No
- Refused



21. Do you feel that you have had sufficient opportunity to participate in discussions regarding the project?
- Yes
 - No → **Why Not** _____

 - Don't Know
 - Refused
22. Do you have any other comments about the project? _____

23. How would you like to be informed about the projects? **DO NOT PROMPT**
- Local newspaper
 - Community group
 - Mail outs
 - Refused
 - Public information Session
 - Government
 - Other _____
24. Are you currently working?
- Yes
 - No
 - Refused
25. How many weeks per year do you normally work in this occupation?
- 0-10
 - 11-20
 - 21-30
 - 31-40
 - 41-52
 - Refused

In concluding our survey I would like to ask some general questions to assist us in understanding your answers.

26. Which of the following sources of information are you most likely to trust?
- Local newspaper
 - Word of mouth
 - Government
 - TV
 - Community group
 - Other _____
 - Radio
 - Environmental lobby
27. Gender: Male Female
28. Is your permanent residence in Digby County?
- Yes → Community _____ → **GO TO QUESTION 32.**
 - No → What is your permanent residence? _____

Refused

29. What brings you to Digby County at this time?

Vacationing

Visiting relatives

Summer home

Other _____

Refused

30. How often do you visit Digby County? _____

Once per year Twice per year

Three times per year Four times per year

More than 4 times per year Refused

31. How long do you usually stay in the area when you visit?

1-2 Weeks

3-4 weeks

1-2 months

3-4 months

5-6 months

more than 6 months

Other _____

Refused

32. Age: 18-30 31-40 41-50 51-60

61-70 over 70

Refused

33. What is the highest level of education you have attained?

Grade IX

High School

College Diploma

Some University

University Graduate

Masters Level

PHD

Refused

**Quality of Life Survey
Digby Neck**

Good Day. My name is _____ and I work for..... Today we are calling you to ask you to take part in a public opinion survey our firm is undertaking on the quality of life in Digby County. We are not trying to sell you anything and we are asking only for about 15 minutes of your time. May I speak to a member of your household who is 18 years or over and who is one of the key decision makers in your household?

Can you participate?

- Yes → Continue
- No → Disconnect

REPEAT INTRODUCTION IF NECESSARY

NEVER PROVIDE “REFUSED / DON’T KNOW” AS AN OPTION; RECORD ONLY IF THIS OCCURS

1. Are you a permanent resident of Digby Neck?
 - Yes → **SKIP # 2**
 - No → **GO TO # 2**
 - Refused → **SKIP # 2**

2. Where is your permanent residence? _____
 - Refused

3. How long have you lived in the Digby Neck area?
 - Less then 1 year
 - 1-5 years
 - 6-10 years
 - More than 10 years
 - Refused / Don't Know

4. How would you rate the overall quality of life in Digby Neck?
 - Excellent
 - Very good
 - Good
 - Fair
 - Poor
 - Refused / Don't Know

5. Within the last 6 months, would you say your quality of life has:
 - Improved
 - Stayed the same
 - Has gotten worse
 - Refused / Don't Know



6. Thinking of your daily life, I would like you to rate the importance of the following factors on a scale from 1 to 5 where 1 means it is not at all important, 2 means it is somewhat not important, 3 means it is neither important nor unimportant, 4 means it is somewhat important and 5 means it is very important:

Access to education	1	2	3	4	5	D/K
Access to healthcare	1	2	3	4	5	D/K
Access to recreational activities	1	2	3	4	5	D/K
A strong network of community services	1	2	3	4	5	D/K
A healthy environment	1	2	3	4	5	D/K
An environment that is safe	1	2	3	4	5	D/K
Respect for your culture	1	2	3	4	5	D/K
Ability to preserve your culture	1	2	3	4	5	D/K
Presence of family	1	2	3	4	5	D/K
A good income and financial security	1	2	3	4	5	D/K
A network of friends	1	2	3	4	5	D/K
A good working environment	1	2	3	4	5	D/K
Ability to achieve personal goals	1	2	3	4	5	D/K

7. Thinking again of your daily life, I would like you to rate how satisfied you are with the following life issues, again on a scale from 1 to 5 where 1 means you are not at all satisfied, 2 means you are somewhat unsatisfied, 3 means you are neither satisfied nor unsatisfied, 4 means it is somewhat satisfied and 5 means you are very satisfied:

Access to education	1	2	3	4	5	D/K
Access to healthcare	1	2	3	4	5	D/K
Access to recreational activities	1	2	3	4	5	D/K
A strong network of community services	1	2	3	4	5	D/K
A healthy environment	1	2	3	4	5	D/K
An environment that is safe	1	2	3	4	5	D/K
Respect for your culture	1	2	3	4	5	D/K
Ability to preserve your culture	1	2	3	4	5	D/K
Presence of family	1	2	3	4	5	D/K
A good income and financial security	1	2	3	4	5	D/K
A network of friends	1	2	3	4	5	D/K
A good working environment	1	2	3	4	5	D/K
Ability to achieve personal goals	1	2	3	4	5	D/K

