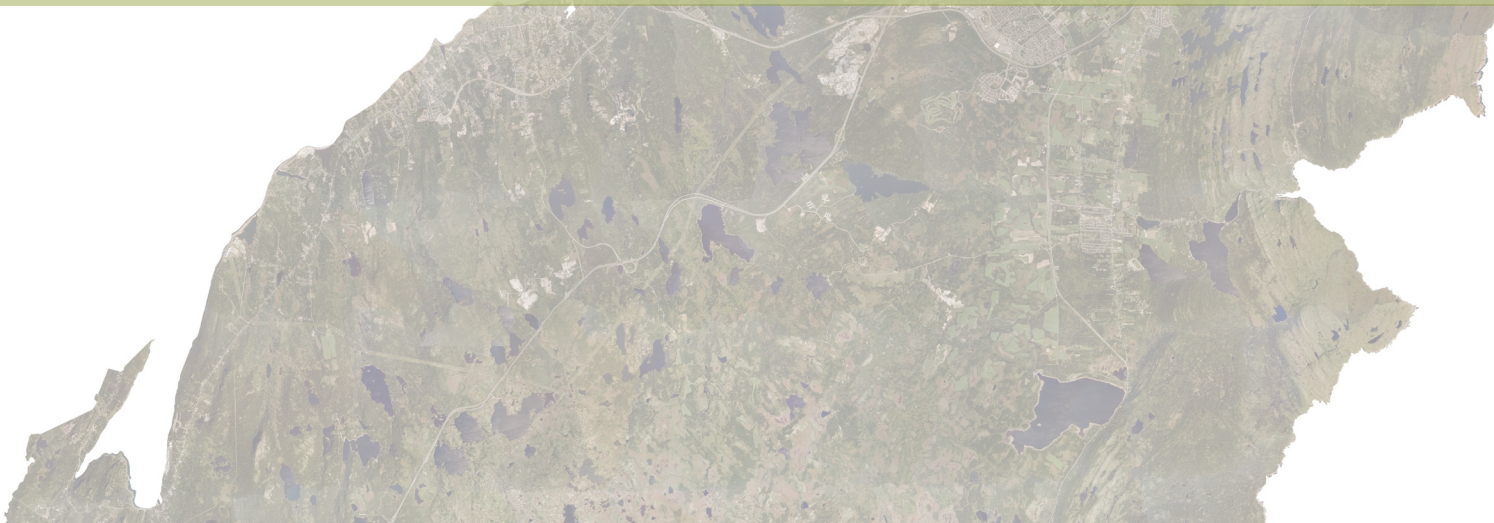


Northeast Avalon Regional Plan Issues and Analysis Report



Prepared For: Newfoundland and Labrador Department of Municipal Affairs
& Northeast Avalon Region Municipalities

September 2009
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Prepared by:



CBCL LIMITED

Consulting Engineers



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Executive Summary

In 1976, the provincial government approved a regional plan for the St. John's Urban Region. The plan, the first of its kind in Newfoundland and Labrador, has guided development in the Northeast Avalon for more than 30 years. In 2008, the province and the 15 municipalities in the region recognized the need to revisit the plan because:

- Population projections in the current plan are out of date and need to be revised to account for future social and demographic change.
- The size and structure of the regional economy has changed dramatically and high levels of investment are anticipated. The Northeast Avalon Region has experienced rapid economic growth in recent years. Planning for the new economy therefore requires a reassessment of the current economic structure and future prospects.
- Rapid urbanization, particularly suburban housing development, has occurred in the region. The current plan does not provide enough guidance to local governments to respond to housing demands across the region in a timely and coordinated manner.
- Over the last thirty years, a growing awareness of the effects of development, pollution and climate change has engendered a desire to protect the Region's unique natural environment.
- Many of the objectives of the 1976 plan have been achieved and much of the infrastructure planned for in that plan has been constructed. An evaluation of current infrastructure capacity and future demands is now required.

A multidisciplinary consulting team of CBCL Limited, Hemson Consulting Ltd., and D.W. Knight Associates was retained to assist with the preparation of the plan. As a first step in the process, this report has been prepared to identify the issues and opportunities for growth and development within the Northeast Avalon Region. The report describes the context for the regional planning process and the current land use and makes an assessment of future demographic and economic change and land use implications.





The first step in the regional planning process is to understand the way in which land is currently used in the Region and what demands are likely to be placed on land in the future. Accordingly, the objectives of this “issues and analysis” report are to:

- provide governments with the information about the Region necessary for making land use planning decisions;
- summarize the many issues raised by governments, business leaders, residents and other stakeholders during the preparation of the plan thus far;
- stimulate discussion on how to proceed with recommendations and strategies; and
- identify the key elements of the new regional plan that have emerged as result of the analysis.

Demographic shifts and increased access to automobiles have changed the pattern of development in the Northeast Avalon Region since the inception of the 1976 plan. The developed area is now almost a continuous strip from St. John’s to Conception Bay South and Portugal Cove-St. Philip’s. Outlying communities that used to function independently have become more related and dependent on this larger urban and suburban area. The previous plan’s approach of developing a central core with outlying local centres needs to shift to a more integrated approach that addresses the interdependencies of communities while allowing them to preserve their unique characteristics.

The region’s population will continue to age so that by 2031 the peak age group in the region will be people in their late 60s. Overall population growth in the region will decline from the mid-2020s. As household growth in the Northeast Avalon Region continues to outpace population growth over the next 25 years, the regional plan should address the growing demand for new housing. A forecast 15,000 new housing units will be required to accommodate this demand and much of that demand will continue to be for single-detached units. However, over the long term, the changing demographic of an aging population will dramatically reduce the demand for the traditional single family home. The question should be asked—is the current rate and pattern of housing growth that is unfolding in the region desirable? If not, how might growth be redirected to:

- Make efficient use of existing infrastructure;
- Protect the natural environment;
- Protect the character of communities; and
- Ensure housing affordability.



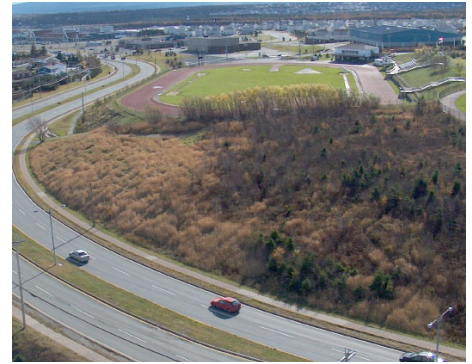


Current water supply and wastewater treatment infrastructure appears to be sufficient to support anticipated growth to 2031, although planning for expansion to the St. John's Regional Water Supply and the Windsor Lake system will need to be initiated before the end of the plan period to ensure sufficient supply is available in the mid-2030s. From a regional water and sewer servicing perspective, while sufficient capacity exists within the existing regional systems to accommodate expected future development, communities not connected to the regional systems are struggling, having to invest heavily in infrastructure to accommodate new development. Similar situations exist with respect to other services such as fire protection, recreation and roads. Some smaller communities have chosen not to investment in water and sewer services; development in these communities proceeds on an unserviced basis. Whether such development is sustainable and future servicing investment avoidable, is unknown, although past experience would suggest that it is not.

The regional road network planned for in the 1970s is essentially complete and provides good access to goods, services and employment. The challenge for the future will not necessarily be the need for major new regional roads, but to ensure that the existing network is able to continue to function efficiently and that land use decisions are not made that contribute to its deterioration. In this regard alternative modes of transportation, including public transit, that make efficient use of existing infrastructure should be encouraged through the regional plan. The development of a regional transportation model to evaluate the impact of development plans or urban growth strategies on the regional road network should be considered. The airport is an important component of provincial and regional transportation as well as an economic generator. Land use around the airport should enable continued functioning of the airport through land use controls and an ample supply of commercial and airport-related lands.

Cultural and natural heritage resources should be carefully considered as development occurs in the Northeast Avalon, as they are very important contributors to the character of the communities in the region. These resources contribute directly to the quality of life for residents and the attractiveness of the area for tourists.

Areas of significant forest cover for resource use, habitat or aesthetic value should be protected and preserved. The preservation of a large natural area connected with natural areas in other parts of the province will provide wildlife corridors and help sustain ecological diversity in the region. As urbanization and development continues a linked system of open spaces should be maintained. The East Coast Trail will be a key component of this system and should continue to be supported. It will also be important to ensure that controls are put in place to protect ecosystems, for example, appropriate buffers to limit the erosion of shorelines. A regional approach to developing and monitoring recreational facilities is needed. The integration of recreational facilities within a regional open space network is desirable.





Agriculture is an important industry in the Northeast Avalon – both in terms of the food produced and for its contribution to the local economy. As an overall approach to food security and to preserve opportunities for the future, it is important to protect sources of local food supplies and preserve affordable agricultural land for new farmers. Regional planning policy that guides development in a manner that ensures agricultural sustainability is needed as the conversion of agricultural land to urban uses is generally irreversible.

The approximately 1,796 ha of land currently planned for residential development in the region is more than 2 times the amount needed to accommodate the projected demand of 865 ha for the next 25 years. Should additional areas proposed for future residential development be approved (i.e. above the 190m. contour, the Fowler Road area in Conception Bay South, and the ADA area in Portugal Cove-St. Philip's), this factor increases to more than 3 times. Growth is occurring throughout the region, particularly at the periphery of the urban core and outlying rural communities. Given the ample supply of land, the regional plan will need to consider whether or not new growth should be channeled to particular areas or be allowed to continue until existing areas are built out.

The oil and gas industry that was anticipated in the 1976 Regional Plan has come to fruition, and in many respects has exceeded expectations. The industry is expected to continue to be the mainstay of the provincial and regional economy for the foreseeable future. However, given the region's excellent short-term economic prospects and the many long-term opportunities that are available, a reevaluation of the availability of land for employment uses in the region is required, particularly with respect to land for regional serving business parks, for lay down, assembly and marshalling of heavy equipment, for regional serving retail uses, and for office space in the urban core. Determining the appropriate location of this land will be a challenge as the needs of future industrial development are very specific and include access to regional transportation systems, port facilities, and appropriately serviced land with suitable topography.

Regional plans are a product of the times in which they are developed. In many ways, the 1976 Regional Plan was concerned with the location and installation of infrastructure to support development in the region, and it largely succeeded in its purpose. Development in the Northeast Avalon Region has now reached a level where some of the characteristics that make it a very attractive place to live are under threat. Residents are concerned about the preservation of open spaces, the protection of rivers, wetlands, forests and coastlines, the maintenance of the character of their communities, and the opportunity to receive some of the benefits of the new economic growth that is occurring in the region.





This new plan should address environmental issues, where “environment” is broadly considered to include not only natural conditions, but also community character, the equitable distribution of social capital, aesthetics, and the preservation of opportunities for future generations.

The short-term economic prospects for the Northeast Avalon Region are excellent and long-term economic opportunities are great and wide ranging. A new regional plan can ensure that these opportunities are realized. At the same time a regional plan can direct growth in a coordinated way, make efficient use of land and services, and protect the natural environment so that the current quality of life in the region can be sustained.





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1 Introduction

The Northeast Avalon Region is located on the northeasterly point of the Avalon Peninsula and, for the purposes of the regional plan, includes Bell Island to the east of the mainland in Conception Bay (Figure 1.1). The region is the most populous and urbanized region of the Newfoundland and Labrador. The region’s largest city, St. John’s, is the provincial capital city, and is home to government institutions, hospitals and Memorial University. The historic downtown core of St. John’s is the centre of commerce and culture, and serves as a place of entertainment for residents and visitors alike. An efficient road network links places of employment, entertainment, education, healthcare, and regional services within a short commuting time.

Surrounded by the Atlantic Ocean, the region boasts spectacular coastal scenery and a rugged wilderness that is unlike any to be seen in North America. Rural and suburban towns and city neighbourhoods are nestled in valleys surrounded by tree-clad hills and windswept barrens. Large undisturbed water supply areas and protected agricultural lands convey a rural feel to this urban region that contributes to its uniqueness as a place to live and to visit. Table 1.1 presents some basic geographical characteristics of the Northeast Avalon Region.

Characteristic	Descriptor
Longitudinal range	53°15'W - 52°36'W
Latitudinal range	47°14'N - 47°49'N
Landmass area	135,000 ha
Length of coast line (mainland and Bell Island, not including other islands)	296km
Range of altitude	-7 metres – 336.25 metres

Table 1.1: Basic Geographical Characteristics of the Northeast Avalon Region (includes Bell Island)

Newfoundland and Labrador has been long-known for its strong cultural identity. Creativity in music and the arts are flourishing – not only in the historic downtown, but in communities throughout the Northeast Avalon Region. The combination of unique landscapes and cultural creativity are attracting a growing number of tourists. In recent years, buoyed by a growing offshore oil industry, the economies of the province and the region have grown. With this have come jobs, new business opportunities and wealth. The combination of economic opportunity, the natural environment, and a rich cultural heritage, are the combination of characteristics that are essential for the region’s growth prospects.

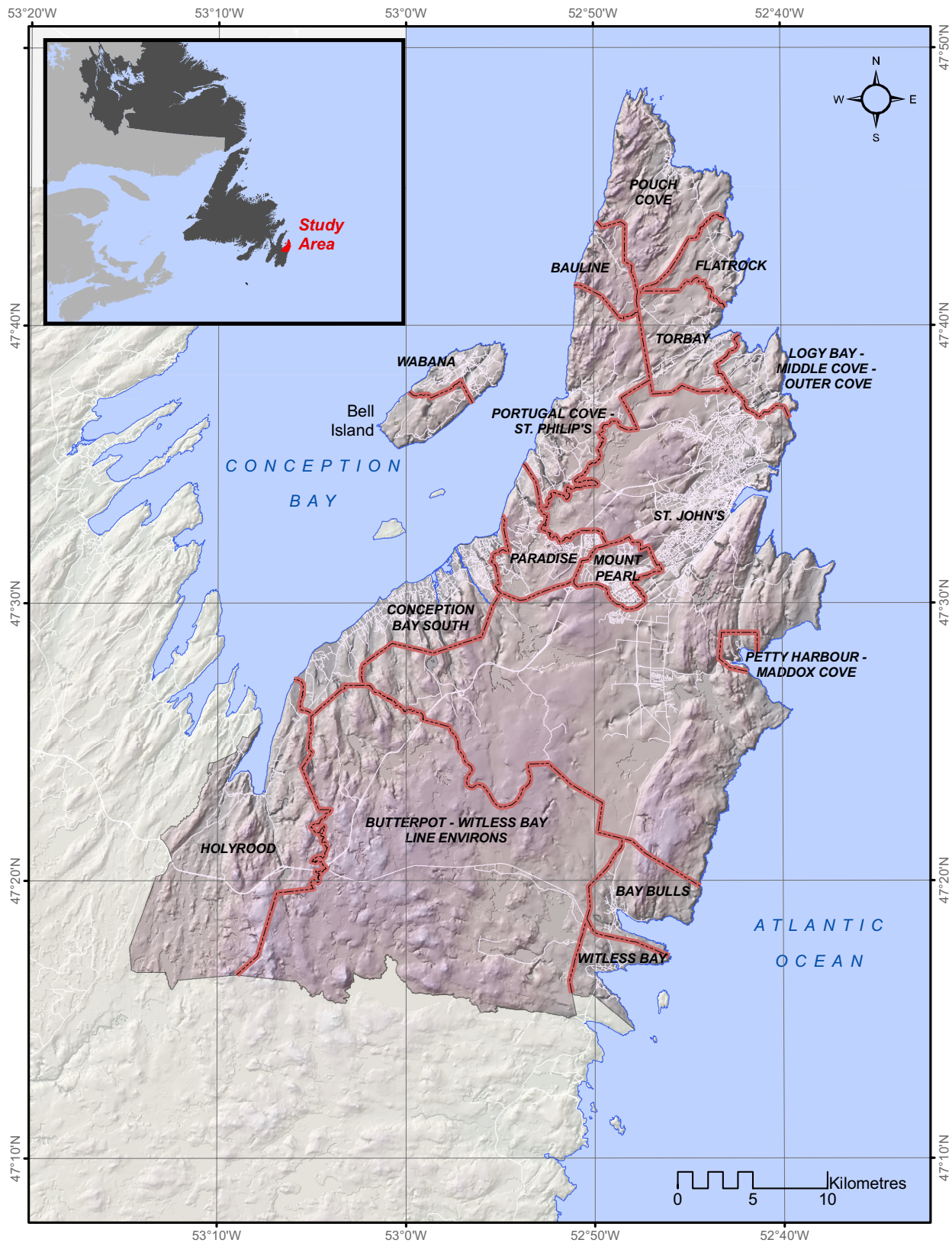


Figure 1.1: Location and geography of the Northeast Avalon Region (Data Source: Department of Municipal Affairs; Department of Environment and Conservation – Surveys and Mapping Division)



Despite these advantages, the region is at a crossroads, as development pressures are perceived to be threatening the very features that make the region distinct from other urban regions in Canada. Residents have expressed a desire to preserve access to the coastline, wetlands and waterways, and the strong cultural heritage in the face of these pressures. Ensuring that the transportation system remains highly functional so that it can provide access for travel and the efficient movement of goods and services is also a challenge within the region. Changing demographics are leading to new and complex challenges that will affect the design of communities and neighbourhoods to meet the needs of an aging population.

In 1976, the provincial government approved the province's first regional plan for the St. John's Urban Region. This plan has guided development in the Northeast Avalon for more than 30 years with varying degrees of success. In 2008, the province and the 15 municipalities in the region recognized the need to revisit this plan and work together with citizens, to prepare a new plan that will guide future land use decisions. A leadership committee comprised of municipal councillors and mayors as well as a technical committee comprised of planners and other municipal representatives have been established to provide guidance and review throughout the Regional Plan development process.

As a first step in this process, this report has been prepared to identify the issues and opportunities for growth and development within the Northeast Avalon Region. Its purpose is to describe the context for the regional planning process, conditions that currently exist, and highlight issues that will need to be addressed as the process moves forward. The issues that are discussed, as well as the desires expressed by the public, will be used to set the stage for the next step in the regional planning process – establishing a set of guiding principles and a vision for the future of the region upon which a new regional plan will be based. Growth forecasts in this report are intended to provide stakeholders with a sense of how growth would occur should current patterns of development continue. The extent to which current and future patterns need to be influenced by regional planning policies will be key decisions as the regional planning process continues.

The report presents an introduction to the Northeast Avalon Region, how it has changed over the past 30 years since regional planning has attempted to influence it, what we know about the region today, and what the future might hold for the next 25 years.

- Chapter 2 examines the history of regional planning in the Northeast Avalon, its success and failures in light of our current understanding;
- Chapter 3 describes what we know about the region today, the urban structure, trails and parks, cultural heritage and natural resource use;
- Chapter 4 provides an analysis of the outlook for future population and economic growth and discusses the implications for future land use needs;
- Chapter 5 gives an assessment of the region's infrastructure and services and its ability to accommodate future growth;
- Chapter 6 discusses the ability of the region to accommodate land use needs forecasted in Chapter 4 and examines the suitability of lands for needed future development; and
- Finally in Chapter 7, input received during the first phase of consultations for the Regional Plan review are summarized.



2 Regional Planning in the Northeast Avalon

2.1 Establishing the St. John's Urban Region Regional Plan

The need for regional planning in the Northeast Avalon emerged in the 1960s in response to the post-war demand for housing and the corresponding lack of infrastructure to accommodate housing growth. At the time there were few incorporated municipalities in the region, few municipal plans, and limited municipal services. There was general recognition that the City of St. John's and the surrounding areas required an overall plan to ensure the future availability of municipal water and sewer services. There was also a growing concern over the lack of piped services and planning controls, particularly in the semi-urban areas of the region which at the time included the Goulds, Kilbride, Torbay, and the communities of Kelligrews and Manuels. Development was resulting in public health issues associated with inadequate or failed on-site septic systems and a chaotic road network. An awareness of the costs that would be incurred to service such areas to rectify these problems also existed.

The *Urban and Rural Planning Act* brought into effect in 1953, provided a framework for regional and municipal planning, and the availability of funds from the federal Department of Regional Economic Expansion supported a number of studies leading up to the preparation of the St. John's Urban Region Regional Plan. Some of these included:

- St. John's, Newfoundland Urban Region Study. Regional Plan Report completed by Proctor and Redfern Limited, Paterson Planning and Research Limited in 1973;
- St. John's Regional Water System Study done by FENCO Ltd. in 1974;
- St. John's Urban Region Waste Management System prepared by Proctor and Redfern Limited in 1973;
- St. John's Industrial Area. Industrial Study conducted by Murray V. Jones and Associates Limited in 1967;
- St. John's Metropolitan Area: A Report on the Planning, Utility Services and Metropolitan Administration of an Area embracing the City of St. John's, the town of Mount Pearl Park – Glendale and the Surrounding Areas completed by Canadian-British Engineering Consultants in 1957.



St. John's suburb development circa 1960



Lack of Regional Services in the 1960s



These studies provided the background for the St. John's Urban Region Regional Plan that was prepared and approved in 1976. The purpose of the Regional Plan was to set out the general nature of future development for the time period 1975 to 1991 in the St. John's Urban Region. Administered by the Province through the Provincial Planning Office, the Regional Plan also formed the framework to which subsequent municipal plans needed to conform as communities in the region became incorporated and prepared their own municipal plans. While St. John's was incorporated in 1888, the majority of towns in the region were not incorporated until the 1970s and 80s. Mount Pearl was one of the first municipalities in the region to have adopted a municipal plan in 1958. The St. John's Metropolitan Area Board, established in 1963, was given responsibility for planning in the unincorporated areas of the region until 1991, when it was abolished through a process of municipal amalgamation.

2.1.1 Content of the Regional Plan

The Regional Plan was very much a physical land use plan. It contained fourteen objectives for development in the region:

1. To improve the region as a place for living, working and leisure by helping to create a more healthy, safe, attractive, and convenient environment.
2. To guide the location of new development in the best interests of the entire region.
3. To establish a basis for the provision of essential public services to all areas where such services may realistically be provided.
4. To develop a clear distinction between the urban and rural parts of the region.
5. To prevent development that will require disproportionately costly public services because of location or use, and to preserve in its natural state land that should not be developed due to its physical characteristics.
6. To prevent the continuation of "ribbon development" along the main roads and highways of the region.
7. To coordinate the varied pattern of major land uses with transportation facilities required for the efficient movement of people and goods within, to, and from the region.
8. To serve as a framework for more detailed Local Area or Municipal Plans that may be prepared for sub-areas of the region.
9. To protect and conserve the limited resources of agricultural land in the region.
10. To protect and conserve appropriate drainage basins designated for use as sources of water supply.
11. To allow for and to encourage the fullest growth and development of individual communities within the Region within limits set by:
 - a) the existing and likely future extent of municipal services;
 - b) the ability of the region to finance the necessary capital works to service such development;
 - c) the need to protect regional resources including agricultural and forest lands, watersheds and scenic resources;
 - d) the need to limit as far as possible heavy capital expenditure on additions to the regional road network to handle commuting and other traffic;
 - e) the amount of infilling possible within presently developed areas;



- f) the capacity of existing local roads and the need to achieve a desirable level of transportation services; and
 - g) the effect of additional population on present school facilities.
12. To encourage development to concentrate within defined urban areas.
 13. To recognize the position of St. John's as the region's dominant business, trade, administrative, and cultural centre, but to acknowledge the need to provide a higher than local level of service in certain more highly developed sub-areas of the region.
 14. To conserve the rural qualities of the region by discouraging non-rural development outside of areas designated for urban uses.