8. Thinking about the stress in your life, would you say that most days are:

- Not at all stressful → **SKIP TO QUESTION 10**
- Not very stressful → **GO TO QUESTION 9**
- Somewhat stressful → **GO TO QUESTION 9**
- Extremely stressful → **GO TO QUESTION 9**
- Refused /Don't Know → **SKIP TO QUESTION 10**

9. What makes your life stressful? → **DO NOT PROMPT**
 → **TICK ALL THAT APPLY**

- Financial problems
- Marital / Relationship problems



- Children
- Lack of employment
- Poor quality housing
- Unaffordable housing
- Lack of social / community services
- No social network / friends
- Current employment is not satisfactory
- Health problems
- Family problems
- Other → Specify _____

10. I am going to ask you about your health. By health, I mean not only the absence of diseases or injury but also physical, mental and social health. In general, would you say your health is:

- Excellent
- Very good
- Good
- Fair
- Poor
- Refused / Don't Know

11. Again using a scale of 1 to 5 where 1 means it is not at all important, 2 means somewhat unimportant, 3 means neither important nor unimportant, 4 means somewhat important and 5 means very important, please tell me how important the following factors are to your personal health:

Quality of the air	1	2	3	4	5	D/K
Quality of water	1	2	3	4	5	D/K
Quality of housing	1	2	3	4	5	D/K
Quality of food	1	2	3	4	5	D/K
Regular exercise	1	2	3	4	5	D/K
Surrounding noise levels	1	2	3	4	5	D/K
Healthy eating	1	2	3	4	5	D/K
Industrial night lighting	1	2	3	4	5	D/K
Consumer products	1	2	3	4	5	D/K

12. On a scale of 1 to 5 where 1 means poor, 2 means somewhat poor, 3 means neither good nor poor, 4 means good and 5 means excellent, please rate the following factors in your environment:

Quality of the air	1	2	3	4	5	D/K
Quality of water	1	2	3	4	5	D/K
Quality of housing	1	2	3	4	5	D/K
Quality of food	1	2	3	4	5	D/K
Regular exercise	1	2	3	4	5	D/K
Surrounding noise levels	1	2	3	4	5	D/K
Healthy eating	1	2	3	4	5	D/K
Industrial night lighting	1	2	3	4	5	D/K

Refused

18. How many years have you worked in this occupation? **TICK ONLY ONE**

of Years _____ # of Months _____ # of Weeks _____
 Refused

19. How many weeks of the year do you normally work in this occupation?

0-10 11-20 21-30 31-40 41-52
Refused

20. Are you currently employed?

Yes No
 Refused

21. Is there another occupation or job that you routinely work at for sometime during the year?

Yes → Please Identify: _____ → **GO TO QUESTION 22**
 No → **SKIP TOP QUESTION 23**
 Refused → **SKIP TOP QUESTION 23**

22. How many weeks of the year do you normally work in this occupation?

0-10 11-20 21-30 31-40 41-52
Refused

23. Have you worked in any *other* occupation or industry in the past five years?

Yes → Please Identify: _____
 No
 Refused

24. Do you have any training or job skills for other occupations not listed above?

Yes → Please Identify (i) _____
(ii) _____
 No
 Refused

25. How far do you presently commute to reach your place of work?

KMS _____ Miles _____
 Refused

26. Have you moved in the past five years to be closer to your work?

Yes
 No

- Refused / Don't Know

27. Are you part of a cultural group (LIST → select all that are appropriate):

- Acadian
- Aboriginal
- Black Community
- Loyalist
- Other _____
- Refused

28. Age: 18-30 31-40 41-50 51-60
 61-70 over 70 Refused

29. What is the highest level of education you have attained?

- Grade IX
- High School
- College Diploma
- Some University
- University Graduate
- Masters Level
- PHD
- Refused

30. Do you currently live:

- Alone
- With your spouse or partner
- With children or other family members
- With friends or room mates

APPENDIX B

AMEC 2005 Quality of Life Survey Results

**ATTITUDE SURVEY:
WHITE'S POINT QUARRY**

Sample Size: **457**

Reliability: **± 5.0% at 95% confidence level**

	Survey Question	Responses	Frequency (%)			
			Males	Females	Total	834 Ex- change ¹ Sample: 94
1.	Have you heard of the White's Point Quarry project? (Sample: 476)	a) Yes b) No	96.1 3.9	96.0 4.0	96.0 4.0	100 0.0
2.	From which of the following sources have you received MOST of your information about the White's Point project? (Sample:457)	a) Local newspaper b) Word of mouth c) Radio d) Environmental Group e) Community group f) Bill boards/protest signs g) Newsletters / flyers h) Media i) TV j) MHA / Gov't member k) Other l) Don't Know / No Answer / No Answer	53.3 55.5 21.7 12.5 12.4 4.3 0.7 0.4 0.7 0.7 1.6 0.4	57.3 55.3 19.0 14.5 16.5 3.7 1.2 0.6 0.3 0.0 0.8 0.8	55.4 55.4 20.3 13.5 14.5 4.0 1.0 0.5 0.5 0.4 1.2 0.6	61.7 61.6 26.7 19.4 31.7 0.0 2.2 0.0 0.0 1.2 0.0 0.0
3a.	What kind of project is it? (Sample: 457)	a) Basalt / Rock Quarry b) Quarry limestone for US Roads c) Quarry Rock to be shipped away / shipped to US d) Mining Project e) Other f) Don't Know / No Answer	67.0 12.3 8.3 4.7 3.2 9.8	56.1 5.9 5.9 4.9 6.9 23.9	61.3 9.0 7.0 4.8 5.2 17.1	84.3 7.7 5.2 6.0 8.7 2.5

¹ The "834" exchange includes the communities of Centreville, Freeport, Sandy Cove, Little River, Tiverton and Westport.



3b.	Where will it be located? (Sample: 457)	a) Digby Neck	48.5	53.9	51.3	16.9
		b) Little River	19.0	16.6	17.8	27.2
		c) White's Cove	6.5	5.7	6.1	26.4
		d) White's Point on Digby Neck	3.9	2.2	3.0	15.7
		e) Sandy Cove	4.5	1.3	2.8	0.0
		f) Whale Cove	1.1	1.5	1.3	0.0
		g) Digby County	0.8	1.5	1.1	0.0
		h) Other	4.3	5.7	5.0	8.7
		i) Don't Know / No Answer	11.8	12.0	11.9	6.8
3c.	How many jobs will be created? (Sample: 456)	a) Very few	8.2	4.6	6.4	13.9
		b) 10-20	8.2	3.4	5.7	2.8
		c) 21-50	16.4	11.0	13.6	36.1
		d) 51-100	2.7	2.5	2.6	0.0
		e) 101-200	1.4	1.3	1.3	0.0
		f) 201-300	0.5	1.3	0.9	0.0
		g) Other	0.9	3.0	2.0	0.0
		h) Don't Know / No Answer	61.6	73.0	67.5	47.2
3d.	How long will the project last? (Sample: 456)	a) Forever/ very long time	6.8	7.6	7.2	11.1
		b) Until the resources run out	2.7	3.0	2.9	8.3
		c) 1-3 years	0.9	2.1	1.5	0.0
		d) 4-5 years	2.7	2.5	2.6	0.0
		e) 6-10 years	1.8	2.1	2.0	0.0
		f) 11-20 years	5.0	1.7	3.3	16.7
		g) 21-50 years	6.8	3.8	5.3	11.1
		h) 51-100 years	0.9	0.0	0.4	0.0
		i) Other	0.9	0.0	0.4	0.0
		j) Don't Know / No Answer	71.2	77.2	74.3	52.8
3e.	What will happen to the quarry mined? (Sample: 456)	a) Sent to New Jersey	1.8	1.7	1.8	0.0
		b) Shipped away	6.8	6.3	6.6	10.8
		c) Shipped to US	32.9	23.2	27.9	37.8
		d) Shipped to US for road construction	5.9	8.9	7.5	16.2
		e) For roads / waste land	6.4	1.2	3.7	8.1