The Regional Plan Map identified the anticipated extent of urban development, lands restricted from development, domestic protected water supplies, agricultural lands, and forest resources, and a regional road network.

One of the key aspects of the Regional Plan was separating the region into urban and rural areas, and specifying policies for three categories of urban development: the regional centre, sub-regional centres and local centres (Figure 2.1). The intent was that development in rural areas would be confined to uses not requiring urban services, would protect natural resources, and would maintain the rural environment. The regional centre included St. John's,

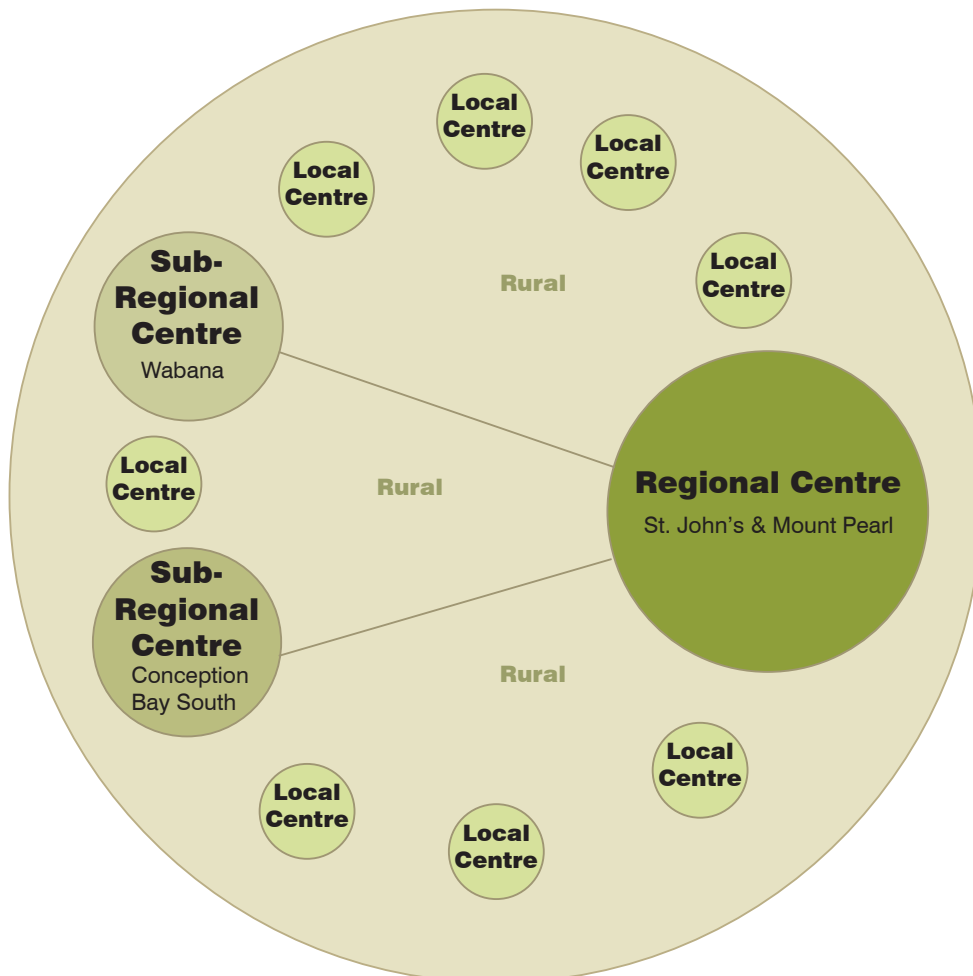


Figure 2.1: Regional classification in the 1976 Regional Plan



Mount Pearl, Newtown, Shea Heights and Kilbride. The sub-regional centres were identified as Conception Bay South, a supportive and complementary community to the Regional Centre, and Wabana, a community that then needed a range of educational and community facilities. Local centres comprised the remaining municipalities in the region that were predicted to grow in accordance within limits of municipal servicing, finance and road capacity, remaining low density with local commercial and small scale industrial uses.

A significant policy of the Regional Plan was the prohibition of development in areas above the 190m contour elevation as regional water and sanitary sewers were designed with capacity to service development up to this elevation. This policy has had the effect of retaining high points of land as undeveloped areas in the urbanized areas of the region (particularly in Kilbride, the Southlands Area, and Kenmount Hill).

In terms of urban growth, the Regional Plan assumed that the region would increase in population from 150,000 to 215,000 over the planning period from 1975 to 1991 - a 65,000 person increase. In reality, however, the current population falls far short of this. The 2006 Census indicate that the region has only grown by just over half that amount to 185,905. Population projections prepared for the current Regional Plan review by the Newfoundland and Labrador Statistics Agency indicate that even under a high growth scenario the population would not increase to 215,000 until after 2021, with a total projected population of 220,760 by the end of the planning period in 2026 (Government of Newfoundland and Labrador, 2008).

The 1976 Regional Plan also addressed rural resource uses and identified lands for agriculture, forestry, and aggregate extraction. It also identified and established policies to protect the region's water supply watersheds. Although it is very much a physical land use plan, the plan contains few policies that address environmental issues that are of concern today such as the protection of wetlands, waterways, and coastal areas.

2.1.2 Changes to the St. John's Urban Region Regional Plan

Since its approval in 1976, the St. John's Urban Region Regional Plan has been amended on numerous occasions. Changes were made to incorporate new regional policy statements/plans as they were prepared, to reflect changes as a result of developments such as major roads, or other provincial policies such as changes to the St. John's Agriculture Development Area.

Significant regional policy statements that were added to the Plan included the St. John's Airport Environs Policy (1983) that set out more detailed land use designations and development policy for lands around the airport, and the Octagon Pond Environs Policy (1983), which established the Octagon Pond Area as a major area for regional industrial use that was anticipated as a result of offshore oil and gas development.

As the city and surrounding towns grew, the Regional Plan was amended to convert lands designated for rural uses to urban uses, or to change industrial land designations to urban development designations that would permit municipalities to determine the specific land uses. Since 2000, the majority of amendments to the Regional Plan have been made to accommodate the growing demand for urban development throughout the region. The most



significant proposed change to the Regional Plan currently being considered, is a request by the City of St. John's to amend the Plan to permit development above the 190m contour elevation. Appendix 1 summarizes the Regional Plan Amendments from 1978 to present.

2.2 Impact of the St. John's Urban Region Regional Plan 1976-2009

The Terms of Reference for the Regional Plan Review require an assessment of the successes and failures of the Regional Plan and its implementation so that lessons from the first 30 years of regional planning can be taken into account in preparing a new Regional Plan for the coming years.

The St. John's Urban Region Regional Plan has played an important part in shaping growth and development in the Northeast Avalon region. Through the Plan, provincial policy has been implemented in areas of natural resource management, regional servicing and transportation. The setting aside of lands for industrial development has enabled the growth of the offshore oil and gas industry, now a key driver of the provincial economy.

The manner in which the 14 regional objectives would be accomplished are outlined the Regional Plan in six broad policy areas, namely urban development, non-urban development, special policies for major industrial uses and the St. John's Airport, transportation, education and implementation.

2.2.1 Regional Development Pattern

One of the main thrusts of the Regional Plan was to see a development axis from St. John's through Mount Pearl to Conception Bay South with the then proposed Harbour Arterial Road, the Manuals Connector and the Conception Bay South By-Pass facilitating this growth direction. However, the original Regional Plan Map failed to recognize the impact this growth would have on the intervening Town of Paradise, where little growth was anticipated. In addition, the conversion of large areas of land around Octagon Pond, originally set aside for industrial development, to residential lands has contributed to the growth of this community.

2.2.2 Growth of Local Centres

The Regional Plan's objectives to preserve the distinction between the urban and rural parts of the region and to prevent ribbon development along the main roads and highways of the region have clearly not been met. This appears to be the result of the local centres growing significantly beyond what was originally projected. Amendments to the Regional Plan that allowed large lot unserviced subdivisions also contributed to the growth of the smaller local centres. The result has been the need to provide infrastructure such as water and sewer services and new schools and recreation facilities which had only been anticipated would be needed for the core areas of these local centres.



2.2.3 Regional Transportation

The Northeast Avalon has an efficient network of arterial roads that serve the region well. Routes such as the Outer Ring Road, the East-West Arterial, the Goulds By-Pass, the Harbour Arterial, the Manuals Connector (Access Road), the Conception Bay South By-Pass and the Torbay By-Pass have met the objectives of the Regional Plan.

The Regional Plan identified a number of provincial highways in the region as “Scenic Routes” and contained policies to ensure that development along them would preserve their scenic rural character. Today, the extent and form of development along these roads has undermined this concept as the spread of local centres and the continuous pattern of residential development has made one community almost indistinguishable from the next.

2.2.4 Protection of Natural Resources and Rural Lands

The protection of natural resources has in part been successful, particularly in the designation of future water supplies and the retention of agricultural lands, although in the case of the latter, the area protected has been significantly reduced from that originally designated by way of reviews undertaken outside of the planning process established under the *Urban and Rural Planning Act*.

Despite policies in the Plan to restrict development on higher elevation lands and steep slopes, amendments to the Plan over the past 30 years have been made to permit development in some areas and allowed urban encroachment onto rural lands.

Similarly, public open space designations on the Regional Plan Map did not prevent the privatization of Cochrane Pond Provincial Park or Marine Drive Provincial Park, or lead to the creation of a new provincial park to the south of Petty Harbour.

2.2.5 Regional Industrial Lands and Special Policies

Special Policies of the Regional Plan were included for major industrial uses and for the St. John’s Airport. Amendments to the original plan to provide for additional industrial lands through the Airport Environs and the Octagon Pond Environs development schemes can largely be looked upon as failures.

While the Donovan’s Business Park and St. Anne’s Industrial Park were being developed in the late 1980s and early 1990s a lack of demand for industrial lands resulted in pressure to redesignate undeveloped industrial lands for urban development. These lands have since been redesignated and are now residential and commercial uses. Recent demand for additional industrial land to support the needs of the oil and gas industry have meant that new areas around the airport and the southern portion of Paradise have had to be identified and proposed or developed for industrial use.



In the case of the Airport, the inclusion of noise exposure forecast contours into plan policy has largely but not entirely prevented encroachment of non-appropriate uses. Similar to the experience in Octagon Pond the airport-related industrial and commercial designations were removed from the Regional Plan and areas redesignated for Urban Development. The City of St. John's has since undertaken planning studies to determine the most appropriate uses in the area of the airport.

In 1987 when anticipation of development of the offshore oil and gas industry was high, an amendment to the Regional Plan placed an industrial designation on a relatively isolated area at Freshwater Bay. The purpose was to provide an accessible laydown and fabrication area for the oil and gas industry. Nothing has been developed in this area and the amendment to the Regional Plan that established it, appears to have misjudged the appropriateness of the site and if nothing else highlights the Plan's lack of a coastal protection policy. Today, the industrial function envisaged for Freshwater Bay appears to be being met by the development of laydown and fabrication facilities at Bay Bulls.

2.2.6 Urban Development

The Regional Plan's urban development policies envisaged major development taking place within the regional centre which includes both St. John's and Mount Pearl. This has largely been successful although the actual area of growth has extended well beyond that designated on the original regional plan map. Policies to encourage major retail, office, hotel and trade facilities to locate in downtown St. John's have only partially been successful as the Plan clearly did not anticipate the trend toward mall development and more recently the retail power centre developments that have diminished the retail function, not only of the downtown, but the shopping malls as well.

On the other hand, urban development policies of the Plan as they specifically relate to local centres have in large part been a failure as they have not been able to maintain the distinct split between urban and rural uses, have not prevented ribbon development, have not limited outward growth and have resulted in the need for capital works beyond that anticipated in the original Plan.

2.2.7 Development Above the 190 Metre Contour

One of the Regional Plan policies that has, with a few exceptions been successfully implemented over the past 30 years is a policy to restrict development above the 190m contour elevation. The policy was required as a result of limits on the engineering design of the regional water and trunk sewer and stormwater management system. Because the policy limited development on high points of land within the region, it has also preserved tree-covered hills that are visible from many vantage points and contribute to the uniqueness of the region and the relative accessibility of urban areas to natural open space.



2.2.8 Education

The Regional Plan included a policy that a regional education plan should be prepared and form part of the Regional Plan. However, this was never done and the development of educational facilities has largely been reactive to growth rather than planned or anticipated by what the Regional Plan projected. As a consequence, facilities have often lagged behind demand and there continues to be a disconnect between planning for educational facilities and the regional and municipal planning processes.

2.2.9 Implementation

Insofar as the Regional Plan anticipated that it would be implemented through a series of local plans, this was achieved when the entire region was incorporated and municipal plans prepared and approved for all municipalities in the region.

By the mid 1990s, the Regional Plan was substantially out-dated. Areas designated for urban development within the urban centre and the sub and local centres extended far beyond that anticipated in the original plan, even though the population of the region is far below what the plan anticipated. In too many instances, particularly since 2000, the regional plan has been amended to keep in step with local plans rather than the regional plan directing the pattern of development. In some respects this may be attributed to the local government structure and lack of regional coordination as each municipality strives to maximize its development potential.



3 Region & Community Structure

This chapter discusses the function and structure of the region's communities, including settlement pattern, cultural heritage, natural resource use, the trails and recreation network, education and other community services that set the stage for regional planning. Detailed discussion about current and anticipated population, economic trends, servicing, and land use zoning can be found in the following chapters.

3.1 Regional Settlement Pattern

Over the past 30 years, patterns of settlement in the Northeast Avalon Region have been shaped by:

- economic changes;
- changing demographics;
- topography and geography;
- the extension of roads, piped water and sewer infrastructure;
- restrictions on development required for protecting municipal water supply areas and agricultural lands; and
- the capacity of infrastructure to accommodate development to up to the 190m contour elevation.

An understanding of the current settlement pattern allows us to see the impacts of market forces, policies and government decisions. Understanding the factors that led to the current settlement pattern, and its opportunities and consequences will inform discussions about how we plan for our future.

3.1.1 Settlement Pattern over the Past 30 Years

Since the last Regional Plan was developed in 1976, the most intensive urban growth has evolved in a linear manner west and southwest from St. John's through Mount Pearl, Paradise and Conception Bay South, northward into Torbay and more recently into Portugal Cove-St. Philip's. Decisions about transportation, water, and sewer servicing made throughout the 1960s and 1970s have greatly influenced the Northeast Avalon Region's settlement pattern. As in many other cities in Canada, the post-war period saw rapid expansion of suburban



communities on their periphery. In St. John's, residential subdivision housing proliferated at the edges of the city and in suburban communities beyond, a process made possible by cheaper land and development costs, and consumer preference for larger lots and single-detached homes. Since the 1970s, in most of the region's rural and suburban communities, considerable investment in water and sewer infrastructure has been required to retrofit unserviced development as on-site wells and septic systems began to fail. Municipalities were forced to take on large amounts of debt to finance the extension of service and retrofit of older, un-serviced subdivisions - a process that continues today. This extension of services, combined with improved regional road networks has also had the impact of enabling further growth and development in the suburban and rural communities of the region.

As infrastructure servicing was extended from the City of St. John's out through Mount Pearl to Conception Bay South, the areas like Paradise that were regarded as more rural in nature began to fill in. During the 1990s and into the 2000s, with improvements to the regional road network, the Town of Paradise ballooned, and a suburban corridor along Topsail Road was established. Changes in retail format and consumer shopping preferences have also shifted the pattern of commercial land use from a focus on the downtown core of the City of St. John's, first to the regional malls on the outskirts of the downtown, and more recently to big box centres on the outer edges of the built up area of St. John's and Mount Pearl.

3.1.2 Current Community Settlement Types

While every community in the Northeast Avalon Region has a unique history and distinct identity, it is useful to categorize communities according to certain characteristics including settlement, employment, and commuting patterns, population size, age structure, geographic location and history of growth. As discussed in Chapter 2, the St. John's Urban Region Regional Plan of 1976 classified the region according to rural and urban areas and grouped the urban communities into three categories: the regional centre, sub-regional centres, and local centres (See Figure 2.1 in Chapter 2). While the Regional Plan articulated the regional centre and sub-regional centres as interconnected, the local centres were regarded as somewhat separate units with primarily low-density residential and locally serving commercial and industrial uses. These categories need to be revisited to more accurately reflect the current regional settlement patterns and the relationships and distinctions between communities. Today the region is highly interconnected, where many of the communities regarded as separate local centres in the 1976 Regional Plan now function as fully integrated components of the region.

The following conceptualization of the Region is intended to be illustrative of the current context. While it will be informative in the next stages of the regional planning process, it is not intended to be prescriptive of future planning policy. Nor does it necessarily reflect the unique characteristics of individual municipalities; in fact many municipalities exemplify a number of the characteristics described below. That said, an understanding of the larger demographic and economic forces that are common features amongst communities is required when preparing the regional plan.

The region can be generally categorized into urban core, suburban corridor, suburban perimeter and outer perimeter communities.



- The **urban core** of the region includes municipalities that generally have a high intensity of economic activity and employment opportunities, a large population, a range of region-serving facilities and services, and a variety and mix of land uses. The urban core has areas with moderate to higher density development patterns of residential, commercial, institutional and other land uses. The urban core has regional and province-wide importance, and has been an area of historical focus for urban growth. The urban core is comprised of the developed portions of the City of St. John's and the City of Mount Pearl.
- The **suburban corridor** extends south-westward from the urban core and includes municipalities that are physically, socially and economically related to the urban core, yet which generally have low to moderate density development patterns and a lesser intensity of economic activity. The suburban corridor is comprised of Paradise and Conception Bay South.
- The **suburban perimeter** includes municipalities that arc around the municipal boundary of St. John's to the north. The developed areas of these municipalities are generally not contiguous with other developed areas. These communities are physically, socially and economically related to the urban core and suburban corridor, yet generally have lower development patterns and a lesser intensity of economic activity. The suburban perimeter is comprised of Portugal Cove-St. Philip's, Torbay, and Logy Bay-Middle Cove-Outer Cove.
- The **outer perimeter** includes municipalities that have an economic and social relationship to the urban core and surrounding suburban areas, yet are generally geographically further removed from the urban core. The communities within the outer perimeter generally have lower density development patterns and a lesser intensity of economic activity than suburban areas. The outer perimeter communities include Wabana, Bauline, Pouch Cove, Flatrock, Holyrood, Witless Bay, Bay Bulls and Petty Harbour-Maddox Cove.
- The Northeast Avalon Region also contains large areas of lands characterized as rural and used for natural resource activities such as agriculture and forestry, or preserved for open space and conservation land. These areas are located within the municipalities discussed above and within the Butterpot-Witless Bay Line Environs.

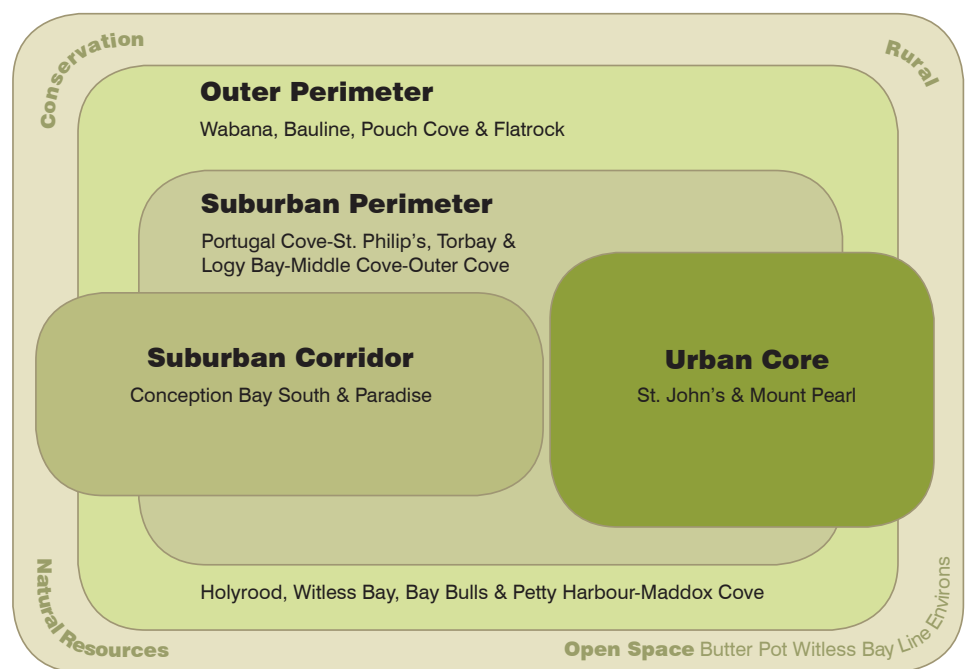


Figure 3.1: Updated conceptualization of the region



Between 1981 and 2006 the population of the Northeast Avalon Region experienced a net increase of 17%, while the population for the province as a whole was declining. Table 3.1 shows the population growth by community category between 1981 and 2006 (See Chapter 4 for a more detailed discussion on demographics and economic factors shaping the region).

POPULATION AND GROWTH RATE 1981 – 2006							
	1981	1986	1991	1996	2001	2006	% Change 1981-2006
Urban Core	119,460	123,380	128,325	127,455	124,140	125,320	4%
Suburban Corridor Communities	17,715	22,120	24,965	27,225	29,370	34,550	95%
Suburban Perimeter Communities	8,550	10,020	12,065	12,880	13,215	14,830	73%
Outer Perimeter Communities	12,840	13,100	12,770	12,170	11,180	11,205	-12%
Total	158,565	168,615	178,125	179,730	177,905	185,905	17%

Table 3.1: Population growth between 1981 and 2006 (Hemson Consulting Ltd. based on Statistics Canada data.)

*Note: Figures may not add due to rounding.

Urban Core Communities

The City of St. John’s and the City of Mount Pearl comprise the urban core of the Northeast Avalon Region.