		f) Other	9.6	8.4	9.0	5.4
		g) Don't Know / No Answer	36.5	50.2	43.6	21.6
4.	Do you know if Digby County will receive any financial or other benefits from the project? (Sample: 457)	a) Yes:				
		• Jobs	19.6	12.2	15.8	20.6
		• Tax revenue	8.2	4.6	6.3	0.0
		• Good for economy	1.8	2.9	2.4	2.9
		• Other	4.6	3.4	3.9	2.9
		b) No	28.3	26.5	27.4	50.0
		c) Don't Know / No Answer	37.4	50.4	44.2	23.5
5.	Have you heard any opinions expressed about the project? (Sample: 457)	a) Yes (Sample : 393)	84.1	87.4	86.0	83.3
		• Some people are for it and some people are against it	29.7	34.5	32.3	17.0
		• Environment/ecosystem	26.6	30.9	28.9	18.0
		• Impact on fishery	24.5	26.2	22.3	44.1
		• Noise, dust	20.5	11.5	15.7	16.5
		• It will create jobs	11.8	9.0	10.4	9.1
		• Impact on whales	12.1	7.1	9.5	
		• Impact on lobster fishery	12.9	8.5	9.5	22.0
		• Disturb the natural landscape / beauty of area	6.3	10.2	8.4	5.1
		• Water/air pollution	6.9	4.6	5.7	4.8
		• Impact on tourism	6.1	6.1	6.1	7.3
		• The project generally is not good for the area	1.2	5.1	3.2	2.1
		• Impact on water quality	4.4	2.4	3.3	12.4
		• Increased marine traffic	6.1	3.6	4.8	5.2
		• Ballast water	4.5	1.7	3.0	9.5
		• Deterioration of roads	1.6	2.2	1.9	0.0
		• Drop in the water table	3.2	0.9	2.0	0.0
		• Losing our resources	1.6	3.6	2.7	3.0
		• Other	18.5	14.9	16.6	24.8



		<ul style="list-style-type: none"> • Don't Know / No Answer 	0.0	1.6	0.9	7.6
		b) No	14.2	10.1	12.0	16.7
		c) Don't Know / No Answer	1.4	2.5	2.0	0.0
6.	Overall, do YOU think the White's Point is a good project for Digby County? (Sample: 457)	a) Yes → Why? (Sample: 132) <ul style="list-style-type: none"> • Job creation • Good for economy • Higher paying jobs • Other • Don't Know / No Answer 	37.4	21.0	28.9	25.0
		<ul style="list-style-type: none"> • Job creation • Good for economy • Higher paying jobs • Other • Don't Know / No Answer 	80.3	71.2	76.9	65.6
		<ul style="list-style-type: none"> • Good for economy 	16.0	14.7	15.5	24.4
		<ul style="list-style-type: none"> • Higher paying jobs 	0.0	3.6	1.4	15.5
		<ul style="list-style-type: none"> • Other 	19.1	16.5	18.3	25.5
		<ul style="list-style-type: none"> • Don't Know / No Answer 	0.0	4.5	1.7	0.0
		b) No → Why Not? (Sample: 184)	38.4	4.20	40.3	58.3
		<ul style="list-style-type: none"> • Environment/ecosystem 	28.3	31.5	30.0	11.8
		<ul style="list-style-type: none"> • Destroying the fishery 	24.1	20.8	22.3	39.3
		<ul style="list-style-type: none"> • Destroying the area 	15.4	15.1	15.3	14.0
		<ul style="list-style-type: none"> • No benefits 	13.0	4.8	8.5	6.5
		<ul style="list-style-type: none"> • Air/water pollution 	7.8	6.9	7.3	10.3
		<ul style="list-style-type: none"> • Destroying the whale habitat 	6.9	2.0	4.2	7.6
		<ul style="list-style-type: none"> • Noise Levels 	1.7	6.1	4.1	12.0
		<ul style="list-style-type: none"> • Losing our resources 	1.8	3.5	2.7	6.4
		<ul style="list-style-type: none"> • Destroying marine life 	1.7	1.5	1.6	7.8
		<ul style="list-style-type: none"> • Other 	48.2	41.7	44.6	49.0
		<ul style="list-style-type: none"> • Don't Know /No Answer 	2.6	1.5	2.0	0.0
		c) Don't Know / No Answer	24.2	37.0	30.9	16.7
7.	Do YOU believe the jobs created by the project will be important to Digby County? (Sample: 457)	a) Yes → Why? (Sample: 250) <ul style="list-style-type: none"> • Jobs are important to the area • Hiring of local people • Improve the economy 	62.1	47.9	54.7	33.3
		<ul style="list-style-type: none"> • Jobs are important to the area 	57.8	52.1	55.2	63.8
		<ul style="list-style-type: none"> • Hiring of local people 	14.9	22.6	18.4	13.8
		<ul style="list-style-type: none"> • Improve the economy 	9.2	9.3	9.3	0.0