St. John’s

As the provincial capital, urban centre of the region, and historic city, St. John’s has a variety of neighbourhoods that represent the different periods of city settlement. The older areas of St. John’s including downtown, Georgetown, Rabbittown and Churchill Park have a compact urban form and a range of high density housing types including apartment buildings, rowhouses, and semi-detached houses. Central St. John’s is configured as a patchwork of neighbourhood street grids. With increasing distance from the downtown, density generally becomes lower particularly in the vicinity of MacDonald Drive, Logy Bay Road,



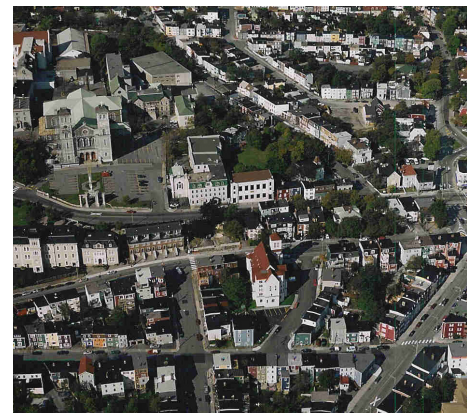
St. John’s



St. John’s



St. John’s



St. John’s



Torbay Road and Portugal Cove Road. The City of St. John's municipal boundary covers a large area of land to the southwest and includes the suburban communities of Goulds and Kilbride. This area also includes farmlands protected by provincial legislation and the area retains much of its original rural character as a result.

The character of retail land use in St. John's is also varied, with boutiques and specialty shops located in the downtown alongside offices, and a regional mall and a number of big box retail developments occurring alongside residential subdivisions and business parks, such as in the Kenmount Road area. The Stavanger Drive commercial area is a busy big box retail centre. A similar configuration of low density residential suburbs and a commercial centre (the Village) exists in the west end, with development radiating away from Topsail Road, and continuing to Mount Pearl and beyond.

As the central city of the region, St. John's has had a stable population for the past 25 years. This is a pattern that is consistent with most central cities in North America. Population growth that occurs in new housing is offset by a decline in aging populations living in smaller households in the current housing stock.

Typically, central cities that have a diminishing supply of developable land cannot add enough new housing to compensate for the decline in the population in the existing housing base as a result of smaller household size (where, over time, children leave the family home and spouses die). This phenomenon is occurring even in cities such as Toronto and Vancouver that have had, until very recently, robust condominium apartment markets. Unlike other central cities, the City of St. John's *does* have a large amount of developable land available within its municipal boundaries. Should significant amounts of new housing growth be directed to undeveloped areas in St. John's in the future the population growth in the new housing may offset the population decline in the existing developed areas of the City and what has been a stable population could become a growing population once again.

Mount Pearl

Mount Pearl is the second largest city in the province. Over the past 25 years the city has experienced rapid expansion. There are now fewer opportunities for future expansion and population growth has stabilized. Mount Pearl is characterized by a small downtown anchored by its City Hall, residential subdivisions and commercial uses clustered in several locations. The Donovan's Business Park is a regionally significant economic and employment centre, and a number of major retailers are located nearby.



Mount Pearl



Mount Pearl



Much of the region’s employment opportunities and “community infrastructure”, such as schools, universities and colleges, and health care facilities, libraries and other public services are located in the urban core cities of St. John’s and Mount Pearl (Figure 3.2). This means that many people from surrounding communities travel into the core for work and to access regional services and facilities. The urban core of the Northeast Avalon Region plays a distinct role as an employment, government and service centre not only for the region, but also for communities located on the east side of Conception Bay in communities like Bay Roberts, Harbour Grace and Carbonear, as well as other communities on the Avalon Peninsula, and the province as a whole.

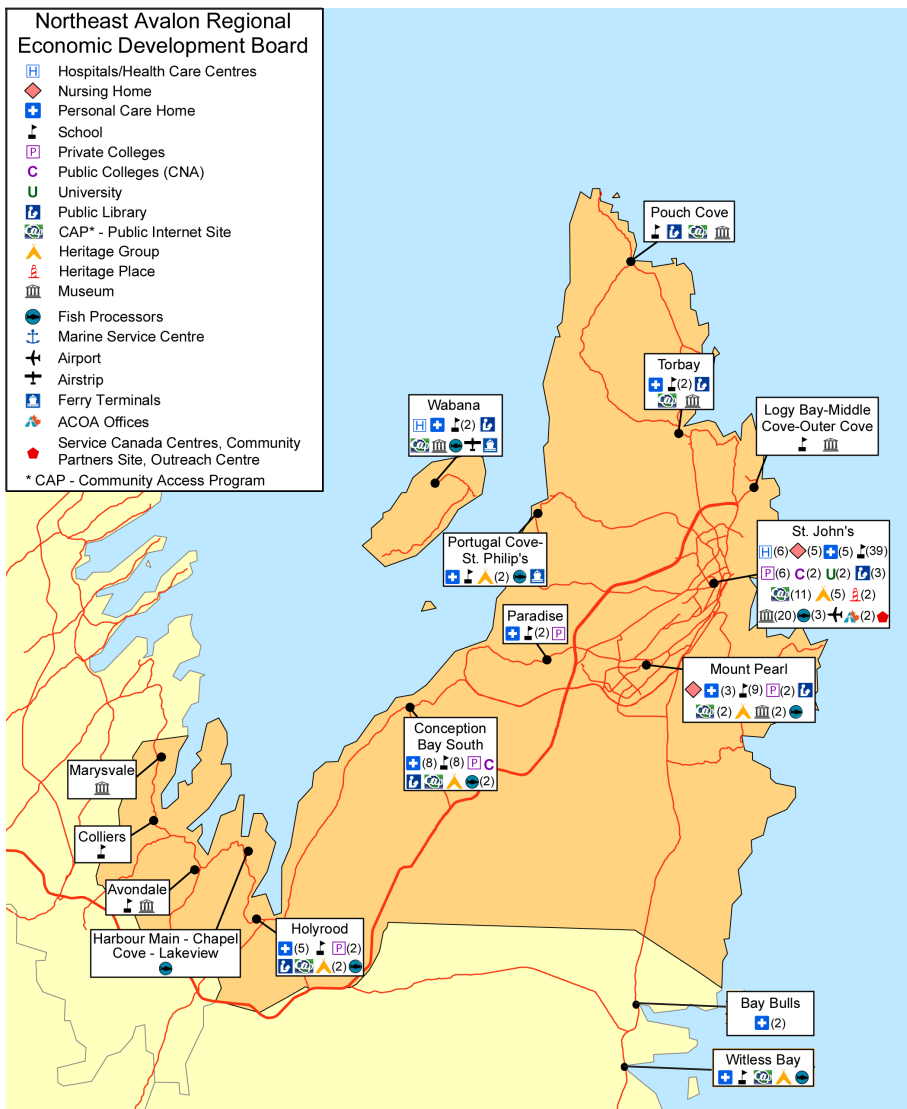


Figure 3.2: Community infrastructure in the Northeast Avalon Region (Community Accounts, 2008). *Note: the map highlights Economic Zone 19 in orange, which includes most of the Northeast Avalon Region, plus a few other communities located at the south of Conception Bay. Witless Bay and Bay Bulls, from Economic Zone 20 have been added.



Suburban Corridor Communities

The corridor of suburban development continuing west and southwest of St. John's and Mount Pearl is a distinctive element of the settlement pattern in the region and includes Paradise and Conception Bay South. Almost two thirds of all population growth in the region occurred there between 2001 and 2006.

Paradise

Since the post-war period the area around Octagon Pond has evolved from a recreational destination to the booming suburban community of Paradise, which grew by 280% since 1981. Paradise has grown primarily as ribbon development along Topsail Road and Paradise Road. Elizabeth Park, one of the first residential subdivisions in the area continues to expand. While the majority of development within the town is residential in nature, industrial development in the St. Anne's Industrial Park and new industrial developments south of Octagon Pond provide the town with stable commercial tax base. Commercial retail development is concentrated along Topsail Road. Considerable land remains to be developed and significant residential development is expected to continue. Paradise is a relatively new community that, unlike others in the region, has evolved as a result of servicing decisions, not resource based industries, such as fishing and agriculture. Today Paradise functions largely as a bedroom community for residents who are employed in the urban core.



Paradise



Conception Bay South

Conception Bay South

Conception Bay South has undergone major changes in settlement patterns in the post-war period. The town is an amalgamated community of the former settlements of Topsail, Chamberlains, Manuel's, Long Pond, Foxtrap, Kelligrews, Upper Gullies and Seal Cove, running east to west along the southern shore of Conception Bay. These communities were established as farming and fishing communities. A railway provided access to the City of St. John's whose residents established summer homes in the Topsail area. Since its amalgamation in 1973, the town has grown to a primarily a residential community although traditional rural uses such as agriculture are still present.

Commercial uses occur sporadically all along the Conception Bay Highway, with two areas of slightly concentrated development. Commercial development has occurred lot-by-lot, and this lack of integration has contributed to issues with parking, traffic flow and pedestrian movement. Plans are in place for development of a big box retail development to be located along the Conception Bay Bypass Road at Legion Road.



Conception Bay South

Growth in both Paradise and Conception Bay South is expected to continue in the coming decades (*See Chapter 4 for a more detailed discussion on the*



growth outlook and population projections). Consideration will need to be given to the increased pressure and opportunities this anticipated growth will create for services, transportation networks and open space.

Suburban Perimeter Communities

A number of smaller communities adjacent to the urban core and suburban corridor—Torbay, Logy Bay-Middle Cove-Outer Cove, and Portugal Cove-St. Phillips—have also experienced rapid housing and population growth in recent years. These communities remain smaller than those in the suburban corridor. Thus, while the rate of growth relative to their population base is significant, the amount of growth in the context of the region is small. Despite recent growth pressures, many of these communities still maintain the form and feel of small communities.

Torbay

Historically, settlement in Torbay occurred across the top of the banks overlooking Tor Bay, and it is one of the earliest known sites of the Newfoundland fishery. It was also an early farming community that supplied produce and meats to the residents of St. John's, facilitated by the construction of Torbay Road in 1820. Today Torbay maintains close ties with St. John's as a dormitory town. Over the last 25 years Torbay grew by 78%. Residential development throughout the Torbay planning area has occurred primarily as ribbon development along the main local road, with several new residential subdivisions.

Logy Bay-Middle Cove-Outer Cove

Logy Bay-Middle Cove-Outer Cove has its roots in agriculture and the fishery. The legacy of agricultural activity is still evident, although many of the original farms have been sold and redeveloped into a continuous pattern of dispersed development on large unserviced lots. There is very little commercial development. The coastline is particularly scenic in the area, attracting demand for large luxury homes with coastal vistas. An unserviced community, the Town has considered the merits of installing a piped water and sewage system as access to piped municipal services exists at its doorstep in the adjoining City of St. John's. The town has, however, decided not to install piped services and to retain its low density rural character by requiring development on large residential lots.

Portugal Cove-St. Philip's

An amalgamation of the two former towns of Portugal Cove and St. Phillips, this area has, over a 25 year period grown by 71%. In addition to new residential development the area has a history of agricultural developments including large-scale hog and poultry producers. While there are no longer any hog producers, the area has a number of active farms, including dairy, vegetable and nursery operations. Most new development is occurring inland from the original core of each community, with a mix of serviced and unserviced residential



Torbay



Logy Bay-Middle Cove-Outer Cove



Portugal Cove-St. Philip's



development. Several ponds have been popular locations for residential estate type development, but there is now a growing interest in development sites along the coastline of the community. This community is struggling with how best to balance a desire to retain its largely rural character while permitting higher density serviced development.

The suburban perimeter communities are experiencing a rapid rate of growth change. Consideration will need to be given to how to preserve community character even while they grow as desirable places to live.

Outer Perimeter Communities

Smaller communities at the northern and southern ends of the Northeast Avalon Region have experienced much slower growth in the last 25 years. The communities of Pouch Cove and Bay Bulls even saw slight population declines, although Bay Bulls has recently reversed that trend. Development that has occurred in these communities has often taken a rural form but maintains strong economic and social ties to the region’s developed urban areas.

Bay Bulls and Witless Bay

Bay Bulls and Witless Bay are the southern most communities in the Northeast Avalon Region. Bay Bulls is one of the oldest settlements in Newfoundland, with evidence of habitation dating to the 1600’s. Residential development has generally occurred on large lots, out from the waterfront, but the traditional settlement centre remains. The harbour in Bay Bulls has been expanded to provide wharf facilities to the fishery, commercial shipping, tour operators, and recreational users, and recently, has seen development in this harbour of industrial facilities that service the offshore oil and gas industry

Witless Bay has a similar character to Bay Bulls, with large lot residential development, but the harbour has not been as heavily developed, and it therefore retains more of a rural look and feel.

Both communities have no piped services and development has occurred along the Southern Shore Highway and local streets in each community. Since the removal of restrictions on development of unserviced subdivisions in the region in the mid 1990’s, these towns have permitted new subdivision development outside their core areas.

Both communities have benefitted from a growing provincial tourism industry. Bay Bulls in particular has become a tourism destination area for day trips from St. John’s as tourists come to the communities to hike along the East Coast Trail, take boat tours to the Witless Bay Seabird Sanctuary, or visit the communities as part of travel to these and other tourism destinations on the Southern Shore of the Avalon Peninsula.



Bay Bulls



Witless Bay



Petty Harbour-Maddox Cove



Petty Harbour-Maddox Cove

The historic fishing community of Petty Harbour-Maddox Cove has retained its original pattern of development that focused on waterfront activity. The Maddox Cove portion of the Town which is primarily a residential subdivision development, developed later. While the community has experienced some growth in recent years, it has not had the same kinds of large lot residential development, or proliferation of serviced development as other communities in the region due mainly to restrictions posed by the topography of extremely steep hillsides around the town. The community places significant emphasis on its historic waterfront and connections to the fishing industry and they have recently announced plans to revitalize the waterfront with facilities catering to the tourism industry.

Holyrood

Holyrood is located at the head of Conception Bay, south of Conception Bay South and approximately 48km from St. John's. Settlement has historically been concentrated along the South Arm of Holyrood Bay. The community is growing, though slowly compared to the rest of the region. As a result, Holyrood has retained much of its rural character. The completion of the Conception Bay Bypass Road, will likely increase development pressure in the community.

Pouch Cove, Flatrock, and Bauline

The community character of small, rural towns originally based upon the fishery has been changing as access to employment in the urban centres have resulted in low density suburban residential development. Pouch Cove and Flatrock have both experienced physical growth from their small harbours to upland areas and along main the roads, particularly Route 20. Bauline is distinct in the region due to its relative geographical isolation and steep topography. The historic area of the community is a cluster of homes and fishing premises at the end of a winding and steep hill. Newer development is occurring in the vicinity of the intersection of the Bauline Line, but the topography of the older part of the community limits additional development.

Wabana

The Bell Island community of Wabana was once a significant mining community with a full range of services and a population that exceeded 12,000 people. Since the closure of the mine in the 1960s the population has declined significantly and the town has struggled to attract development and new residents. A key factor that limits development is the town's reliance on a ferry service. Frequent ferry delays, the result of an aging fleet and inclement weather, pose challenges to attracting new residents to the Town. The island has begun to attract summer residents who enjoy the visually stunning coastal scenery and opportunities for sailing and scuba diving to a number of ship wrecks.



Holyrood



Pouch Cove



Flatrock



Bauline



Butterpot Witless Bay Line Environs

The Butterpot Witless Bay Line Environs is an unincorporated area located to the south of the City of St. John’s on the southern boundary of the Northeast Avalon Region. Development in the area takes the form of cabins and other seasonal structures against a backdrop characteristic of the Southeast Barrens. Primary land use in the area is conservation, recreation, resource use and watershed protection. Highway Route 13 – the Witless Bay Line – provides an important highway connection between the communities of Witless Bay and Bay Bulls to the Trans Canada Highway.

3.1.3 Implications of Current Settlement Patterns

The Northeast Avalon Region encompasses a large area which, for a metropolitan area, exhibits a low population density. However, in the context of Newfoundland and Labrador and the region’s own history of growth, the recent rate of population growth has been significant. The pattern of population distribution is similar to other North American metropolitan areas in that growth pressures are strongest at the perimeter of the urban commuting area.

Recent growth on the edges of the urban core and in the suburban corridor communities of Paradise and Conception Bay South has evolved in a manner similar to that across North America - a separation of land uses that facilitates larger lots and single detached homes, yet necessitates travel (mostly in single occupant vehicles) between home, education and work locations. This pattern of development contributes to greenhouse gas emissions and tends to increase costs for servicing and maintenance of existing infrastructure that are not covered by the residential property tax base. For most suburban and rural communities in the region, a lack of commercial and industrial tax base limits the ability to provide the additional services for such things as recreational facilities or water and sewage treatment plants.

As growth continues in the rural and suburban communities on the periphery of the urban core, greater demands are placed on the regional road network to accommodate an increasing amount of commuter traffic. In the downtown area of St. John’s in particular, commuting from both within and outside the city creates traffic and parking congestion.



Wabana



Butter Pot Witless Bay Line Environs



3.2 Natural Resource Use

Natural resources are important components of regional land use and the economy. Following is a discussion about forestry, agriculture, fisheries and aquaculture, and mineral extraction. A discussion about oil and gas can be found in Chapter 4.

3.2.1 Forest Resources

Forest resources in the province are managed by the Provincial Department of Natural Resources. The Northeast Avalon Region is part of District Forest Management Area 1. Within the region, the forest resource is utilized for domestic cutting (small scale harvesting for personal use) and commercial uses that support several small sawmill operations. The Department is currently in the third year of its 5 Year planning cycle and starting in January 2010 will develop a new plan that will be implemented in 2012.

Table 3.2 shows the average demand for forest resources in Northeast Avalon Region from 2001 to 2005. Of the total of 2,976 cubic metres harvested, approximately 70% was used for domestic purposes. This is well below the average annual allowable cut of 4,163 cubic metres. Areas that produce enough timber (at least 35 cubic metres per hectare, that have not been harvested, disturbed, or silviculture treated) to be viable for cutting (productive forest), cutover or disturbed areas, and areas where replanting and/or forest management is taking place (silviculture areas) are shown on Figure 3.3.

Sub management Unit	Demand (m3)	Total Harvest (net m3)*	Total Harvest (gross m3)**	Annual allowable cut (m3)	Surplus/ deficit (m3)
Northeastern Avalon	2,208 (Domestic) 948 (Commercial)	2,976	3,899	4,163	264

Table 3.2: The average demand for forest resources in the Northeast Avalon Region for 2001 to 2005 (Data source: Government of Newfoundland and Labrador, 2006e)

*Note: Net cubic volume of wood before adjustment for poor utilization and underreporting.

**Note: Gross cubic volume wood adjusted for utilization and underreporting.

An area of approximately 400 ha known as the MUN (Memorial University of Newfoundland) woodlot located adjacent to Paddy’s Pond has been utilized for teaching and research purposes. Memorial University relinquished the lease it held on this area in early 2009 and several provincial resource departments have expressed interest in having the land designated for agricultural or aggregate resource uses.

Wildfires, human-animal conflicts, complaints on illegal activity, and requests for allocation of Crown land represent some of the challenges facing the forestry sector in the Northeast Avalon Region. Loss of productive forest land to competing land uses (such as cottages, agriculture, residential, roadways, quarrying and other commercial use) on both crown and private land is probably the greatest threat to the forestry industry. The rate of forest land

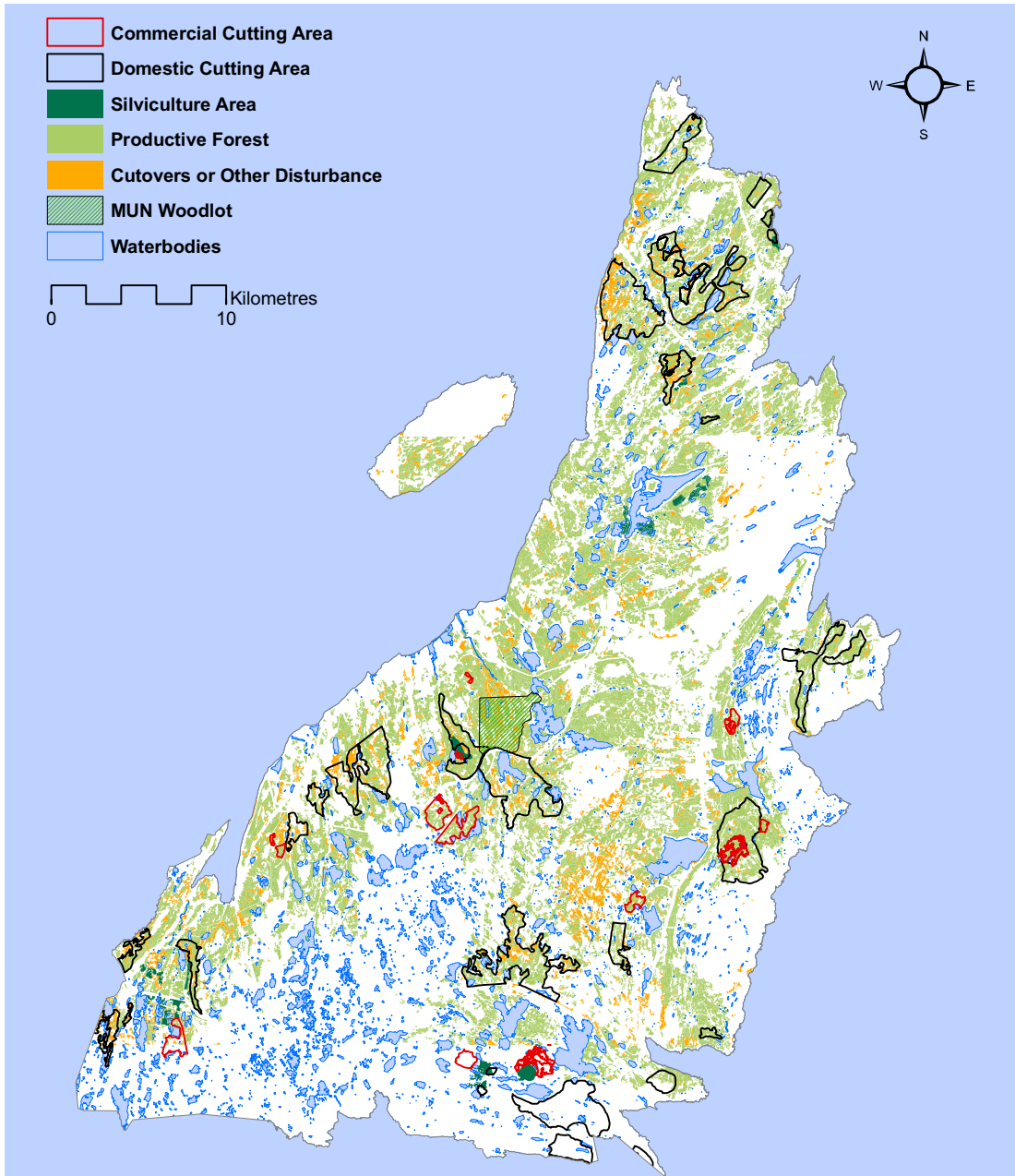


Figure 3.3: Forest Resource Use (Data Source: Department of Natural Resources – Forest Resources Division)

alienation is expected to continue to increase in the future considering such things as the continued demographic shift in the island's population towards the Northeast Avalon and attempts to satisfy expanding cabin development demands (Government of Newfoundland and Labrador, 2006b).

Land use planning, including the designation of reserves for forestry and ecological purposes can bring greater certainty for the long term management of the forestry resource. An evaluation of the adequacy of ecological and forest reserves network in the Northeast Avalon Region to sustain the forest industry may also be required. The network of reserves must be



large enough to sustain ecological functions, and must be representative of the entire region and should include wetlands, the different forest types, barrens and unique areas. Although it is impossible to manage habitat on a species by species basis, studies can be conducted to identify potential species whose habitat protection leads to the protection of a significant number of other species, that is, keystone species. The habitats of such identified keystone species may then be managed to keep the majority of the ecosystem functions intact.

3.2.2 Agriculture

Historically agricultural production in the Northeast Avalon began as subsistence gardening with earliest settlement of the region. As the communities grew, farms began to develop around the outskirts of St. John's in areas such as what is now Mount Pearl, Conception Bay South, Goulds and Kilbride, Logy Bay, Portugal Cove and Torbay. These agricultural hubs supplied meats and dairy products to residents of the City of St. John's. The agricultural industry was protected by a system of quotas and tariff barriers maintained by the then Dominion and former colony of Newfoundland. Increased urbanization, coupled with the removal of trade protections following Confederation, resulted in the gradual decline in the agricultural industry

As urban development spread out from the City of St. John's to Mount Pearl and areas like Goulds, Kilbride, Paradise and Conception Bay South some of the best agricultural land was lost to production. This trend continued from the 1950s through to the 1970s. Figure 3.4 illustrates the conversion of agricultural land to residential use in Kilbride. Concerned over the growing loss of farms and farmland, the Provincial Government established the St. John's Urban Region (Agriculture) Development Area (ADA) in 1973.



Figure 3.4: Conversion of Agricultural Land to Residential Use in Kilbride 1970-2009 (1970 and 1981 images from Kienholz, 1984; 2009 aerial photography)



The purpose for establishing the ADA was to:

- protect the agricultural land base by controlling developments which would destroy the arable land base or result in land use conflicts with agricultural activity;
- minimize land speculation, thereby allowing farmers to plan for the long term operation of their farms;
- control land fragmentation to ensure that properties remain large enough that they can be efficiently used for agricultural purposes; and,
- provide an environment that will stabilize the farm community, encourage farm expansion and promote the growth of the industry.

At the time, some 24,500 hectares of land located in what are now the municipalities of St. John's, Mount Pearl, Conception Bay South, Paradise, Portugal Cove-St. Philip's, Logy Bay-Middle Cove-Outer Cove, Torbay, Flatrock, and Pouch Cove were included in the Agricultural Development Area. As a provincial policy, the St. John's Agriculture Development Area was recognized in the 1976 Regional Plan and subsequently all municipal plans throughout the region where the ADA is present.

At the time it was established, the St. John's ADA included most of the agricultural land in use in the region, as well as additional area that was thought to have potential for agricultural production or which would prevent urban encroachment and land use conflicts associated with farm operations.

Over the years, the boundaries of the St. John's ADA have been reviewed, and areas released from it. From 1973 to 1991, some 19 deletions reduced the ADA to 17,000 hectares. The first complete review of the boundaries of the St. John's Agriculture Development Area (the Simmons Commission) in 1993 saw the area reduced to approximately 12,000 hectares (See Figure 3.5) In addition, since its inception, between 450 and 500 applications for development have been approved by the Land Development Advisory Authority inside the ADA, the majority of which were for non-agricultural uses.

Mounting land values and demand for land for urban development prompted a second review of the Agricultural Development Area that was finalized in June 2008. Although recommendations from this review have not yet been approved, an additional 570 hectares of land are proposed to be removed from the ADA in communities north of the City of St. John's. The recommendations include 495 hectares to be removed from the ADA in Portugal Cove-St. Phillips along Old Broad Cove Road, 80 hectares in Torbay, and 45 hectares in Logy Bay-Middle Cove-Outer Cove.

The Agrifoods Branch of the Department of Natural Resources is working to identify new areas that could be brought into agricultural production within the region. Two areas have been identified. The Memorial University (MUN) Woodlot which has recently reverted back to the crown, and an area of Crown Land in Bay Bulls next to an existing dairy operation.

In 1985, the provincial government introduced a program to purchase privately held lands from non-farmers or retiring farmers in the ADA and to make this land available to existing commercial farmers, part-time farmers and new entrants into the industry. This program has continued and in the past few years, has received additional funds to purchase properties

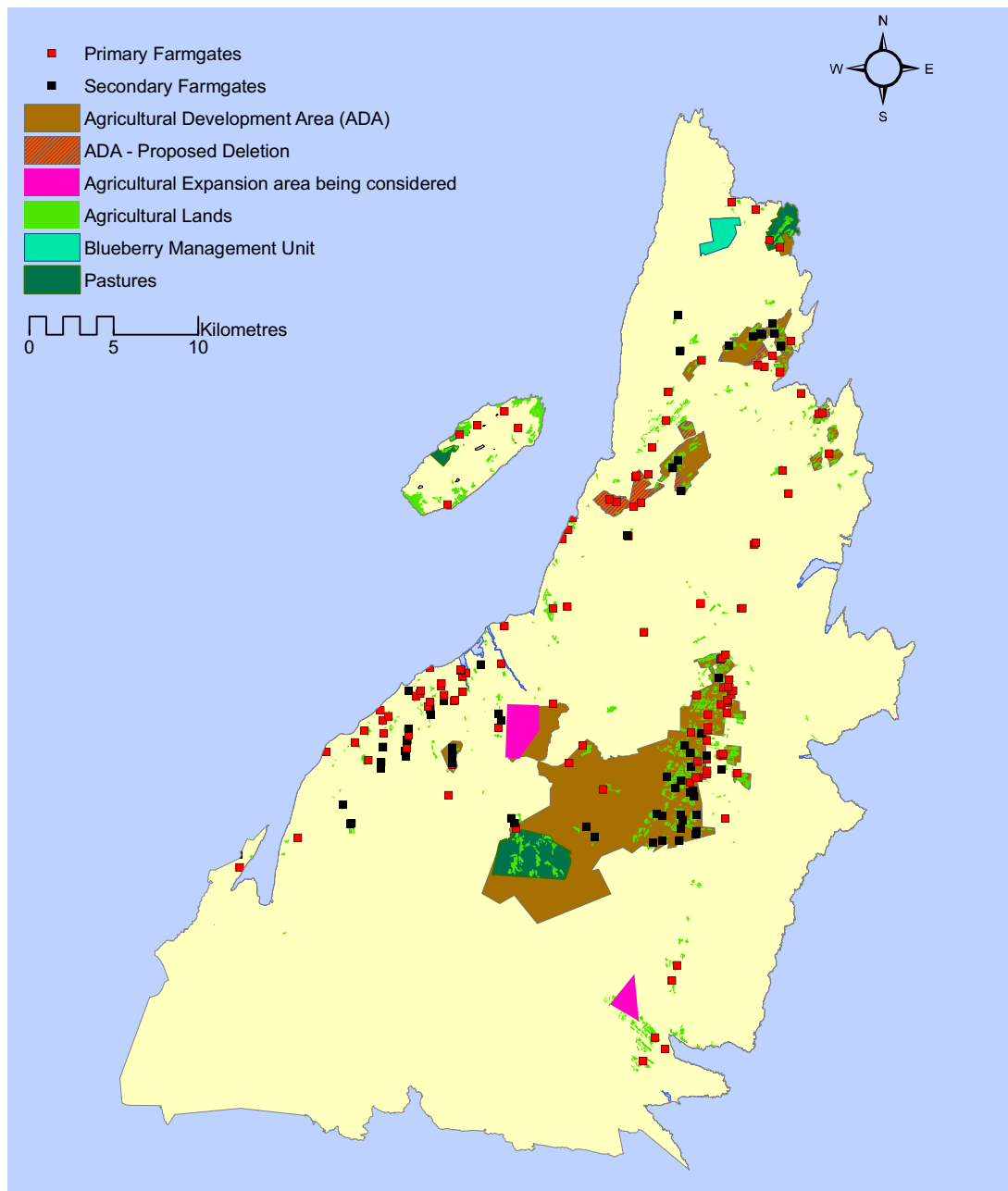


Figure 3.5: Agriculture (Data Source: Government of Newfoundland and Labrador, Dept of Natural Resources, Agrifoods Branch, 2008)

outside the ADA. Since 1986, 768 hectares of land have been purchased through the Land Consolidation Program in the Northeast Avalon region and leased back to agricultural producers.

The establishment of the Agriculture Development Area has brought stability to the agriculture industry in the region. While the number of farms in the region declined from the mid 1990s until present, the total on-farm land ownership has remained the same, and even increased somewhat. The drop in the number of farms reflects a general trend seen for the rest



of Canada where smaller farms are closing, and production quotas and the land base are being taken over by more successful, expanding farms (Figure 3.6).

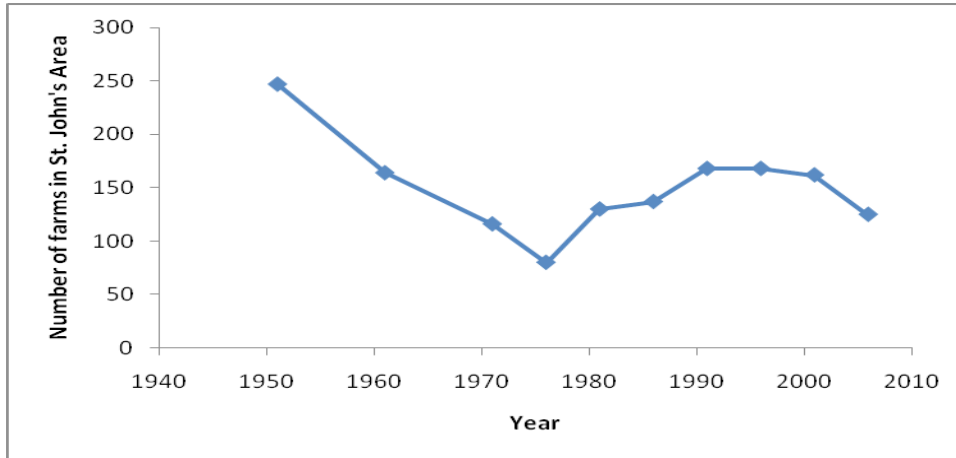


Figure 3.6: Trend in the number of farms in the region from 1951 to 2006 (Government of Newfoundland and Labrador, 2008g)

Since 1993, the agriculture industry has witnessed tremendous growth especially in the production of industrial milk and other dairy products, food processing facilities, silage production, vegetable and greenhouse production, sod farming, landscape initiatives, and various livestock operations. The density of primary farmgates (main farm operations) and secondary farmgates (ancillary operations) as shown on Figure 3.5 provides an indication of the intensity of farm activity in the region.

Table 3.3 illustrates the increasing value of the agriculture industry in the Northeast Avalon Region from 1991 to 2006. A growing market demand, use of improved technology, and stability provided by protection of the land base has enabled the industry to grow and survive. Today, the region accounts for 30.5% of the value of all farmland, buildings equipment and livestock in the Province and 42% of the value of agricultural products sold (Government of Newfoundland and Labrador, 2008e, g).

	1991	1996	2001	2006
Farm Capital	73,054,558	64,049,438	77,185,618	78,850,725
Farm Cash Receipts	19,134,637	21,094,669	39,847,695	44,957,431
Weeks of Paid Labour	7,623	8,193	7,809	13,452

Table 3.3: Value of Agricultural Industry in the St. John's Area (Government of Newfoundland and Labrador, 2008e, g)

Today, the 15 dairy farms in the region supply sufficient fluid milk to feed 170,000 people, and have an additional industrial quota that has enabled the processing of other dairy products and the expansion of processing facilities. Development of lands in the Goulds Forage Area has also reduced reliance of dairy operations on imported cattle feed.



In terms of poultry, since 1990, 65% of broiler production in the province has relocated to the a site in the ADA near Paddy's Pond where as many as 1million birds in 11 barns are raised and processed locally at the Country Ribbon Plant in St. John's. Egg production has declined significantly as a result of restructuring in the industry and there is currently only one small egg producer operating in the region. Demand for local products supports three turkey farms established in the region.

Pork production in the province is now limited to two farms in Central and Western Newfoundland. A provincial swine breeding station in Portugal Cove was closed in the early 1990's. There are three small beef farms in the region.

Within the ADA, there are five vegetable farms, but throughout the region, particularly in areas of Conception Bay South, Portugal Cove, and Torbay small vegetable farms supply the local market. In the region, there are a growing number of roadside markets and regular farmer's markets in St. John's and Conception Bay South. Several farms produce organic produce to supply a growing local consumer demand. Demand for landscaping materials supports five greenhouse operations and there are five sod farms that produce sod for the local residential market. Agriculture Canada conducts applied agricultural research at its Atlantic Cool Climate Crop Research Station on Brookfield Road that has resulted in significant advances in crop varieties and management technologies to assist the local industry. Table 3.4 summarizes the status of the agriculture industry in various subregions within the ADA.

To enable the industry to continue to grow, additional land is needed. Dairy operations are currently seeking more land for forage production as additional quotas are acquired. However, encroaching urban development, soil suitability, environmental constraints and competing land uses have made expansion difficult.



Agriculture



Agricultural land in the region



ADA Subregion	Profile
Goulds-Kilbride	<ul style="list-style-type: none"> ➤ Agriculture Canada Research Station ➤ 12 dairy farms; 1500 cattle ➤ 400 heifers ➤ 4 greenhouses ➤ farm markets ➤ most of ADA's vegetable production ➤ significant Land Consolidation investment ➤ substantial amount of private land holdings ➤ large percentage of land base has been farmed for generations and is representative of the best soils in the ADA ➤ adjacent to urban areas ➤ 16 properties (384 acres) recently advertised as a farmland development project
Burnt Hills/ Cochrane Pond	<ul style="list-style-type: none"> ➤ When combined with the Goulds-Kilbride area represents 75% of the ADA ➤ Goulds Forage Area ➤ Cochrane Pond Farmland Development Area ➤ Country Ribbon Inc. ➤ Foxtrap Pasture ➤ self sufficiency in forage ➤ approximately 1200 acres cleared since the early 1980s ➤ limitations on expansions due to sensitive wetlands, future water supplies, permitting requirements, soil suitability
Logy Bay-Middle Cove-Outer Cove	<ul style="list-style-type: none"> ➤ significant reduction of the ADA in 1993 ➤ two dairy farms ➤ two horse stables ➤ small scale farming ➤ demand for housing due to proximity to residential and commercial developments. ➤ public value of agricultural/rural/marine setting due to tourist attractions such as Marine Drive
Torbay-Flatrock- Pouch Cove	<ul style="list-style-type: none"> ➤ Pouch Cove Pasture Lands ➤ One large dairy farm, forage and dairy replacement producer, vegetable and sod production ➤ Town's interest for residential lots
Portugal Cove-St. Phillips Windsor Heights	<ul style="list-style-type: none"> ➤ Old Broad Cove Road Area ➤ 2 greenhouses ➤ sod farm ➤ turkey farm ➤ layer farm and swine farms ceased operations ➤ dairy farm closed ➤ strong interest in horticultural uses of land in the area ➤ 240 acres in forage production ➤ Land Consolidation Lots
Foxtrap Access Road MUN Woodlot	<ul style="list-style-type: none"> ➤ Foxtrap Access Road ➤ vegetable farming ➤ MUN woodlot, suitable land

Table 3.4: Profile of Subregions in the ADA



3.2.3 Fisheries and Aquaculture

Most coastal communities on the Avalon Peninsula including those in the Northeast Avalon Region rely on the fishing industry as a major source of economic sustenance. The value of the fishery on the Avalon Peninsula in 2000 was approximately \$240 million dollars (Hamilton and Butler, 2001). Species groups harvested include groundfish, small pelagics, large pelagics, estuarial, sharks and skates, other finfish and invertebrates. Although the inshore cod fishery has declined significantly since the moratorium in 1992, fish are still landed at ports and wharves in St. John's, Petty Harbour, Bay Bulls, Witless Bay, Pouch Cove, Bauline, Flatrock, Torbay, Portugal Cove, Holyrood and at Long Pond and Foxtrap in Conception Bay South. Many of the fish plants that processed fish in the Northeast Avalon have closed or currently operate on a periodic basis. Today, small fish plants are located in Witless Bay and Foxtrap.

Within the Northeast Avalon Region, there are no shellfish aquaculture sites and only one marine cod site in Bay Bulls Harbour. Despite the exposed coastline of much of the Northeast Avalon, the Department of Fisheries and Aquaculture expects that further aquaculture sites could be developed in the future. However, the presence of stormwater and sewage outfalls into the ocean have the potential to affect future aquaculture development on a localized basis. There are no current applications or plans to establish new aquaculture sites in the region.

3.2.4 Minerals

Aggregate extraction is the primary mining activity occurring in the Northeast Avalon. While there is no active mining taking place, iron ore mines on Bell Island were operational during WWII and an open pit Pyrophyllite mine in Manuels (see Figure 3.7) has been closed and the site now used only for stockpiling. The "impost land" i.e. (mineral rights granted by the government prior to 6 June 1978) nearby was originally granted for a manganese mine and is currently non-operational and the claim has most recently been used for aggregate extraction.

Other minerals that have been identified in commercial volumes in some municipalities of the Northeast Avalon include lead, zinc and gold in Pouch Cove; copper in Logy Bay-Middle Cove-Outer Cove; gold and silver in Paradise; copper, gold, and silver in Conception Bay South; copper and gold in Butter Pot-Witless Bay Line environs as well as in Holyrood. These finds and other mineral prospecting activities in the region could significantly influence land use (Government of Newfoundland and Labrador, 2009g).

Current mineral exploration (noted as staked claims on Figure 3.7) is mostly taking place along the western side of the northeast Avalon Peninsula and in a south-trending belt extending from Manuels towards Mobile Big Pond and mirrors historical exploration in this region. The south-trending area of mineral exploration overlies a zone of rocks termed the Avalon High Alumina Belt which includes the Manuels pyrophyllite mine. This belt is also highly prospective for gold mineralization. Outside this zone, most exploration is for copper and gold.

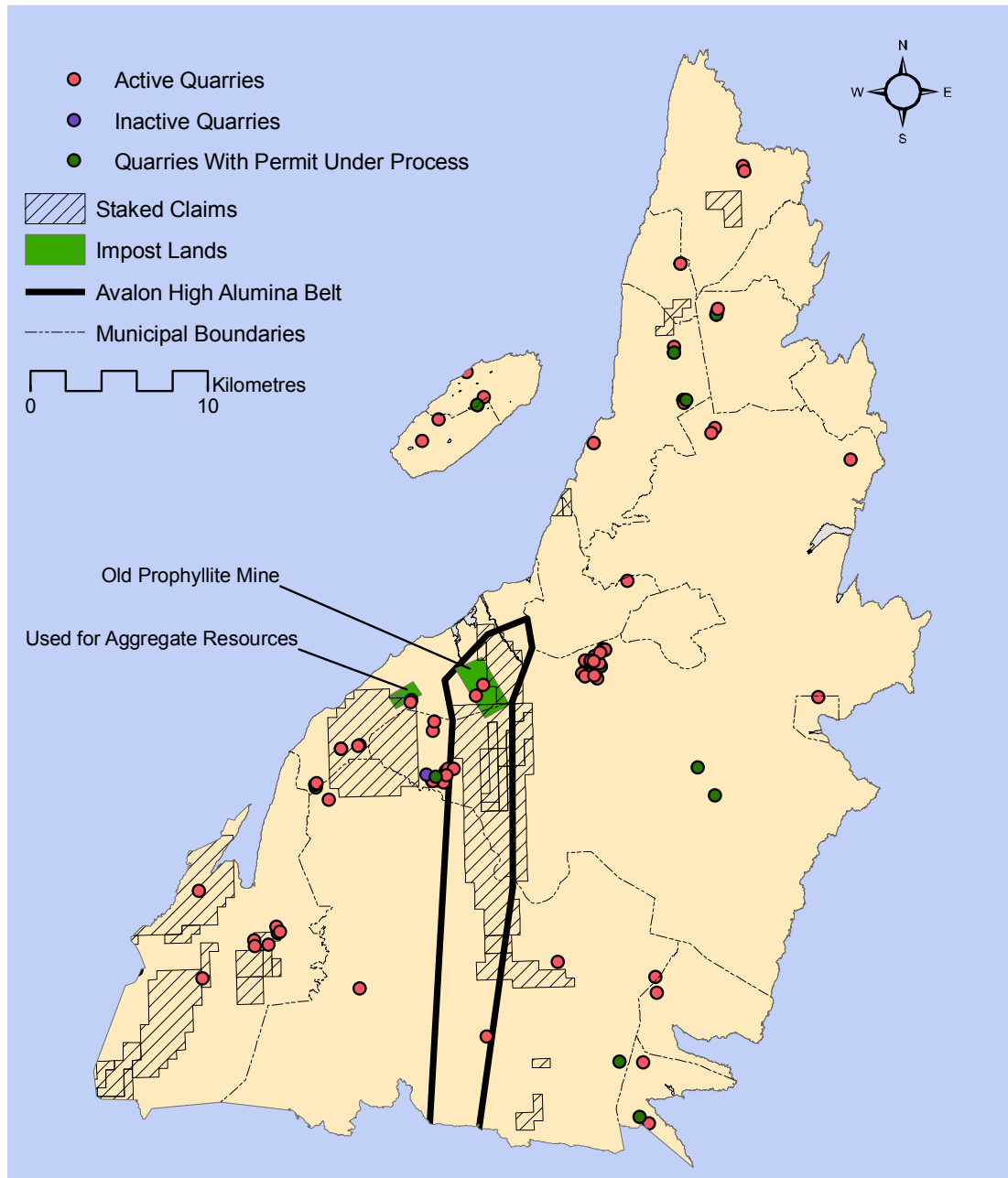


Figure 3.7: Mineral Resources (Data Source: Department of Natural Resources - Geoscience Resource Atlas; Department of Municipal Affairs)

Current and historical quarry activity in the region is widespread, occurring throughout the region but mostly adjacent to the extensive road system. Quarry activity is for rock, sand and gravel. Concentrations of quarrying activity occur:

- South-southeast of Holyrood in the area of Round Marsh Gullies and Black Ridge Gullies;
- In the area of Incinerator Road and Penny's Hill off of the Foxtrap Access Road;
- At the Harbour Arterial Quarry Site near the intersection of the Trans-Canada Highway and the Conception Bay South By-pass.