		<ul style="list-style-type: none"> • Take people off welfare • Other • Don't Know / No Answer 	0.6	1.5	1.0	0.0
			15.7	14.3	15.1	10.6
			4.1	10.0	7.0	11.8
		b) No → Why Not? (Sample: 137)	28.8	31.1	30.0	50.0
		<ul style="list-style-type: none"> • Hiring of outsiders • Not sustainable • Not that many jobs available • Not enough jobs to have an impact 	29.4	37.5	33.8	54.5
			12.5	14.4	13.5	9.8
			12.5	13.3	12.9	20.6
			14.5	10.5	12.3	6.9
		<ul style="list-style-type: none"> • Unskilled people in the area • Only low paying jobs • Other • Don't Know / No Answer 	7.6	3.1	5.2	0.0
			3.6	5.0	4.4	4.3
			28.4	33.2	31.0	16.4
			4.6	6.5	5.6	8.8
		c) Don't Know / No Answer	9.1	21.0	15.3	16.7
8.	In YOUR opinion will the White's Point project affect the natural environment of Digby County? (Sample: 457)	a) Yes → How? (Sample: 306)	61.2	71.8	66.7	69.4
		<ul style="list-style-type: none"> • Destroying the landscape/loss of tree line • Air / water pollution • Killing fish / destroying habitat • Silt in the bay / run-offs / chemicals in ocean • Endanger wildlife • Change in the water tables • Decline in whale population • Disturbing the natural sea life • Too many boats in water • Detrimental to lobster fishery • Health problems • Plant life will die • Other 	41.2	45.2	43.4	26.6
			13.5	19.9	17.1	20.2
			13.7	15.6	14.8	26.0
			13.4	4.3	8.3	17.5
			9.4	11.0	10.3	19.1
			11.8	4.5	7.7	5.6
			10.4	5.7	7.7	7.3
			9.5	6.4	7.8	12.2
			6.2	7.6	7.0	14.5
			4.2	5.8	5.1	20.0
			3.4	0.7	1.9	0.0
			2.8	1.1	1.9	6.4



		<ul style="list-style-type: none"> • Don't Know / No Answer 	16.5	19.9	18.4	12.5
		b) No	2.4	6.4	4.6	0.0
		c) Don't Know / No Answer	20.1	10.5	15.1	27.8
			18.7	17.6	18.2	2.8
9.	In YOUR opinion will the project affect the overall well-being and quality of people's lives in Digby County? (Sample: 457)	a) Yes → How? (Sample:232) <u>Positive:</u> <ul style="list-style-type: none"> • More / better jobs • Increases in the economy • More homes will be built <u>Negative:</u> <ul style="list-style-type: none"> • Destroy livelihood of people in fishery and tourism • Too much noise • Air / water pollution • Silt run off/more pollution • Too much traffic on land and water • Bad impact on tourism • Destroying habitats • Roads will be destroyed • Trouble with water tables • Negative impact on eco-system • Quality of water • Other • Don't Know / No Answer 	50.2	51.3	50.8	56.8
			23.0	18.2	20.5	9.0
			11.1	6.0	8.4	2.1
			0.7	0.5	0.6	
			18.6	14.0	16.2	27.2
			12.5	15.8	14.2	11.6
			14.4	7.9	11.0	16.6
			7.7	12.5	10.2	8.6
			4.2	4.0	4.1	9.9
			3.4	3.3	3.3	6.6
			4.2	2.7	3.4	0.0
			1.4	3.7	2.6	4.3
			3.7	0.7	2.1	0.0
			0	1.7	0.9	0.0
			0.8	0.7	0.7	0.0
			37.9	39.8	38.6	39.3
			4.4	4.2	4.3	0.0
		b) No	30.6	21.4	25.8	29.7
		c) Don't Know / No Answer	19.2	27.3	23.4	13.5
10.	In YOUR opinion will the project affect tourism opportunities in Digby County?	a) Yes → Why? (Sample: 173) <u>Positive:</u>	32.4	42.9	37.9	48.6



	(Sample: 457)	<ul style="list-style-type: none"> It will bring more tourists to the area 	6.6	5.3	5.8	6.6
		<p><u>Negative:</u></p> <ul style="list-style-type: none"> Will drive tourists away Will spoil beauty of the landscape Will drive away the whales Too much noise Will be an ugly site Will kill the fishery / deep sea fishery No scenic view Bad for campgrounds Other Don't Know / No Answer 	50.4	48.2	49.1	49.4
			25.4	23.1	24.0	24.8
			22.9	17.2	19.6	21.9
			10.3	6.7	8.1	0.0
			9.7	5.4	7.2	13.3
			4.9	3.1	3.9	2.5
			3.3	1.5	2.2	4.5
			0.0	0.6	0.3	0.0
			17.9	23.2	21.0	21.9
			2.2	4.5	3.5	0.0
		b) No	53.9	33.6	43.3	45.9
		c) Don't Know / No Answer	13.7	23.5	18.8	5.4
11.	In YOUR opinion will the project affect local traditional activities? (Sample: 455)	<p>a) Yes → Why? (Sample 159)</p> <ul style="list-style-type: none"> Will destroy fishing and spawning grounds Will have a bad affect on people Will destroy the characteristics of quiet fishing villages Bad impact on tourism Will hurt activities like hunting, camping, picnicking, walking trial, skidooring Will affect plant life Will take away from the scenic beauty Will destroy farmlands Will change the culture Bird watching Other Don't Know / No Answer 	35.8	34.22	34.9	38.9
			61.6	53.2	57.3	70.8
			14.4	12.0	13.2	20.8
			7.1	8.8	8.0	0.0
			9.3	3.2	6.2	9.0
			6.1	5.8	5.9	0.0
			2.7	1.8	2.2	5.7
			1.9	0.0	1.0	0.0
			1.0	0.7	0.8	0.0
			0.0	1.0	0.5	0.0
			0.0	0.9	0.5	0.0
			17.7	19.8	18.8	0.0
			3.5	11.1	7.3	8.8



		b) No	47.2	35.9	41.3	55.6
		c) Don't Know / No Answer	17.0	30.0	23.7	5.6
12.	In YOUR opinion will the coastline near the project be affected by the project? (Sample: 457)	a) Yes → Why? (Sample: 294)	61.2	67.2	64.3	75.7
		• Large hole will be left in side of coastline	15.2	18.9	17.2	24.8
		• Building a wharf / huge wharf / eye-sore terminal	17.6	9.5	13.2	15.0
		• Pollution of water	13.6	5.3	9.1	4.6
		• Marine traffic	9.8	7.2	8.4	1.6
		• Environmental issues	10.3	5.3	7.6	8.2
		• Visually it will not be good	5.3	7.8	6.6	8.5
		• Erosion	4.2	8.2	6.4	2.9
		• Spills along the coastline	6.5	1.7	3.9	3.4
		• Will affect the mountain range	4.1	5.0	4.6	14.9
		• Water levels	1.2	1.1	1.2	0.0
		• Other	27.0	42.7	35.5	36.7
		• Don't Know / No Answer	3.1	7.3	5.4	2.9
		b) No	20.5	9.7	14.9	21.6
		c) Don't Know / No Answer	18.3	23.1	20.8	2.7
13.	In YOUR opinion will the project have an affect on the local lobster fishery? (Sample: 456)	a) Yes → Why? (Sample: 215)	49.3	45.1	47.1	72.2
		• Silt run-off and/or ballast water will destroy habitats	14.8	21.1	18.0	33.3
		• Ships will destroy lobster pots	13.0	10.0	11.5	25.9
		• Blasting, construction and dredging will cause environmental damage	7.4	11.0	9.2	7.4
		• High volume of shipping traffic	10.2	4.6	7.4	14.8
		• Upset balance of marine life	5.6	6.4	6.0	3.7



		<ul style="list-style-type: none"> • Spawning grounds in the cove will be disturbed • Fish will move to deeper waters • Floor of ocean will change • Land and water temperature will affect water temperature • Other 	4.6	8.3	6.5	0.0
			2.8	7.3	5.1	3.7
			1.9	1.8	1.8	0.0
			0.0	0.9	0.5	0.0
			33.3	20.2	26.7	11.1
		b) No	24.2	19.0	21.5	19.4
		c) Don't Know / No Answer	26.5	35.9	31.4	8.3
14.	In YOUR opinion will the project affect Digby County's economy? (Sample: 457)	a) Yes → Why? (Sample: 301)	68.9	63.0	65.9	59.5
		<u>Positive:</u>				
		• Will create growth in the economy	42.7	32.9	37.7	40.9
		• There will be more jobs in the area	27.3	25.0	26.2	4.5
		• There will be more spending in the area	8.0	9.2	8.6	4.5
		<u>Negative:</u>				
		• It will destroy people's livelihoods	11.3	11.8	11.6	40.9
		• Less tourists	1.3	2.6	2.0	4.5
		• Other	6.0	12.5	9.3	4.5
		• Don't Know / No Answer	3.3	5.9	4.6	0.0
		b) No	23.7	13.9	18.6	29.7
		c) Don't Know / No Answer	7.3	23.1	15.5	10.8
15.	Of the issues raised respecting the project, which concerns you the most? (Sample: 457)	a) Environmental issues	11.0	18.3	14.8	8.8
		b) Fishery	12.3	11.7	12.0	20.6
		c) Landscape	4.6	10.4	7.6	11.7
		d) Economic Impacts	6.8	5.4	6.1	8.8
		e) Lobster Fishery	5.0	5.0	5.0	11.8
		f) Water Quality	3.7	3.8	3.7	0.0
		g) Whales	1.8	2.1	2.0	0.0