The location of concentrated and major quarry activities noted above are in areas of significant aggregate resources, however, they are not geologically unique and there is considerable potential for locating other similar areas in the Northeast Avalon Peninsula, including within the city itself.

The Northeast Avalon Peninsula is, and will remain for the foreseeable future, the largest customer base and consumer of quarried products in the whole province. Concrete, asphalt, aggregate and fill are major requirements of economic growth, whether the expansion be industrial, residential or associated infrastructure.

3.3 Rural Land Use - Incinerator Road

Within the region, rural lands have been used to site a number of uses that are typically not permitted in developed urban areas. One such area, located north of the Trans Canada Highway, west of the Foxtrap Access Road, has evolved over time to include a number of uses including active and inactive quarries, Department of Transportation and Works salt depot, a rendering plant, hazardous waste management facilities, a firefighters training centre and scrap yard. This area, known as Incinerator Road, also includes the site of a former landfill and incinerator site operated by the Town of Conception Bay South.

The area is part of the Nut Brook watershed which drains into the Kelligrews River. Significant concern has been expressed over the impact of uses in the Incinerator Road area on water quality in the watershed. Studies carried out by the Northeast Avalon Atlantic Coastal Action Program show a deteriorated quality of water in the streams and wetlands in this area. A committee has been formed consisting of representatives of companies operating in the area, agency and municipal officials and representatives of community groups and organizations, to identify and address impacts of development on the river system. Future land use in this area will need to be considered in light of cumulative effects on water quality. In addition, clean up and remediation of the former landfill and incinerator site will need to be addressed as a priority actions for this area.

3.4 Parks, Trails and Open Space

Residents of the Northeast Avalon have easy access to parks, open space and the scenic coastline. Lands along river systems such as the Manuels, Rennies and Virginia Rivers are accessible by public walking trails. High points of land remain tree covered and large areas that are within protected water supply areas are preserved in their natural state and give a sense of rurality to an urbanizing region. This feature of the landscape makes the Northeast Avalon unique among many similar regions of the country and as a result, contributes to the desirability of the region as a place to live. Figure 3.8 shows the location of parks and trails discussed in the following sections.

3.4.1 Federal Parks

The two National Historic sites in the Northeast Avalon, Cape Spear and Signal Hill National Historic Sites, are primary destination areas for tourists visiting the province and St. John's. Both sites, in addition to historic structures, also have developed walking trails which are linked to the East Coast Trail. Trails within the Signal Hill National Historic Site are also integrated into the Grand Concourse trail network. In recent years, development pressure in the Battery area of downtown St. John's has caused concern about the impact of encroaching urban development on the integrity of the Signal Hill National Historic Site.

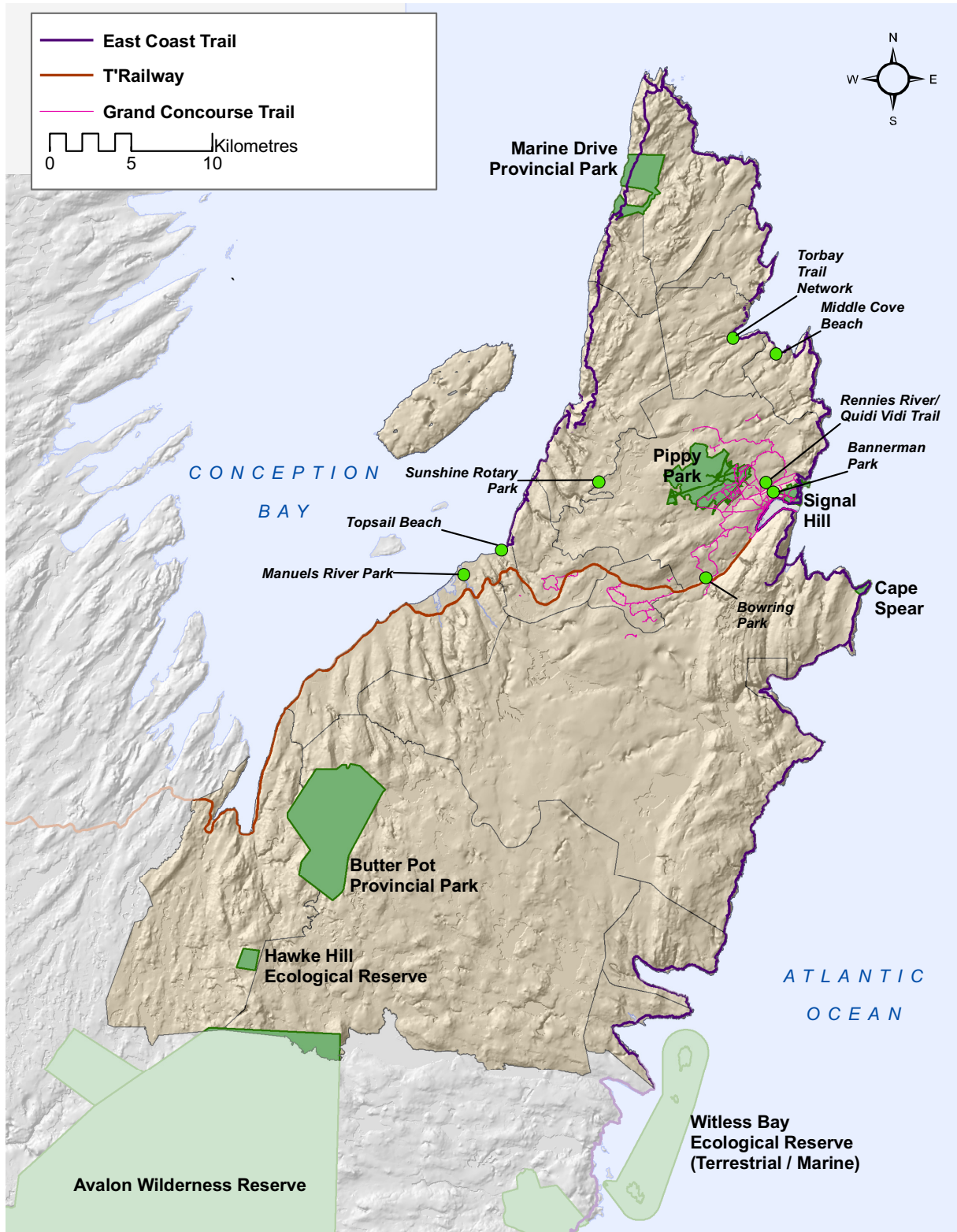


Figure 3.8: Parks, Trails and Protected Areas (Data Source: Department of Municipal Affairs; City of St John's; Department of Environment and Conservation – Parks and Natural Areas Divisions; Grand Concourse Authority)



3.4.2 Provincial Parks and Protected Areas

Provincially protected areas in the Northeast Avalon Region fall under three categories: wilderness reserves, ecological reserves and parks. While these areas are protected under the same provincial legislation, they have different purposes. Parks are intended for education, recreation and enjoyment of the natural environment, and have the associated infrastructure required to meet these purposes. The wilderness and ecological reserves play a key role in environmental conservation, and have very few services, structures or roads.

Protected areas in the Northeast Avalon include Marine Drive Provincial Park Reserve, Witless Bay Ecological Reserve, Butter Pot Provincial Park, Avalon Wilderness Reserve, and Hawke Hills Ecological Reserve.

Marine Drive Provincial Park Reserve located in the municipality of Pouch Cove, has a total area of 6.17 square kilometres, and is representative of the northeastern barrens subregion. A portion of the park centred around Herring Cove Pond was removed from the park and transferred to private management. Facilities here include camping, a water slide, boat rentals and a beach.

Witless Bay Ecological Reserve with an area of 31 square kilometers is located off Witless Bay in the southeastern corner of the Northeast Avalon Region. It is comprised of four small islands - Green, Pee Pee, Great and Gull – that are home to over 2 million breeding marine birds and has the second largest population of seabirds in eastern North America. As such, this rich marine area is a popular tourism destination and several boat tours and associated tourism infrastructure in Bay Bulls and Witless Bay cater to thousands of tourists who visit this area to see the marine life within this reserve.

Butter Pot Provincial Park is a recreational park located off the Trans Canada Highway, that has a total area of 28.33 square kilometers of varied terrain and vegetation: forests, bogs, heaths and ponds. It provides opportunities for camping, hiking, fishing, bird watching, picnicking, swimming, non-motorized boating and cross-country skiing and is a popular destination for residents of the urban region.

Hawke Hills Ecological Reserve in Holyrood, has a total area of 2.1 square kilometers, and contains the best representation of Alpine Barrens east of the Long Range Mountains. There is no promotion of recreational activity in this reserve.

The **Avalon Wilderness Reserve** is almost entirely outside of the Northeast Avalon, except for a small portion (479 ha) at the very southern extremity of the region. The reserve is one of only two such designations in the province. The reserve has a total area of 1,070 square kilometres and is one of the most accessible, unspoiled barren lands and forests in North America. It is home to the world’s most southerly herd of caribou (Government of Newfoundland and Labrador, 2009i).



Witless Bay Ecological Reserve



Witless Bay Ecological Reserve



Butter Pot Provincial Park



3.4.3 Municipal Parks and Open Spaces

Within the region there are also a number of municipal parks that have traditionally been used by residents throughout the Region. Many other parks and small open spaces serve primarily local needs.

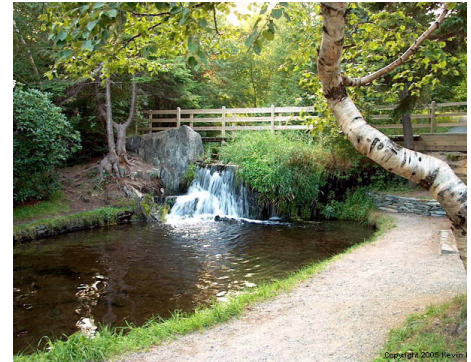
C.A. Pippy Park is an area of 1191 ha, officially established by the province in 1968 primarily as an institutional land bank. It has fulfilled this function and today, Memorial University, the Marine Institute, Health Sciences Centre, Confederation Building and a number of other government offices have been built here. More recently, a francophone school and the City's new Animal Services Building have been built within the park. In addition to the institutional uses, the Park also provides recreational amenities that are used by residents throughout the region. A golf course, an extensive network of walking and cross-country ski trails, and a campground attract residents and tourists. The Rennies River Development Foundation, a group dedicated to preserving the Rennies River, has developed an educational facility in the park at Long Pond to interpret the natural history of the Rennies River system.

Bowring Park and Bannerman Park, in St. John's, are historic parks that attract residents from throughout the region. Bowring Park was created in the 1920's and has a duck pond, gardens, a playground, fields, walking paths, and an amphitheatre. Bannerman Park has a pool, ball fields, gardens, a playground and walking paths. Both of these parks are also used for a variety of cultural events.

Sunshine Rotary Park is a recreation park located on the outskirts of the City of St. John's at its boundary with the Town of Portugal Cove-St. Phillips. A popular day use park, Rotary Sunshine Park is used by residents of the region for swimming and boating.

Topsail Beach Park in Conception Bay South has traditionally been used by residents of the region as a day use park. Significant upgrades have been made in recent years and today the park includes an amphitheatre, playground, picnic areas, fire pits and beach access. Its scenic location provides views of Conception Bay and the Topsail Bluffs. Plans are underway to develop a connection with the park to the East Coast Trail

Middle Cove Beach, located along Route 30 on Marine Drive in Logy Bay Middle Cove-Outer Cove, is a popular day use park and one of the most popular beaches in the Region. The Town of Logy Bay-Middle Cove-Outer Cove has recently upgraded facilities at the beach to improve parking.



Bowring Park



Topsail Beach Park



Rennies River



Rotary Park



3.4.4 Trails

East Coast Trail

The East Coast Trail is a significant part of the open space and trail system of the Avalon Peninsula and the Northeast Avalon. Under continual development since it was initiated in 1994, the 540 km hiking trail system involves upgrading and joining eighteen coastal walking trails that have linked community to community for generations prior to development of roads and railways. It passes from Conception Bay South at Topsail Beach around the Northeast Avalon Peninsula to Witless Bay, and continues south to Trepassey and west to Placentia. To date, 220 kilometres (from Cappahayden to St. John’s) have been hardened to an international standard. The trail segment from Topsail Beach to St. John’s is under development and scheduled to be completed within the next couple of years.

Managed by the East Coast Trail Association, the trail has been developed into an internationally recognized trail that provides access to spectacular coastal scenery. In developing the trail, the East Coast Trail Association has negotiated with private landowners for access over private lands, and obtained a Permit to Occupy from the Provincial Government where the trail crosses Crown Land. It has also lobbied the provincial and municipal governments to support its efforts to maintain the trail by protecting it from encroaching urban development. As growth in the region has increased in recent years, the trail is threatened to become fragmented in some areas by the development of private property that restricts trail access. In recognition of the significance of the trail to the provincial tourism industry, the Provincial Government is considering development of a Provincial Land Use Policy concerning the East Coast Trail that would protect the continuity and integrity of the Trail and ensure its long term sustainability.



East Coast Trail



T’Railway Park

T’Railway Park

The Newfoundland T’Railway Park is a multi-use recreational trail running from St. John’s to Port aux Basques, linking urban, rural and wilderness environments. Designated a provincial park in 1997, it follows 883 km of railway line abandoned since 1988. Fifty km of trail are located within the Northeast Avalon Peninsula. It begins in downtown St. John’s, passes through Mount Pearl, Paradise, and along the shoreline of Conception Bay South and Holyrood before continuing across the province. In some areas the trail is not multi-use; for example, in Mount Pearl no motorized recreational vehicles are permitted. In areas that are multi-use and shared by motorized recreational vehicles, cyclists and pedestrians, conflicts have arisen over trail safety, development and maintenance. This is particularly an issue in Conception Bay South where the trail is accessible from local streets and passes through residential neighbourhoods. In a study prepared for the Town of Conception Bay South by Tract Consultants in 2007, a recommendation was made to provide an alternative trail network for motorized recreational vehicles to the south of the town and develop the existing trail bed for pedestrians and cyclists only.



Grand Concourse

The Grand Concourse is a walkway system that extends through St. John’s, Mount Pearl and Paradise. It provides an integrated system of trails that are operated and maintained by a range of entities, including the Grand Concourse Authority, municipalities, Parks Canada and Memorial University. It consists of approximately 125 km of walkways, linkages and connecting sidewalk routes in the Northeast Avalon. The Grand Concourse provides connectivity between the East Coast Trail, the T’Railway in downtown St. John’s, and portions of the T’Railway and other walkways in Mount Pearl and Paradise.

The Grand Concourse Authority has been partnering with municipalities, business and other organizations to extend trailways, create linkages with open spaces, recreational facilities and cultural and heritage sites within Mount Pearl, St. John’s and Paradise. The Grand Concourse Authority also carries out a range of environmental initiatives and actively promotes use of the regional pathways to encourage active living.

3.4.5 Other Municipal Trail Systems

Other municipalities in the region have developed local trail systems that are or could be connected to the larger trail systems in the region such as the East Coast Trail, T’Railway Park and the Grand Concourse.

The Rennies River/ Quidi Vidi Trails were originally developed by the Quidi Vidi Rennies River Development Foundation and have since been integrated into the Grand Concourse trail system. The trails follow the length of the Rennies River from Long Pond through St. John’s and around Quidi Vidi Lake to Quidi Vidi Village.

In Conception Bay South, the Manuels River Trail has been developed by the Manuels River Natural Heritage Society. The 5 km trail follows the river valley, with access from the Manuels River Bridge on Route 60, as well as the T’Railway Park. A new visitors centre is being developed to enhance the educational component of the trail system. Efforts are underway to develop another trail network within the town along the Kelligrews River. The Torbay Trails and Environment Committee maintains trails in the Town of Torbay, and has enhanced the section of the East Coast Trail which passes through the town. There is a network of trails in Torbay which extend north to the Flatrock town boundary, south to the St. John’s city limit near the airport, and west into Portugal Cove St. Phillips. The Town of Torbay recently adopted a new recreation master plan that will guide the Town into the future in relation to recreation facilities, open space areas and walking trails.

The extensive network of existing, planned and proposed trails improve the amenity and quality of life for residents of the region. There is growing public interest in integrating walking trails into urban developments as an open space amenity and to improve the desirability of the development. There is the opportunity to expand current trails into a regional open space and recreation network that would link parks, trails, recreational areas, cultural and heritage facilities with neighbourhoods, centres of commerce, employment and education that would add to the character of the region.



Manuels River Trail



Southlands



3.5 Recreational Facilities

3.5.1 Existing Recreation Facilities

Residents in municipalities throughout the region have access to a variety of recreational facilities. Community centres, sport playing fields and playgrounds are available in most of the region’s communities while pools, rinks and other indoor facilities tend to be more centralized in the urban core.

The Newfoundland Statistics Agency has recently conducted a survey of recreational facilities throughout the province. Figure 3.9 shows the number of recreational facilities available in each municipality in the Northeast Avalon and Table 3.5 summarizes the number of these facilities region-wide. The region is served by 13 ice arenas, 14 swimming pools (indoor and outdoor) and 27 community recreation centres. At the local level church and community halls, private gyms, dance studios, seniors’ centres and other small-scale facilities contribute to everyday activity and wellness.

3.5.2 Future Recreation Facilities

Many towns throughout the region have recently conducted studies to review their open space and recreation facilities and services. These reviews have been conducted in response to:

- A need for renewal of aging facilities to meet changing community needs;
- Growth in communities that have limited recreational facilities;
- A desire to integrate open space and recreational facilities to encourage active lifestyles

These municipal recreation plans reflect a general trend towards construction of new facilities that are multi-purpose and focused on promoting “sport, healthy lifestyles, fitness, and well-being”.

The recreation plans prepared for municipalities in the region include the following recommendations for recreational facilities development:

- St. John’s: Three new multi-purpose leisure centres throughout the city, each including a gymnasium, pool, and multi-purpose space. The plan emphasizes retrofitting and upgrading of existing facilities such as the Mews Centre prior to construction of new facilities.
- Mount Pearl: Construction is beginning for a new lifestyle centre at the Pearl Gate Recreational Complex to include a pool, gymnastics facility and multipurpose space. New soccer and softball fields and ice surfaces are also proposed.
- Conception Bay South: Recreation Plan recommended expansion of existing recreation facilities to create additional playing fields, playgrounds, fitness centres and multi-purpose space, as well as an additional ice sheet at the existing arena with convertible ice surface and soccer turf.

Facility	Total Count
Arena	13
Baseball-Softball Field	51
Bowling Alley	6
Community Rec. Centre	27
Cross Country Ski-Trail	2
Downhill Ski	1
Green Space	50
Miscellaneous	12
Multiplex	3
Outdoor Walking-Biking Trail	56
Playground	182
Swimming Pool	14
Rugby Pitch	5
Seniors Centre	1
Soccer Pitch	57
Tennis Court	32

Table 3.5: Recreation Facilities in the Northeast Avalon Region. (Data source: Newfoundland Statistics Agency, 2008)

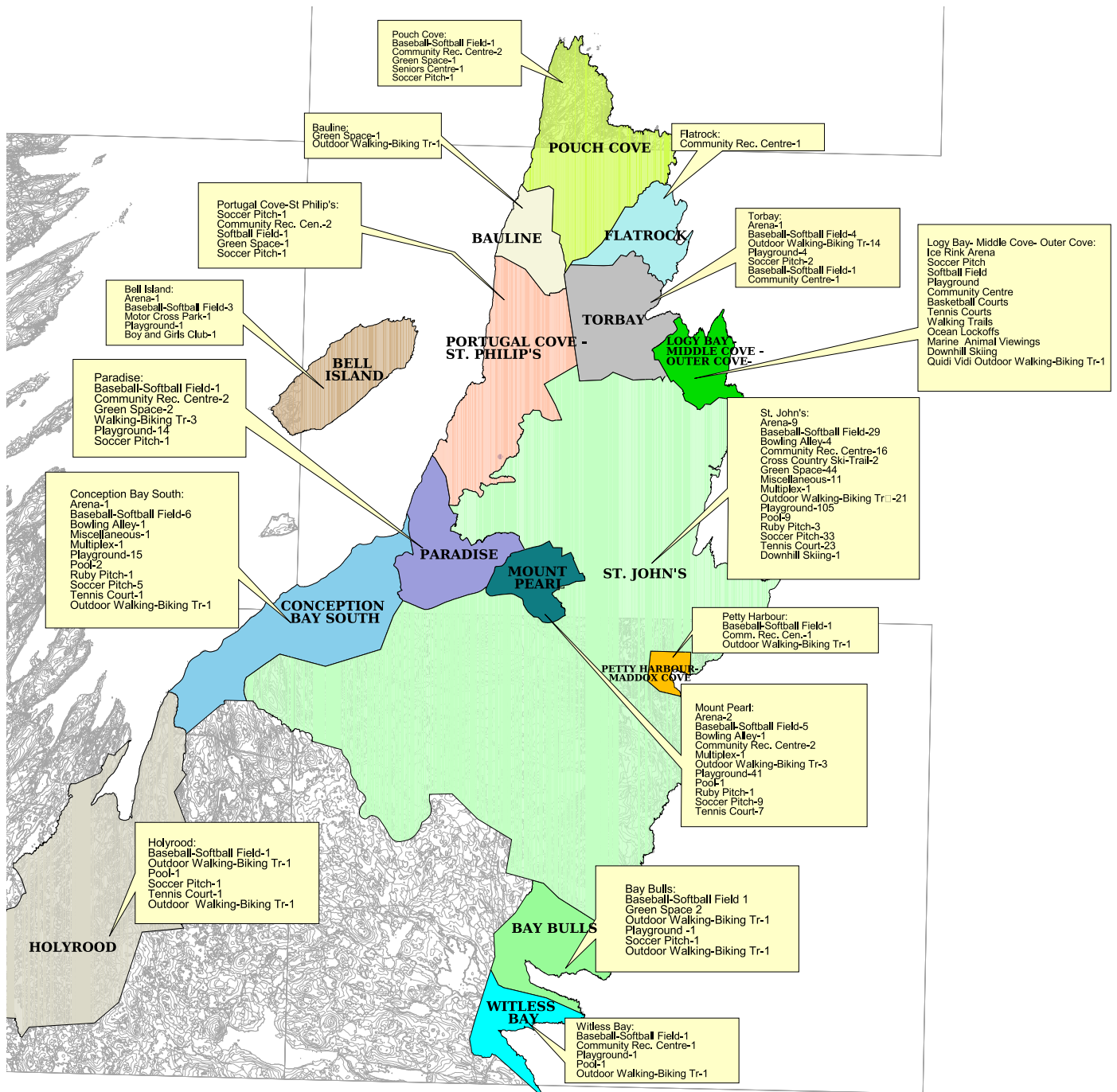


Figure 3.9: Recreational Facilities (Data Source: Department of Municipal Affairs)



- Portugal Cove - St. Philips: Recreation Master Plan recommends an Edu-Rec Centre that would include a pool, fitness centre, multi-purpose space, and two new soccer fields.
- Torbay: The Town of Torbay is currently working on a Town Centre concept plan that will house a multi-purpose recreation facility, museum, library and other community-minded spaces.