		h) Noise / dust	2.7	4.2	3.5	0.0
		i) Ecological impact	1.8	1.7	1.7	0.0
		j) Ballast Water	1.8	0.8	1.3	0.0
		k) Resources being taken away	1.8	0.8	1.3	5.9
		l) Affect people's lifestyle	0.5	2.5	1.5	0.0
		m) Marine traffic	1.4	0.8	1.1	0.0
		n) The results once the developer is gone	1.8	0.4	1.1	0.0
		o) Lack of information	1.4	0.4	0.9	0.0
		p) Infrastructure / traffic	1.4	0.4	0.9	0.0
		q) All the issues	1.4	0.4	0.9	0.0
		r) Oil and chemical spills	1.4	0.0	0.7	9.5
		s) Tourism	0.9	0.0	1.4	0.0
		t) Health of residents	0.5	0.4	0.4	0.0
		u) Other	10.0	7.9	8.9	11.8
		v) Don't Know / No Answer	21.9	19.2	20.5	17.6
16.	In YOUR opinion can concerns that people have expressed about the project be addressed so that the project can proceed? (Sample: 456)	a) Yes	47.2	39.1	43.0	45.9
		b) No → Why Not? (Sample: 119)	28.9	23.5	26.1	29.7
		• Project will proceed regardless	28.5	18.2	23.7	20.1
		• People do not want the project to proceed	14.4	8.9	11.8	9.0
		• Too many environmental issues	6.7	12.0	9.2	16.6
		• Too many unanswered questions	6.6	6.8	6.7	8.8
		• Just not a good idea for the area	2.2	5.7	3.8	6.3
		• No compensation for fishermen	2.2	4.4	3.2	
		• Big companies have no concern for project impacts	2.2	4.5	3.2	
		• Need to protect the fishery / lobster fishery	2.2	1.9	2.1	
		• Because of impacts on people	2.6	0.0	1.4	
		• Don't trust the companies	0.0	2.4	1.1	
		• Other	28.1	37.0	32.3	
		• Don't Know / No Answer	6.6	4.9	5.8	



		c) Don't Know / No Answer	23.9	37.4	30.9	24.3
17.	Based on what you know about the White's Point Project, do you support the project? (Sample: 456)	a) Yes b) No c) Don't Know / No Answer	42.9 44.3 12.8	19.0 51.9 29.1	30.5 48.2 21.3	30.6 58.3 11.1
18.	Do you feel that you have had sufficient opportunity to participate in discussions regarding the project? (Sample: 456)	a) Yes b) No → Why Not? (Sample: 179) <ul style="list-style-type: none"> • Does not concern them / Not interested • Have heard too much about it • Need more information • Doesn't live in the area • Would like more public meetings / information • Need more promotion / advertising • Meetings are held too far away • Other • Don't Know / No Answer c) Don't Know / No Answer d) Refused	53.0 37.9 23.0 21.3 19.5 10.5 11.2 7.7 1.1 4.7 2.9 8.7 0.5	46.8 40.5 32.0 15.8 8.3 12.3 8.2 3.4 4.2 6.9 9.0 12.7 0.0	49.8 39.3 27.8 18.3 13.4 11.5 9.6 5.4 2.7 5.9 6.2 10.7 0.2	65.7 28.6 13.2 13.2 15.5 20.7 31.5 5.7 0.0
19.	Do you have any other comments? (Sample:457)	<u>Positive:</u> <ul style="list-style-type: none"> • Hope it goes ahead and boosts economy • The project will bring lots of jobs to the area • Government looks long and hard before proceeding • Things should be fine • Digby should get benefits promised • Other 	2.9 3.4 0.3 0.4 0.4 6.4	1.9 0.3 2.0 1.1 0.3 5.6	2.4 1.8 1.2 0.8 0.3 6.0	4.5 3.5 3.9 7.7



		<p><u>Negative:</u></p> <ul style="list-style-type: none"> • Hope it does not proceed 5.3 • Would like / needs more information/ updates more often 1.5 • People in the area are very opposed 2.8 • Should not let our resources to be taken away 1.7 • Have not heard enough to form an opinion 1.9 • Will affect the environment 0.4 • What will happen to site once developer goes 0.4 • Property values will decrease 0.4 <p>No 73.9</p>	4.5	4.9	6.9
20.	Can you name the company that is developing the White's Point Quarry? (Sample: 457)	<p>a) Bilcon 5.9</p> <p>b) No 90.4</p> <p>c) Other 3.7</p>	5.5	5.7	19.4
21.	Where does the company come from? (Sample: 457)	<p>a) United States 69.4</p> <p>b) Canada 0.9</p> <p>c) Other 1.8</p> <p>d) Don't Know / No Answer 27.9</p>	60.3	64.6	91.7