Each community in reviewing its own facility needs, have argued that while facilities would primarily serve local needs, broader regional needs could also be met, particularly in a region where most areas are accessible within less than an hour's drive. For example, the Towns of Flatrock, Logy Bay-Middle Cove-Outer Cove, Pouch Cove and Torbay have recently constructed a regional arena located within the municipal boundaries of Logy Bay-Middle Cove-Outer Cove and Torbay. In Bay Bulls, the Province has recently approved funding for a new lifestyle centre that will include a gymnasium and multi-purpose space to serve Witless Bay, Bay Bulls and communities along the southern shore outside of the Northeast Avalon region.

In response to growing requests from municipalities for funding for recreational facilities in the Region, the Provincial Department of Municipal Affairs is currently undertaking a Regional Recreational Needs Assessment to be completed by the end of 2009 that would identify an appropriate number of facilities to meet the future needs of the population.

3.6 Education

3.6.1 Public Schools

The public school system on the Northeast Avalon is managed by the Eastern School District that is responsible for 122 schools on the Avalon, Burin and Bonavista Peninsulas. Figure 3.10 shows the location and school configuration of the 38 schools (with an enrollment of 16,000 students) in the Northeast Avalon.

In 2008, the Eastern School District prepared a Multi-Year Capital Works and School Organization Plan (2007 & 2008) to address a number of challenges affecting schools in the Northeast Avalon region, including declining enrolment, aging infrastructure and shifting demographics.

As is the trend throughout the province, school enrolments in the Northeast Avalon are declining, particularly in the central St. John's city schools. As growth has shifted with new housing developments in the west and eastern ends of the City of St. John's and surrounding areas, new demand for school facilities is created. Renewal of school facilities has also had to consider the age of school buildings, which, in the central city area are among some of the oldest in the province, with the average age being 42 years.

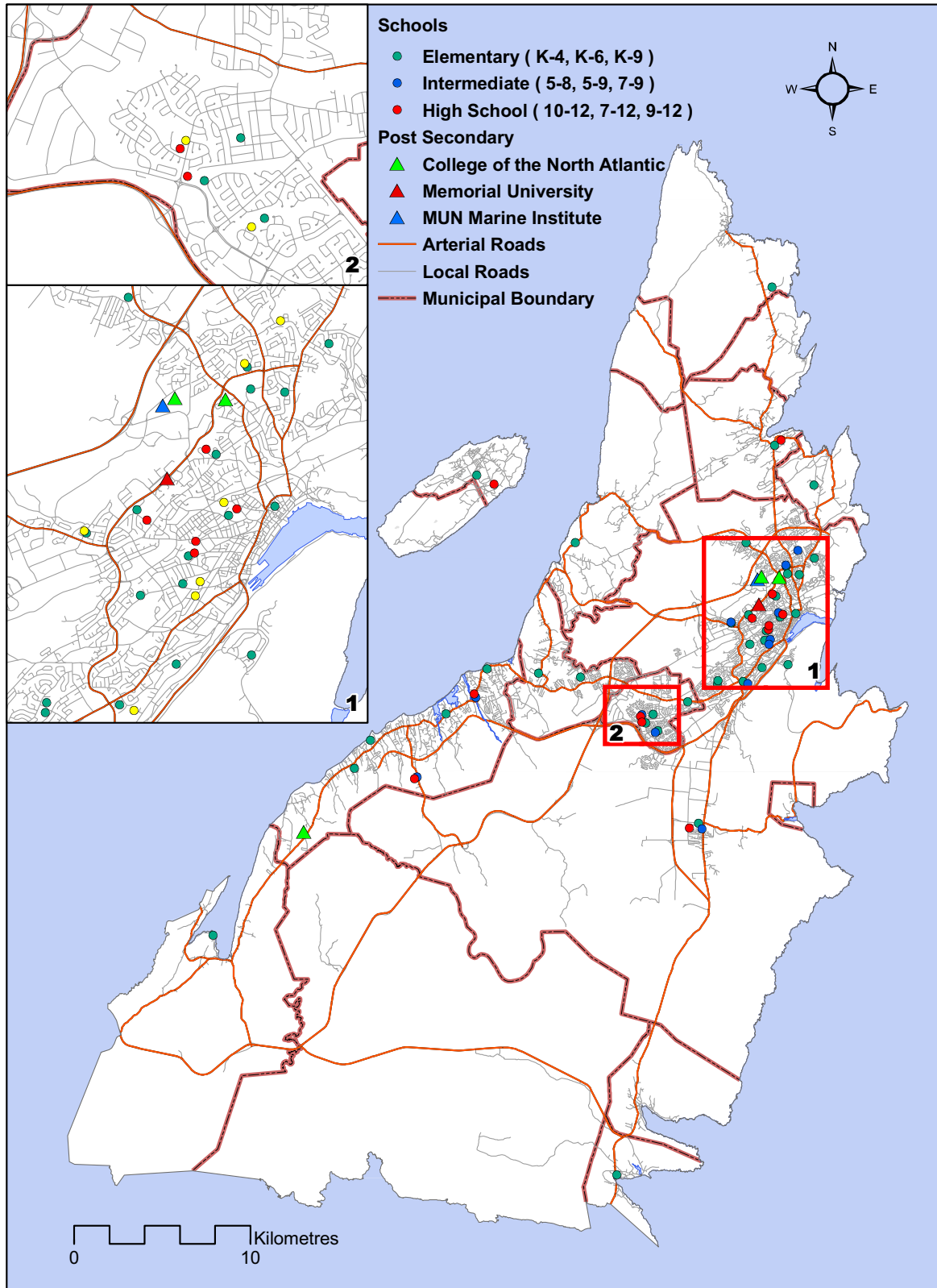


Figure 3.10: Educational Facilities (Data Source: Avalon District School Board; Department of Municipal Affairs; Department of Environment and Conservation – Surveys and Mapping Division)



Plans for new school infrastructure reflect the shifting population of the region. Older inner city high schools (Bishops and Booth) are being replaced with a new high school in the west end of St. John's. Extensions are planned to schools in Portugal Cove-St. Phillips, and the Airport Heights area of St. John's. A new K-6 school is currently under construction in Torbay and a new school is planned in the Town of Paradise. In planning new school facilities, the Eastern School District consults with municipalities to review where growth and development are planned and attempts to balance high school populations, maintain capacity for future growth, and streamline school feeder systems. Despite this, planning for schools in the region remains somewhat reactive to the patterns of growth and demographic change occurring within the Northeast Avalon.

3.6.2 Post Secondary Institutions

Memorial University, the largest university in Atlantic Canada offers more than 100 degree programs and has a student population of 17,000. The university employs 950 full-time faculty, 850 sessional instructors and 2,300 administrative and support staff, plus 2,000 students in part-time jobs with the majority of these at the main campus and Marine Institute in St. John's.

The College of the North Atlantic is one of the largest post-secondary educational and skills training centres in Atlantic Canada, with 17 campus locations throughout Newfoundland and Labrador and one in the Middle East. The College offers nearly 100 full-time program offerings and more than 300 part-time courses for approximately 20,000 students each year. In the Northeast Avalon the College operates from campuses located in St. John's and Conception Bay South.

These institutions contribute significantly to the economy of the region, providing programming to meet the growing need for workers in the offshore oil and gas industry, health care, administrative and cultural fields; supporting industry through pure and applied research facilities and expertise; and as a major source of employment. One of the issues facing these institutions within the Northeast Avalon is an increasing lack of suitable and affordable housing for students. With a public transit system limited to the City of St. John's and Mount Pearl, access to housing outside the area served by the transit system is difficult for students without access to a vehicle.

3.7 Cultural Heritage Resources

The Cultural Plan for Newfoundland and Labrador defines culture as “the arts and the tangible and intangible heritage of the people of Newfoundland and Labrador”. Tangible heritage includes built heritage, landscapes and archaeological sites. Intangible heritage refers to our living heritage that includes stories, traditions, and so on. As our culture has been shaped by the land and sea and is inextricably bonded to it, it is important to consider the cultural and heritage assets and values in developing a plan for the Northeast Avalon. Preserving and celebrating these resources is firstly important to sustaining our culture, our communities and region, but it also defines how we present ourselves to (and how we are received by) the wider world. (Government of Newfoundland and Labrador, 2006a).



The Northeast Avalon Region is a storehouse of cultural heritage for the region and the Province of Newfoundland and Labrador. It includes downtown St. John's with its heritage district, theatre venues, the province's hallmark cultural space The Rooms, an historic ecclesiastical district, provincial and federal historic sites, and a high concentration of artists and cultural providers. The city's designation as a Cultural Capital of Canada in 2006 was a major recognition of its national and international significance as a place of culture.

All other communities in the region also have significant cultural heritage assets, such as the Amherst 1762 military landing site in Torbay, church properties (e.g. in Witless Bay, Torbay and Conception Bay South), a broad network of community museums and archives (around 70 in total) and multiple festivals and events where cultural heritage and creativity are celebrated.

The region has a cluster of national and provincial historic sites and interpretive centres, concentrated primarily in St. John's but others exist including Admiralty House, Mount Pearl, Cape Spear National Historic Site and Bell Island, where the province's mining heritage is presented. Another form of cultural heritage lies offshore in the form of shipwrecks. They include the World War II iron ore carrier wrecks off Bell Island and the 1696 HMS Sapphire wreck off Bay Bulls.

For many years, communities retained their own unique and identifiable character, strengthened by a physical separation of essentially undeveloped rural lands. Travelling along the Scenic Roads between communities allowed for discoveries and the enjoyment of scenic ocean views and landscapes. With the construction of roads that improved access and reduced commuting time to employment centres in the urban core, communities on the perimeter have experienced growth of new, modern residential subdivisions that have begun to overwhelm their traditional character. Development along rural roads such as the Southern Shore Highway and roads linking communities in the northern part of the region has contributed to a homogenization of development to the extent that communities now appear to blend together and individual identity is being lost.

The Cultural Plan for Newfoundland and Labrador underlines the importance of cultural heritage in stimulating social and economic development and recognizes the value of heritage resources as crucially important to growing the provincial economy. Communities in the region are becoming increasingly interested in preserving and enhancing their cultural and heritage resources, and generally recognize the role that culture and heritage play in the quality of life in the community and the benefits for economic development. While communities are placing greater emphasis on providing cultural spaces, events and preservation of historic buildings, there is fear that development pressures, both in the historic downtown and surrounding rural communities could erode heritage features that contribute to the amenity and quality of life that attracted development in the first place.



Quidi Vidi



Bauline



Torbay



3.7.1 Natural Heritage

The natural heritage of the Northeast Avalon includes dramatic coastal landscapes, watersheds and river eco-systems, and fish and wildlife habitats. Some of it is preserved in the aforementioned parks and reserves, but there are significant resources without any official preservation agenda, such as vast coastal areas, the windswept barrens in the Butterpot-Witless Bay Line Environs, and the heights of land above 190 metre elevation that have been left in their natural state. These are all important components of our natural heritage and they have economic and social value for the Northeast Avalon Region as cultural heritage and tourism assets.

Other initiatives that help to preserve and celebrate the natural heritage of the region include the Johnson GEO Centre, The Fluvarium, Logy Bay Marine Lab and Manuel’s River Linear Park. The Manuel’s River Board of Directors, for example, has been very active in promoting environmental education and stewardship of the river valley, estuary and the shale beds containing fossilized trilobites.

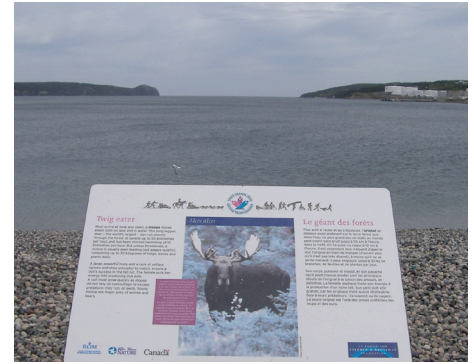
While organizations such as these are doing commendable jobs to promote preservation and stewardship of our natural heritage resources, no comprehensive plan for their preservation and interpretation has ever been considered. As the tourism sector in the region grows, recognition and valuing of the region’s natural resources in terms of cultural heritage and tourism development will be needed.

3.7.2 Tourism

The Northeast Avalon Region as a destination appeals to a broad spectrum of market segments, including meetings and conventions, general touring, cruise, pleasure boating and niche explorer markets within the cultural and outdoor adventure spectrum. The region has a number of strategic resources and developed attractions that are promoted to draw business and pleasure tourists here, including:

- A cluster of heritage attractions in and around the capital city with quality dining, accommodations, learning and cultural entertainment experiences,
- Distinctive rural communities, coastal marine landscapes and open spaces that are easily accessible for day trips and extended adventures.
- Regional and local trails which can accommodate a variety of experiences.
- Scenic touring resources that include Bell Island, the Admiral’s, Killick and Irish Loop touring routes, with viewpoints, coastal landscapes and headlands.

Tourism infrastructure has developed in response to the growth in the tourism industry, particularly within the more rural parts of the region. This is happening gradually; e.g., in Bay Bulls (boat tours, restaurants),



Holyrood



Witless Bay



Tourism attraction in the capital city



Holyrood (tea garden, marina) and Portugal Cove-St. Philips (quality dining, accommodations). The tourism industry of the Northeast Avalon is also closely linked to tourism attractions and destinations outside the region. Short trips to communities in Conception Bay North, Trinity and Bonavista, as well as travel to attractions such as the Colony of Avalon and the Cape St. Mary's Seabird Sanctuary are promoted to the travel trade to broaden and extend stays in the province and the region. The tourism industry relies on being able to satisfy expectations sought by various market segments that come to the province to experience a unique culture and heritage, dramatic scenery and marine wildlife. As such, tourism is a resource-based industry, with its sustainability heavily dependent on the long-term preservation of quality natural and cultural resources.

The provincial vision for tourism development (Newfoundland and Labrador Tourism, 2009) seeks to double annual tourism revenue by 2020 with its mission "to inspire travelers through authentic experiences that embrace our natural creativity, environment and unique culture for the sustainable benefit of our people and our province". The Region's natural and cultural resource base is both diverse and rich. It is of utmost importance that their value not be compromised over the long-term. This will require comprehensive planning and management by a number of public and volunteer agencies, in which the Northeast Avalon Regional Plan can play a role. The Province's tourism industry association, Hospitality Newfoundland and Labrador, has identified the need for a provincial resource management plan that includes tourism values, and they are working with the provincial government to this end (Carol-Ann Gilliard, Hospitality Newfoundland and Labrador, pers. comm.). It is vital that the quality of natural and cultural resources not be compromised through, for example, incremental land acquisition and development control decisions over time.

Land use management priorities important to the tourism sector for the Northeast Avalon include:

- The preservation of scenic viewsapes, particularly along the Admirals, Killick and Irish Loop touring routes.
- The reservation of convenient public access to quality shoreline and headlands.
- The preservation of distinctive rural character in communities throughout the region.
- The curtailment of urban sprawl.
- The promotion of best practices in land use planning and management with respect to tourism and heritage values.
- The promotion of practices for environmental and cultural resource sustainability.



Restaurant in St. Philip's



Tourism on Bell Island



Lobster Traps



3.8 Key Issues and Opportunities

Regional Settlement Pattern - Demographic shifts and increased access to personal automobiles have changed the pattern of development in the Northeast Avalon Region since the Regional Plan was created in 1976. The urban core extends to a suburban corridor in a more or less continuous strip from St. John's and Mount Pearl, through Paradise to Conception Bay South. There is a suburban perimeter of communities comprised of municipalities that form a northward arc from Portugal Cove-St. Philip's through Torbay to Logy Bay-Middle Cove-Outer Cove. These communities are economically and socially related to the suburban corridor and urban core, yet their developed areas are geographically less contiguous. Communities that used to operate more independently as local centres have become more related and dependent on the urban core, and suburban areas. The 1976 Regional Plan's approach of developing a central core with outlying local centres needs to shift to a more integrative approach that addresses the interdependencies of the communities while allowing them to preserve their unique characteristics.

Forest Resource - While harvesting of the forest resource is affecting only a relatively small area of the Northeast Avalon region, the harvesting of productive forest areas is threatened by competing natural resource uses and urban expansion. In addition, areas of significant forest cover for resource use, habitat or aesthetic value need to be protected and preserved. The preservation of a large natural corridor connected with natural areas in other parts of the province will provide wildlife corridors and help to preserve ecological diversity in the region. It is also important to ensure that there are controls in place to protect the functioning of natural ecosystems, for example, appropriate buffers to limit erosion of waterbodies.

Agriculture - Agriculture is an important industry in the Northeast Avalon – both in terms of the food produced and for its contribution to the local economy. The St. John's Agriculture Development Area has helped to stabilize the industry. As an overall approach to food security and to preserve opportunities for the future, it is important to protect sources of local food supplies and ensure the preservation of affordable agricultural land for new farmers. Regional planning policy that guides development in a manner that ensures sustainability of the industry is needed as urban development of agricultural land is an irreversible use of a non-renewable resource.



Minerals - The amount and locations of quarries need to be carefully considered and monitored to ensure adequate supply of aggregate material while protecting ecological systems and the aesthetics of the area. Mining activities should be supported to encourage diversification of economy. Rehabilitation of pits and quarries throughout the region should also be addressed in planning policy.

Parks, Trails and Open Space - As urbanization and development continues in the area, a linked system of parks and open spaces should be developed. The East Coast Trail is a key component of this system and should continue to be supported.

Recreation Facilities - The rapid growth in the Northeast Avalon has increased demand for recreation programs and facilities and most municipalities are experiencing pressure. As the region continues to grow the availability of recreation opportunities will have an influence on where development occurs. Additionally, the municipalities which have the financial and infrastructure capacity for large scale developments will be more able to expand their services. A regional framework for recreation facilities should be developed within which local decisions regarding recreation facilities are determined.

Education - Planning for schools in the Northeast Avalon currently lacks integration with land use planning processes. As a result, identification of school sites often follows growth rather than anticipates it.

Cultural and Natural Heritage Resources / Tourism - Cultural and natural heritage resources should be carefully considered as development occurs in the Northeast Avalon, as they are very important contributors to the character of the communities in the region. These resources contribute directly to the quality of life for residents and the attractiveness of the area for tourists.



4 Demographic & Economic Growth Outlook

This chapter provides forecasts of long term growth in population, housing and employment for the Northeast Avalon Region. It includes a review of growth patterns in the region over the past 25 years and an analysis of the current regional economy. A discussion of the outlook for future economic growth is also provided.

The current pattern of settlement in the region is the result of a number of factors. They include the unique topography of the peninsula, the historic rise and fall of the Atlantic fishery and, more recently, the effects of the oil and gas industry on the economy. Future settlement patterns, the location of jobs, and the availability of labour will be affected by economic growth.

The demographic and economic outlook for the Northeast Avalon Region over the next 20 to 25 years will, to a large extent, guide the planning choices to be made. These choices will affect the ultimate planning policy framework for housing development, the zoning of additional lands for employment uses, the construction of new infrastructure, as well as other municipal service planning to be set out in the regional plan. The growth outlook will also influence all other aspects of the plan by identifying opportunities and constraints for implementing strategic planning objectives.

The analysis in this chapter discusses the range of options for growth in population, housing and employment based on our review of census and provincial data, interviews with policy-makers and stakeholders in the region, field visits, and research into sectoral trends. The chapter is divided into four sections:

- **Section 4.1** – reviews recent demographic and economic trends in the Northeast Avalon Region.
- **Section 4.2** – describes the current economic base, land uses, and urban structure in the region.
- **Section 4.3** – provides a preliminary outlook of future growth
- **Section 4.4** – identifies key issues and questions to be considered in preparing the regional plan.



4.1 Recent Demographic and Economic Growth

Population and household growth in the Northeast Avalon Region has been significant over the past 25 years, with household growth being a prominent feature of the urban landscape in the past decade. Growth has been greatly influenced by the region’s economy and its relationship to the economies of the province as a whole and the country; the Northeast Avalon Region has grown faster than the province and, until very recently, has been outpaced by the national economy. The pattern of settlement in the region is a familiar one in Canada – a metropolitan area that contains a stable central city and older suburbs, and a rapidly developing newer suburban fringe. One unusual feature of the region, however, is the number of outlying communities that have a rural form but interact closely with the urban and suburban areas.

The Northeast Avalon regional economy has had a turbulent 25 years with fluctuating rates of growth, but has emerged as one of the strongest regional economies in Canada. Recent economic growth can be attributed to a great degree to the development of the oil and gas industry, which has generated more employment than was lost through the collapse of the Atlantic cod fishery. The region’s unemployment rate is currently near record lows.

4.1.1 Northeast Avalon Region Population Has Grown by 17% Over the Past 20 Years and Recent Patterns Indicate a Solid Foundation for Sustained Growth

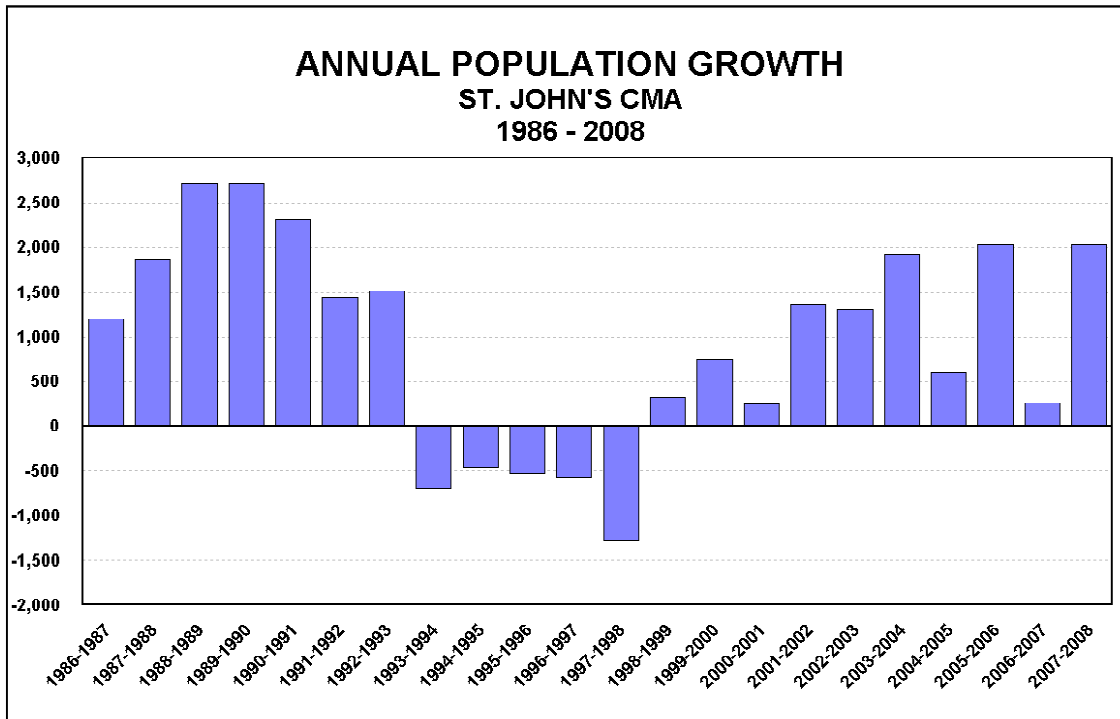
According to the Census, the total population in the Northeast Avalon Region grew from 159,000 in 1981 to 186,000 in 2006, or about 17% over the past 25 years. Growth through this period is shown in Table 4.1. Subsequent population estimates from Statistics Canada’s Annual Demographic Statistics indicate further growth of about 2,000 since 2006, resulting in an estimated total population of 188,000 at mid-year 2008.

POPULATION & HOUSEHOLDS				
Year	Population	Growth Rate	Households	Growth Rate
1981	159,000	-	47,000	-
1986	169,000	6.3%	50,000	6.4%
1991	178,000	5.3%	57,000	14.0%
1996	180,000	1.1%	62,000	8.8%
2001	178,000	-1.1%	67,000	8.1%
2006	186,000	4.5%	73,000	9.0%

Table 4.1: Population and Households in the region 1981 – 2006 (Data Source: Newfoundland & Labrador, 2008h). *Note: Figures may not add due to rounding.



Population growth since 1986 occurred in three phases: a period of rapid growth between 1986 and 1993; followed by a period of decline between 1993 and 1998; and a period of renewed growth since 1998. The factors driving the change in population in each phase are quite distinct. The pattern is shown in Figure 4.1.¹



Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.

Figure 4.1: Annual Population Growth

Population change is driven by two components:

- natural increase, or the number of births less the number of deaths, and
- net migration, or the number of people moving into an area less the number of people leaving.

Until the 1980s, population growth in the Northeast Avalon Region (and in Newfoundland and Labrador) was overwhelmingly the result of natural increase and compensated for the long history of out migration from the Province. Since the early 1990s, a sustained decline in the birth rate has led to a negative rate of natural increase in the Province and an almost zero rate of natural increase in the region. Census data for the St. John's Census Metropolitan Area (CMA)² indicates that natural increase went from 1,270 in 1986–1987 (based on 2,420 births and 1,150 deaths) down to about 50 in 2007–2008 (based on 1,650 births and 1,600 deaths) (Government of Newfoundland and Labrador, 2006b).

¹ Much of the historic data presented in this section is based on Statistics Canada's Annual Demographic Statistics which provides data for the St. John's CMA from 1986 onwards. The St. John's CMA is entirely within the Northeast Avalon Region, but does not include Holyrood, Wabana, or the unincorporated Butterpot-Witless Bay Line Environs. For the purpose of the discussion of general trends in this chapter, the CMA data—which accounts for 97% of the regional population—is sufficient.

² A full discussion of natural increase and fertility patterns in Newfoundland and Labrador is available in the Province's October 2006 paper, Demographic Change: Issues and Implications.



The higher number of deaths is due to the larger population base and its age structure, even though death rates among older age groups have declined due to improved public health and medical care. The pattern of a declining rate of natural increase is expected to continue in the Northeast Avalon Region. Accordingly, future growth will not be helped by natural increase and instead will be driven by migration.

From the mid 1980s net migration, particularly the movement of people from other parts of the Province to the Northeast Avalon Region, has been the main driver of population growth in the region. Migration also has a significant influence on the economic well-being of the region and its role in the wider Provincial and national economies. There are three major components of migration:

International migration, which is the movement of people between the Northeast Avalon Region and other countries, including permanent immigrants and emigrants as well as non-permanent residents (mainly foreign students, refugee claimants, and those on temporary work visas). Net international migration currently comprises a very small part of the overall population growth in the Northeast Avalon Region (only several hundred people annually) and has held steady for some time.

Inter-provincial migration, which is the movement of people between the Northeast Avalon Region and other provinces. This effect of inter-provincial migration is discussed in more detail below.

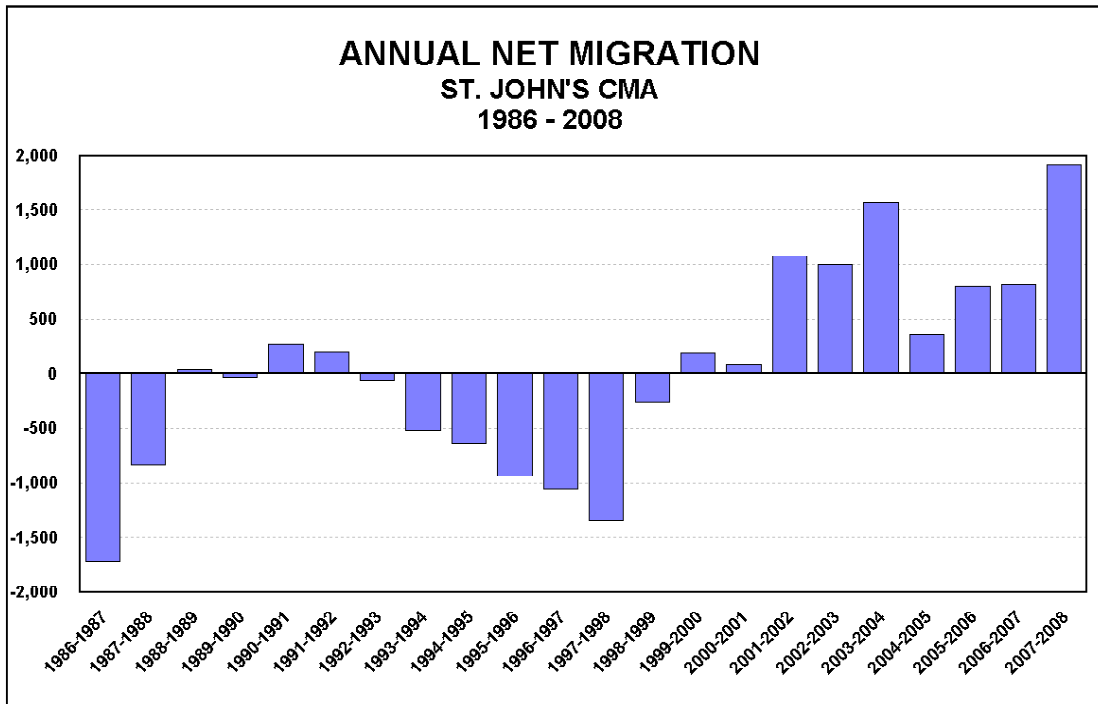
Intra-provincial migration, which is the movement of people between the Northeast Avalon Region and other parts of Newfoundland and Labrador. A discussion of intra-provincial migration in the context of the region is discussed below.

Figure 4.2 shows the annual net migration (migration into the Northeast Avalon Region less migration out) for the region over the period since 1986. Net migration in the past decade has been particularly strong.

Migration will have a profound effect on the Northeast Avalon Region's future growth prospects. This is particularly true of the inter-provincial and intra-provincial migration patterns as they are heavily influenced by economic factors. Figure 4.3 illustrates the pattern of net inter-provincial migration in the Northeast Avalon Region since 1986, a pattern that many people in Newfoundland and Labrador would find familiar. It is one of significant inter-provincial out-migration in the mid-1980s to the then booming central Canadian economy followed by reduced out-migration in the late 1980s and early 1990s as a severe recession hit Ontario. Inter-provincial out-migration soared during the 1990s due to a combination of job losses at home following the cod moratorium and increasing opportunities for employment in central Canada and Alberta.

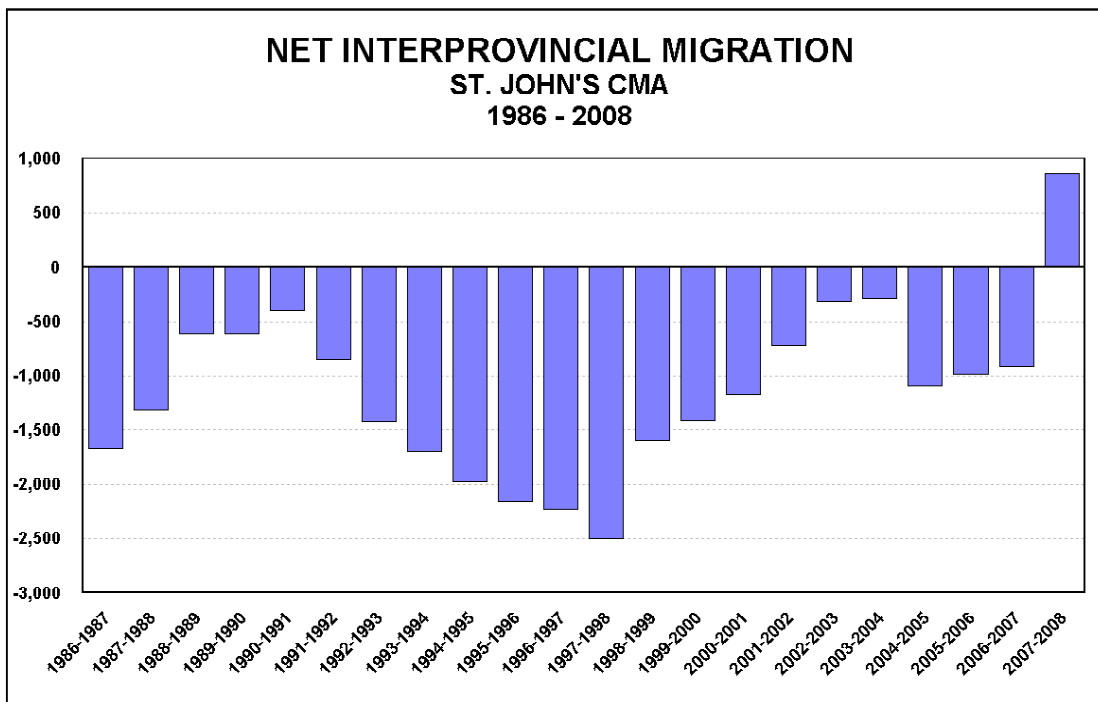
The past decade has witnessed declining inter-provincial out-migration as employment opportunities in the Northeast Avalon Region have improved. Indeed, recent data suggest that the Northeast Avalon Region is experiencing positive net in-migration for the first time in decades.³

³ While only provincial data are available prior to 1986, they do indicate that 2007–2008 is likely the first year of positive net inter-provincial in-migration in the region since Newfoundland joined Canada.



Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.

Figure 4.2: Annual Net Migration



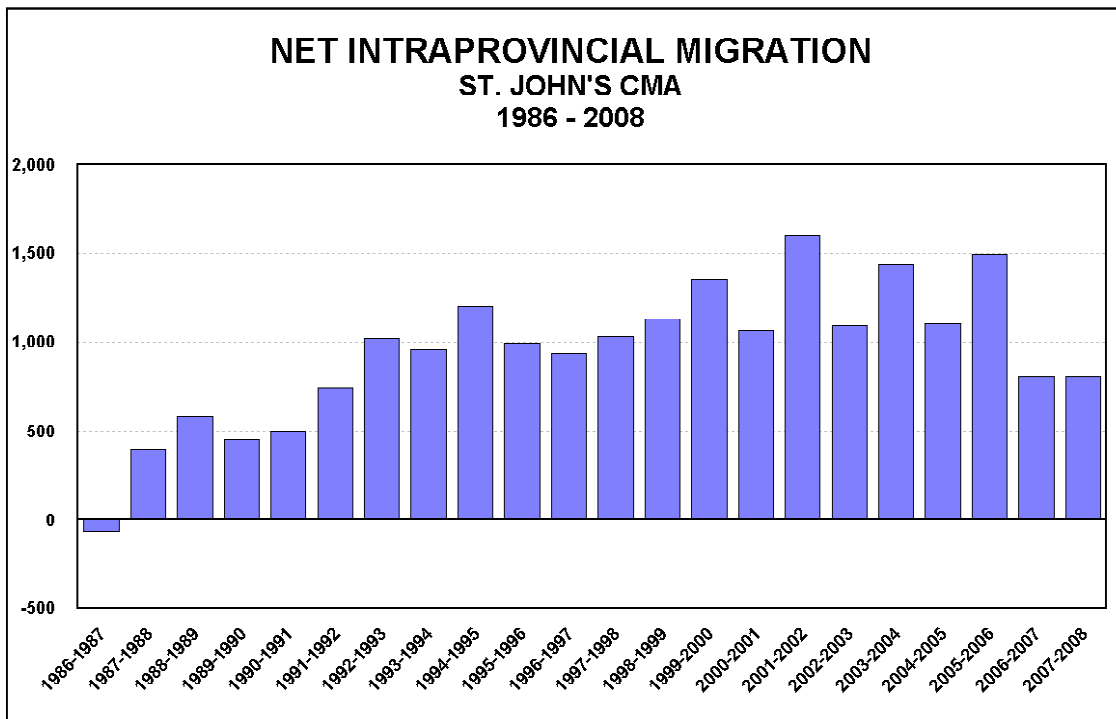
Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.

Figure 4.3: Net Inter-provincial Migration



This rapid reversal of fortune is the result of both increasing local opportunities and the decline in job prospects in Alberta and Ontario since the onset of the recent economic downturn.

Historically, the pattern of intra-provincial migration has been more stable (as shown in Figure 4.4). In-migration from other parts of the province to the Northeast Avalon Region, already increasing in the late 1980s, accelerated after the cod moratorium in 1992 and has continued to the present day as strong economic growth occurred in the region. This pattern of movement from other parts of Newfoundland and Labrador to the Northeast Avalon Region has been a significant driver of growth in the region. However, population declines and the loss of young people in much of the rest of the province continues to be a major economic, social, and political challenge.



Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.

Figure 4.4: Net Intra-provincial Migration

In this context, the future pattern of population growth will be based more than ever on the economic prospects of the Northeast Avalon Region relative to other areas, particularly to the rest of the province but also to the rest of Canada.



4.1.2 Population Distribution Within Region Reflects Housing Development and Suburbanizing Patterns

As discussed in Chapter 3, the current pattern of settlement within the Northeast Avalon Region is very similar to that of most metropolitan areas in North America, both large and small. Today, central St. John's and its well-established inner suburbs have stable to slightly declining populations, while the newly developing areas in suburban communities that surround the central city exhibit rapid expansion and growth of residential subdivisions. Communities adjacent to the central city and suburban areas have to date experienced far less growth or even in some cases negative growth over the last 20 years. Table 4.2 provides the historic population growth by community. The data is also displayed on Figure 4.5.

HISTORIC POPULATION AND GROWTH RATE							
	1981	1986	1991	1996	2001	2006	% Change 1981-2006
St. John's	101,975	103,085	104,635	101,935	99,180	100,650	-1%
Mount Pearl	17,485	20,295	23,690	25,520	24,960	24,670	41%
Urban Core	119,460	123,380	128,325	127,455	124,140	125,320	4%
Paradise	3,310	5,825	7,375	7,960	9,600	12,585	280%
Conception Bay South	14,405	16,295	17,590	19,265	19,770	21,965	52%
Suburban Corridor Communities	17,715	22,120	24,965	27,225	29,370	34,550	95%
Portugal Cove-St. Philip's	3,855	4,770	5,470	5,770	5,870	6,575	71%
Torbay	3,535	3,885	4,705	5,230	5,470	6,280	78%
Logy Bay-Middle Cove-Outer Cove	1,165	1,366	1,885	1,880	1,875	1,975	70%
Suburban Perimeter Communities	8,550	10,020	12,065	12,880	13,215	14,830	73%
Holyrood	1,790	2,115	2,075	2,090	1,905	2,005	12%
Bell Island	4,860	4,610	4,185	3,595	3,080	2,780	-42%
Bauline	420	415	385	380	365	380	-13%
Pouch Cove	1,895	1,960	1,975	1,885	1,670	1,760	-7%
Flatrock	810	885	1,045	1,085	1,135	1,215	50%
Petty Harbour-Maddox Cove	855	975	975	955	950	915	7%
Bay Bulls	1,150	1,115	1,065	1,065	1,015	1,080	-6%
Witless Bay	1,060	1,020	1,065	1,115	1,060	1,070	1%
Outer Perimeter Communities	12,840	13,100	12,770	12,170	11,180	11,205	-12%
Total	158,565	168,615	178,125	179,730	177,905	185,905	17%

Source: Statistics Canada data, 1981 to 2006 Census of Canada. *Note: Figures may not add due to rounding. Data is based on municipal boundaries at the time the census was taken.

Table 4.2: Historic population and growth rate by Census Period, 1981 to 2006.

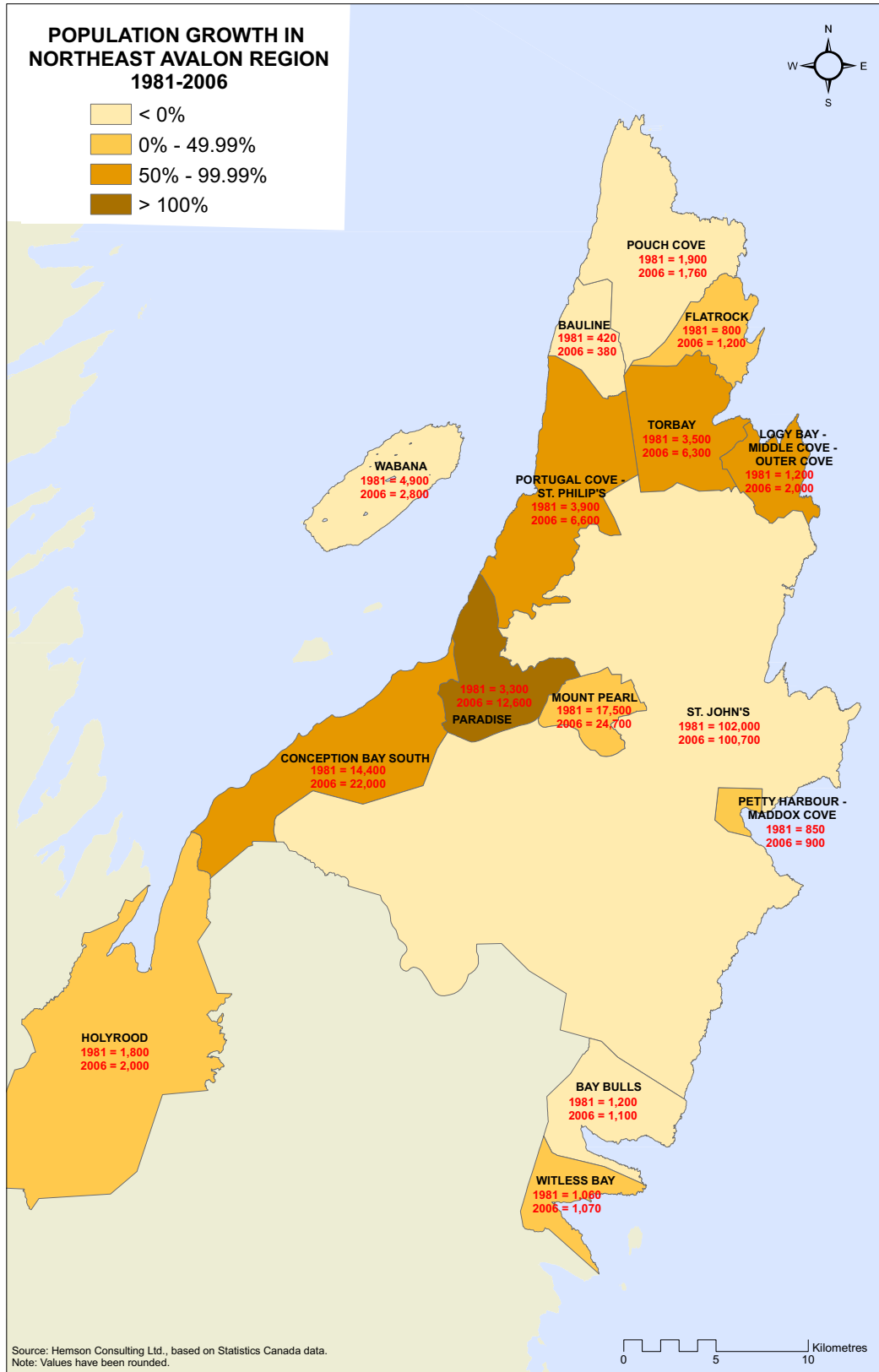
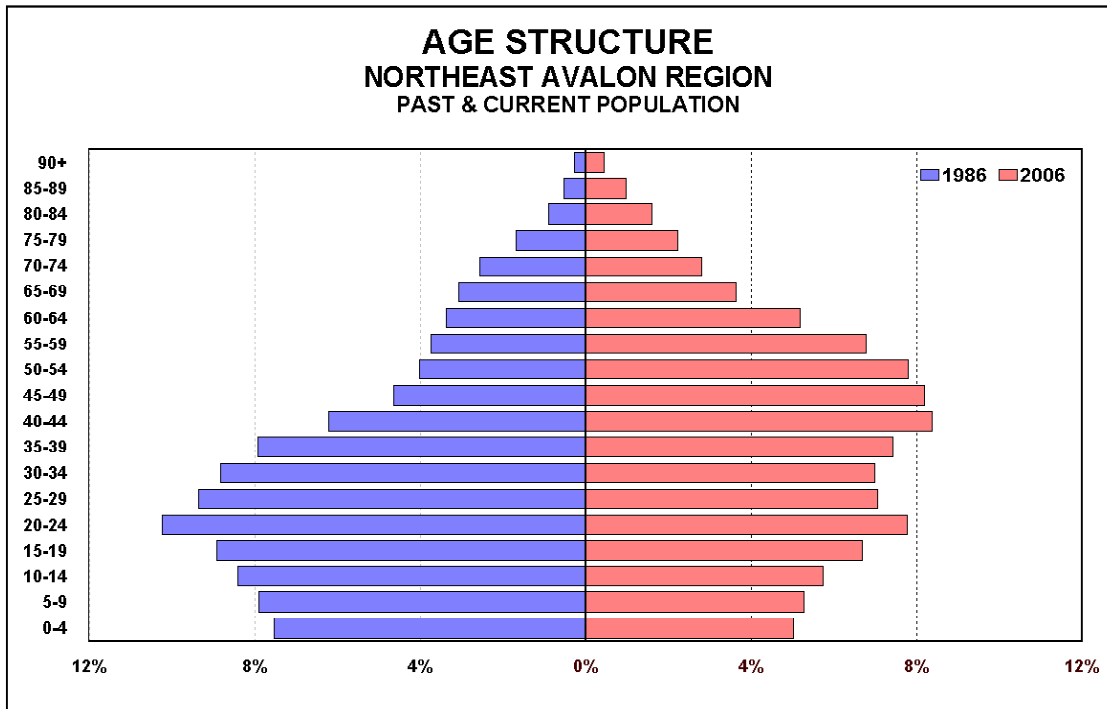


Figure 4.5: Population Growth across the region from 1981-2006
(Data Source: Statistics Canada)



4.1.3 Shift to an Aging Population Over the Past 20 Years

Understanding the age structure of the population and how it may change over time is critical to the region’s long-term planning. Levels of natural increase in the region are declining due to decreasing fertility rates, the aging of the population overall and, particularly, the aging of the “baby boom” population beyond its child bearing years. The 1986 and 2006 age structures are compared in the graphs in Figure 4.6



Source: Hemson Consulting Ltd., based on Statistics Canada, 2006 Census of Canada and Newfoundland & Labrador, *Population & Household Projections Northeast Avalon Region*, June 2008.