	Survey Question	Responses	Frequency (%)			
			Males	Females	Total	
22.	What do you think is the best way to inform the community about development projects in the Digby area? (Sample: 476)	<p>a) Local newspaper 60.8</p> <p>b) Public Information sessions 35.5</p> <p>c) Radio / TV 30.1</p> <p>d) Mail out surveys 18.4</p> <p>e) Community group 17.1</p> <p>f) Government 10.2</p> <p>g) General media 1.8</p>	59.0	59.8	46.2	



		h) Internet	1.3	1.5	1.4	0.0
		i) Other / community newspapers	1.0	0.6	0.8	0.0
		j) Door to door	1.1	0.3	0.7	3.2
		k) Other	2.6	3.0	2.8	2.2
		l) Don't Know / No Answer	5.9	4.8	5.4	10.2
23.	Gender: (Sample: 476)	a) Male			44.9	47.2
		b) Female			55.1	52.7
24.	Is your permanent residence in Digby County? (Sample:476)	a) Yes	80.7	74.2	77.3	100.00
		b) No → What is your permanent residence (Sample: 106)	19.3	25.0	22.3	
		• Annapolis County	75.6	78.1	77.1	
		• Other	22.2	14.1	17.4	
		• Refused	2.2	7.8	5.5	
25.	What brings you to Digby County at this time? (Sample: 29)	a) Shopping	0.0	22.2	13.8	N/A
		b) Visiting relatives	0.0	16.7	10.3	
		c) Summer home	9.1	5.6	6.9	
		d) Other	18.2	5.6	10.3	
		e) Don't Know / No Answer / refused	72.8	50.0	58.6	
26.	How often do you visit Digby County? (Sample: 29)	a) Once per year	10.0	0.0	3.4	N/A
		b) Twice per year	10.0	5.3	6.9	
		c) More than 4 times per year	50.0	63.2	58.6	
		d) Refused	30.0	31.6	31.0	
27.	How long do you usually stay in the area when you visit? (Sample: 31)	a) Less than a month	9.1	20.0	16.1	N/A
		b) 1-2 months	0.0	5.0	3.2	
		c) 5-6 months	18.2	5.0	9.7	
		d) more than 6 months	0.0	5.0	3.2	
		e) Day trip	45.5	35.0	38.7	
		f) Refused	27.3	30.0	29.0	
28.	Age	a) 18-30	15.8	14.5	15.1	17.1



	(Sample:476)	b) 31-40	18.9	16.9	17.9	17.1
		c) 41-50	20.2	18.5	19.3	20.0
		d) 51-60	18.4	16.9	17.6	17.1
		e) 61-70	12.7	12.9	12.8	11.4
		f) over 70	14.0	19.0	16.6	17.1
		g) Refused	0.0	1.2	0.6	0.0
29.	Are you currently working? (Sample: 476)	a) Yes	57.5	42.7	49.8	50.0
		• Full time	89.3	75.5	83.1	82.4
		• Part Time	10.7	24.5	16.9	17.6
		b) No	42.1	56.9	49.8	50.0
		c) Refused	0.4	0.4	0.4	
30.	What is your occupation? (Sample: 477)	a) Management Occupations	5.7	4.5	5.0	2.7
		b) Business, Finance and Administrative Occupations	2.6	11.7	7.3	10.8
		c) Natural and Applied Sciences and Related Occupations	3.9	0.4	2.1	5.4
		d) Health Occupations	2.2	6.9	4.6	2.7
		e) Occupations in Social Sci., Education, Govt. service and Rel	3.9	6.9	5.5	10.8
		f) Occupations in Art, Culture, Recreation and Sport	0.9	1.2	1.0	
		g) Sales and Service Occupations	7.8	7.7	7.8	2.7
		h) Trades, Transport and Equipment Operators and Related Occupations	15.2	0.4	7.5	5.4
		i) Occupations Unique to Primary Industry	16.5	3.2	9.6	18.9
		j) Occupations Unique to Processing, Manufacturing and Utilities	3.5	0.0	1.7	2.7
		k) Retired	27.4	32.0	29.8	24.3
		l) Unemployed/homemaker / stay at home mom	1.7	15.8	9.0	10.8
			1.7	1.2	1.5	0.0
		m) Laborer	0.9	0.8	0.8	0.0
		n) Disabled	1.7	2.0	1.9	0.0
		o) Student	3.5	3.2	3.4	0.0
		p) Other Mentions	0.9	2.0	1.5	2.7
		q) Refused				



31	What is your highest level of education? (Sample: 477)	a) Less than grade 9	8.3	4.0	6.1	13.9
		b) Grade 9	14.0	8.9	11.3	5.6
		c) High School	30.1	32.3	31.2	36.1
		d) College Diploma	22.7	24.2	23.5	13.9
		e) Some University	6.1	7.7	6.9	2.8
		f) University graduate	11.4	16.5	14.0	13.9
		g) Masters or PHD	7.0	5.2	6.1	11.1
		h) Refused	0.4	1.2	0.8	2.8