Figure 4.6: Age Structure 1986 and 2006

There are two notable features to look for in the graphs:

- The population is aging. Peak population age groups have aged by 20 years, though the peak population in their early 20s in 1986 is far less pronounced 20 years later among those in their early 40s. This is the result of the out-migration of members of this age group throughout the period. The effect of declining birth rates on the total number of children is striking.
- In 2006, the population of young adults in their early 20s shows a small peak relative to those older and younger. As migrants are largely concentrated among those in their 20s and 30s, the peak is the result of in-migration (mainly intra-provincial migration from other parts of the province) both for employment and for attendance at Memorial University and other post-secondary institutions. The peak is also the result of fewer people in this age group now leaving Newfoundland and Labrador from the Northeast Avalon Region. This age group, should it choose to remain in the region, will generate a small increase in the number of children as it approaches its child-bearing years in the coming decade.



For planning purposes, it is important to understand that the amount and type of housing occurring in the region is directly dependent upon the age structure, to the extent that an older population will generally form more households than a younger population. Labour force participation affects both the employment outlook and, in turn, the housing market due to its effect on household incomes. The labour force itself however is closely tied to the age structure as the primary determinant of the size and availability of labour is the size of the population between about 20 and 60 years of age. Planning for many municipal services, such as recreation and transportation, also depends heavily on the age of the population as an aging population will demand different services, different forms of service delivery, and different levels of service.

4.1.4 Household Formation Will Continue to Outpace Population Growth

While population and employment growth are the overall drivers of change, regional land use planning is more about planning for households rather than population because household growth, especially in the Northeast Avalon Region, is occurring at a faster rate than population growth. This phenomenon occurs as a result of a number of factors.

First, an older population creates more households than a younger population. This is because as a population ages the number of empty-nester households and single-person households increases dramatically as children leave home, divorces occur, and spouses die. The aging of the Northeast Avalon Region population will mean that, even in the absence of any population growth in the region in the coming years, additional households will still be required.

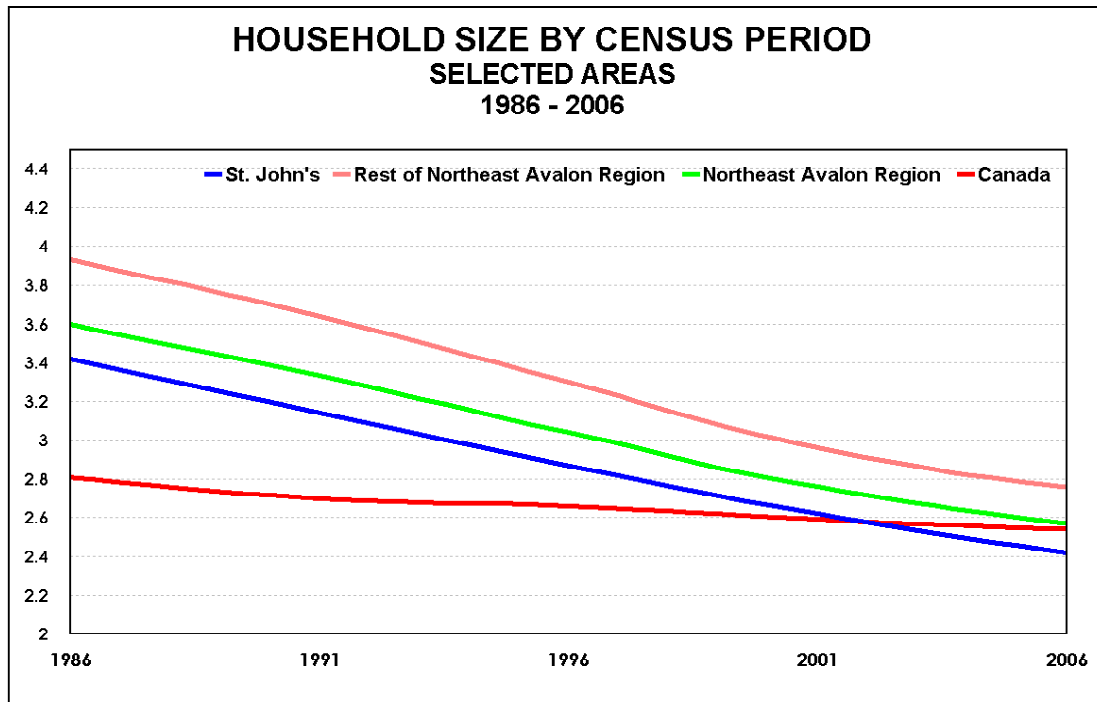
Second, the declining birthrate reduces the number of children per household. The reduction in the number of children shown in the age structure graph above has a significant downward effect on the average household size.

A third factor, in some ways unique to the Northeast Avalon Region, is the growth in prosperity in recent years. More jobs and increased wealth—the median household income in the region increased from \$45,675 to \$62,107 between 2001 and 2006—have had a significant effect on the number of households. The reason for this phenomenon is twofold:

The household formation rate of young people is particularly affected by economic cycles. In recessionary times, the young remain with their parents longer or tend to share space more so than in periods of economic prosperity. Job opportunities allow young adults to start their own households earlier in life and reduce the number of boarders or roommates. Prosperity also reduces the necessity to accommodate elderly parents in multi-generational households.

The much more dramatic decline in average household size in the Northeast Avalon Region relative to virtually all other parts of Canada is the direct result of increased wealth in the region in recent years. The pattern of decline in household size is illustrated in Figure 4.7.

Assumptions about both the amount and location of future housing growth are critical to the Northeast Avalon Regional Plan. Housing growth needs to be planned for even in areas



Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Willess Bay Line Environs.

Figure 4.7: Household size 1986-2006

where there is currently little or no population growth. Moreover, when considering the housing growth outlook for the Regional Plan, a key issue will be the degree to which growth is based only on demographic factors (the age structure of the population) or is the result of changes in the rate of household formation brought about by rising incomes. The forecasts contained in this report assume that current age-specific household formation patterns will continue; the ongoing decline in average household size in the forecast is therefore only associated with the changing age structure of the population. It must be stressed that rising incomes above and beyond what has already been experienced in the Northeast Avalon Region could result in an even greater decline in regional average household size in the future than is provided for in the forecasts.

4.1.5 Housing Market Will Continue to Be Dominated by Single Detached Housing

The housing types that accommodate the region's households are highly concentrated in single detached houses (see Table 4.3 and Figure 4.8). Not surprisingly, the multiple family dwelling types are concentrated in the urban core (Mount Pearl and St. John's). Other areas are predominantly and, in some cases, even exclusively single detached units. The apartment market is almost entirely in the City of St. John's, which is typical of central cities.

One unusual feature of the housing market in the Northeast Avalon Region is the number of duplex units. Duplexes are two units one above the other in a single detached unit, either historic houses that have been divided, or more modern houses that have separate basement



NORTHEAST AVALON REGION HOUSING MARKET STRUCTURE										
	Single Detached		Semi Detached		Townhouse		Apartments		Duplex	
	#	%	#	%	#	%	#	%	#	%
Bauline	130	100	0	0	0	0	0	0	0	0
Bay Bulls	365	92	0	0	0	0	5	1	30	8
Bell Island	880	85	85	8	5	0	55	5	20	2
Conception Bay South	6,395	81	140	2	45	0	105	2	1,215	15
Flatrock	415	98	5	1	0	0	5	1	0	0
Holyrood	665	91	5	1	0	0	40	5	20	3
Logy Bay-Middle Cove-Outer Cove	640	95	5	0.5	5	0.5	0	0	25	4
Mount Pearl	4,155	45	690	8	880	10	285	3	3,175	35
Paradise	3,435	76	135	3	75	2	55	1	795	18
Petty Harbour-Maddox Cove	305	92	0	0	0	0	5	2	20	6
Portugal Cove-St. Philip's	2,205	94	15	1	5	0	20	1	95	4
Pouch Cove	615	95	20	3	0	0	5	1	10	2
St. John's	17,765	43	2,800	7	5,070	12	5,950	15	9,670	23
Torbay	1,835	83	15	1	10	0	35	2	315	14
Witless Bay	375	99	0	0	0	0	0	0	5	1
Total NEAR	40,180	56	3,915	5	6,095	8	6,565	9	15,395	21

Data Source: Hemson Consulting Ltd. based on Statistics Canada data. *Note: Figures may not add due to rounding.

Table 4.3: Housing Market Structure, 2006 Census

or secondary suite units.⁴ In the Census, when a second unit is created in a single detached unit one single detached unit is removed from the housing record and is replaced with two duplex units. The proportion of duplexes in the Northeast Avalon Region housing market is high compared with other Canadian metropolitan markets. Compared to the Greater Toronto Area (GTA), for example, the Northeast Avalon Region has 21% of its units in duplexes to the GTA's 4%. Put another way, 30% of the Northeast Avalon Region's single detached houses are, in fact, two units which compares to less than 8% in the GTA.

The duplex phenomenon is important for land use planning in the region because shifts in the form and function of duplexes could have a significant effect on the region's long term housing demand. From a land supply perspective, should fewer property owners, as a result of increased wealth, choose to build a second suite or rent out their existing second suites the availability of such units could decline. On the demand side, the number of second suites occupied could also decline should more renters choose other rental or ownership options. In either case, the effect could be an increase in future housing unit demand, even with the same number of households and the same size of population.

⁴ A duplex is distinct from a semi-detached unit which is defined by the Census as one of two dwellings attached side by side (or back to front). Typically, duplexes contain either one or two renters. Semi-detached units are usually owner occupied. The census includes duplexes in its broad definition of apartments. Table 4.3 segregates duplexes from other apartments because of the land use planning implications in the Northeast Avalon Region.

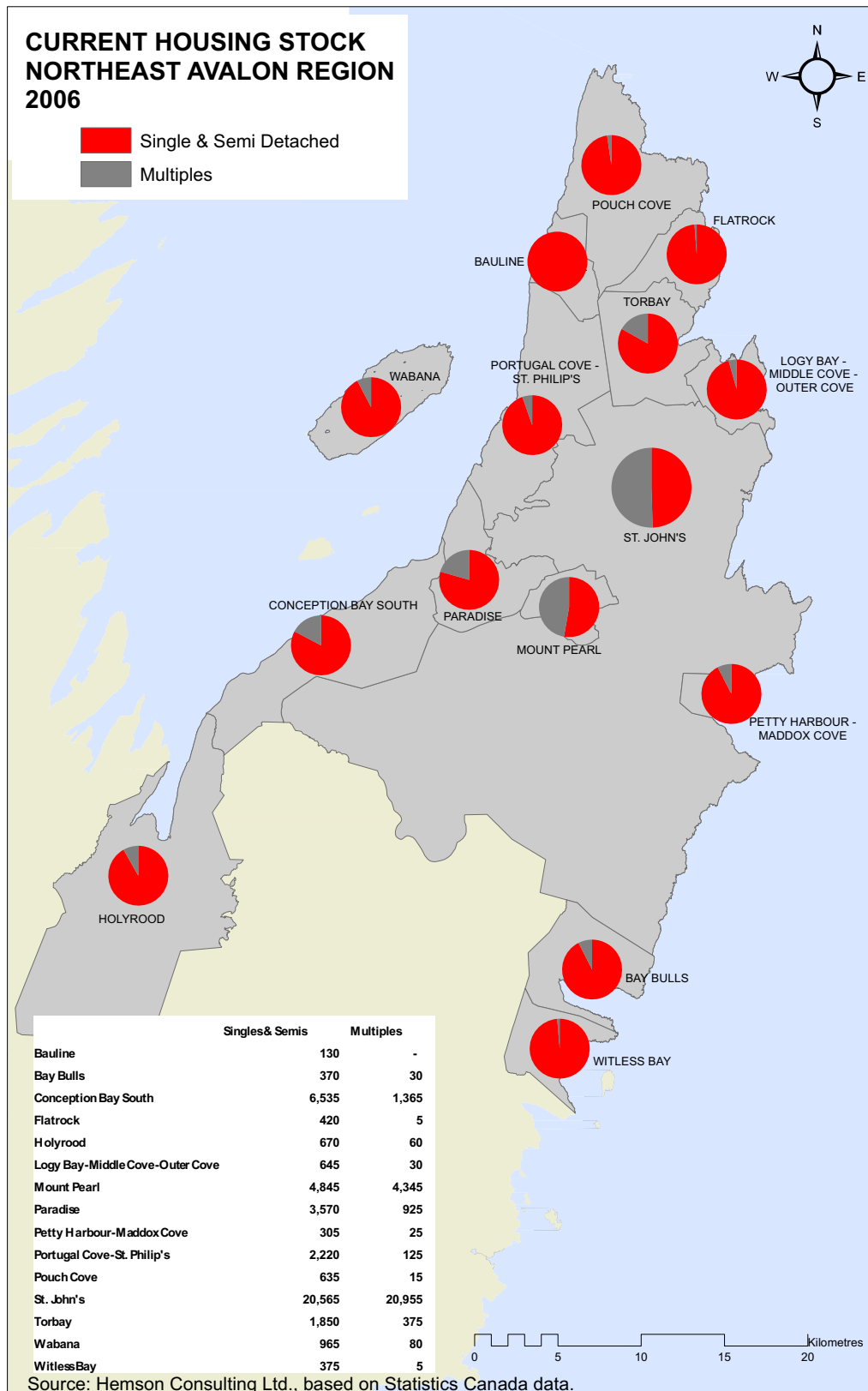


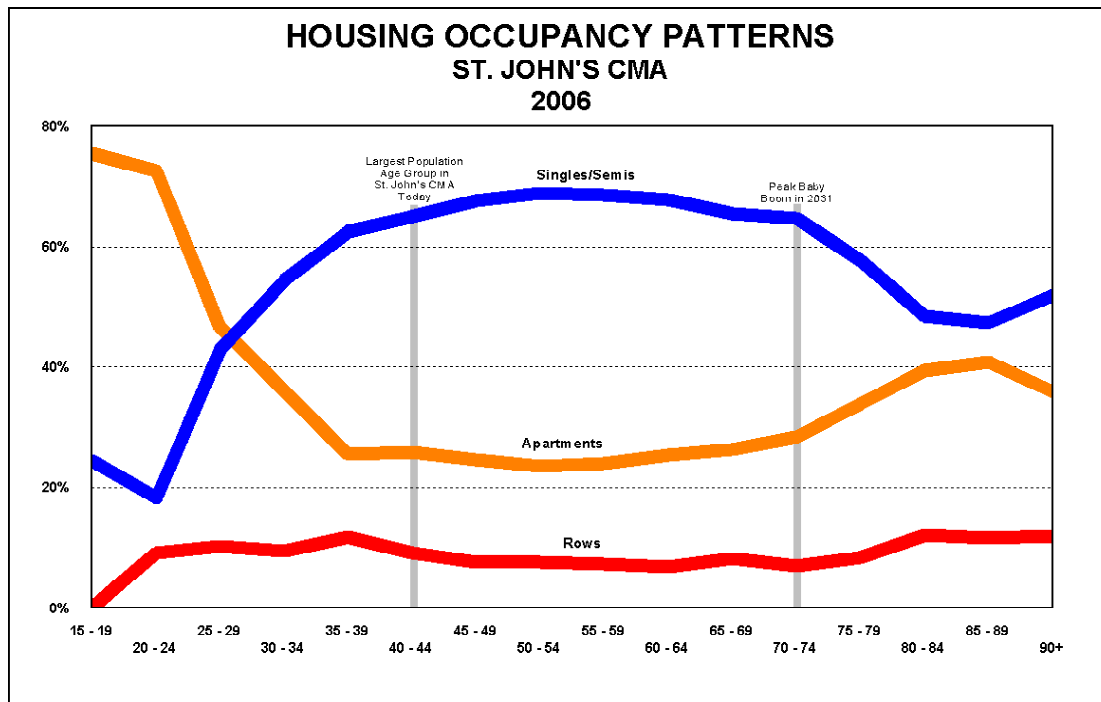
Figure 4.8: Regional Housing Stock, 2006 Census. *Note "Multiples" includes duplexes. (Data Source: Statistics Canada)



Were the Northeast Avalon Region to shift to a market structure similar to the GTA, for example, a demand for nearly 12,000 additional units would result without any change to the total number of households. While this scenario is extremely unlikely in the short term a shift in this direction might occur and should be considered as the Regional Plan is prepared.

Any change in the occupancy patterns of duplexes would likely affect the housing and population base of the areas where these units are concentrated, particularly the urban core communities of Mount Pearl and St. John's.

Figure 4.9 shows housing occupancy patterns in the Northeast Avalon Region by age of household head. It demonstrates how housing preferences follow conventional life cycle patterns. People in their 20s predominantly occupy apartments. Typically one's first house is a rental apartment. In their late 20s and 30s most people are forming family households and having children. It is at this time when people increasingly desire both single or semi-detached housing and home ownership. Occupancy of single and semi-detached housing peaks amongst people in their 50s. The trend moves back in favour of apartment forms (either rental or condominium units) as people age.



Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Willess Bay Line Environs.

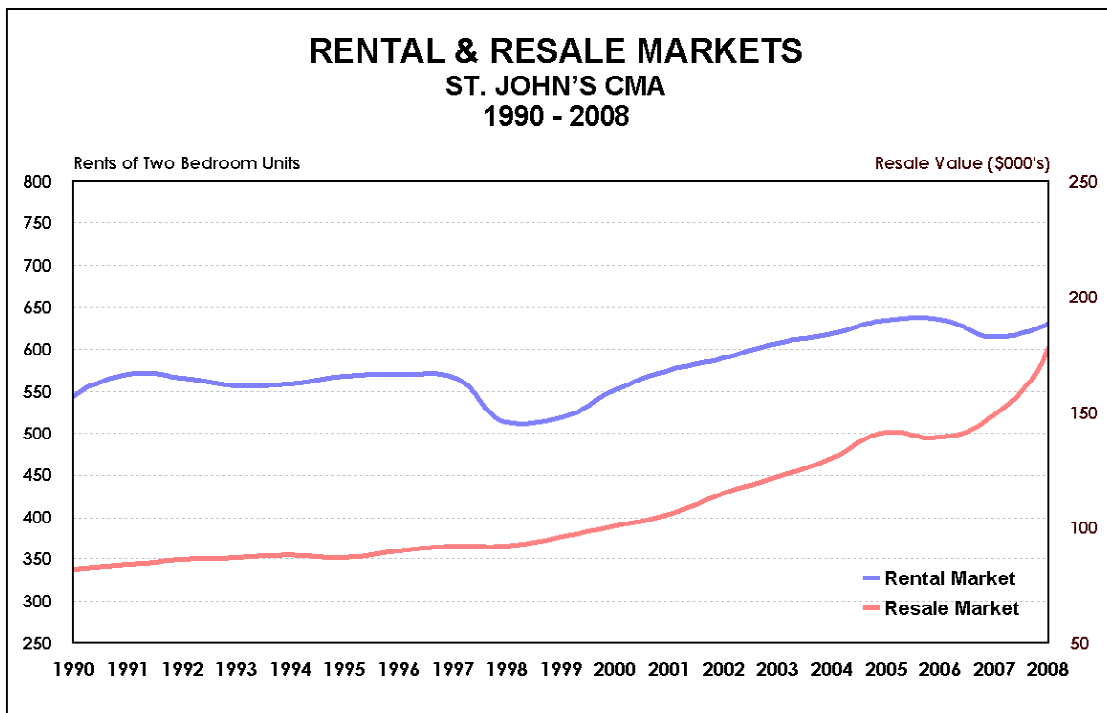
Figure 4.9: Housing Occupancy Patterns in 2006

Much of the future population distribution within the Northeast Avalon Region, and certainly the future land use planning implications, are tied to housing choices. It is therefore notable that the largest age cohort in the Northeast Avalon Region population is only just reaching the age when maximum occupancy of ground-related housing is expected. Even by 2031 the peak baby boom age group will only just be at the age when apartment occupancy is beginning to increase rapidly.



4.1.6 Continued Economic Growth May Put Pressure on Housing Affordability in the Region

There is increasing concern in the Northeast Avalon Region about the affordability of housing as house prices have increased sharply in the past few years. Figure 4.10 demonstrates how house prices and rents have changed in the region since 1990. The graph shows that both rents and house prices remained flat for much of the 1990s before rising steadily from about 1998. Rents have stabilized since 2005 and even fell somewhat in 2007. Conversely, house prices, which remained steady through 2005 and 2006, have increased rapidly in 2007 and 2008 as the number of jobs, the average household income, and the corresponding demand for home ownership has spiked. Low interest rates in recent years have also fuelled this demand. Thus, even in the context of the recent economic downturn, St. John's has recently been identified as a "Canadian housing hotspot" (Hogue, 2009).



Source: Hemson Consulting Ltd., based on CMHC, Rental Market Survey & Canadian Real Estate Association.
 Note: Data provided by for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.
 Note: Rental data are for private structures which contain three or more units.

Figure 4.10: Rental and resale markets, 1990-2008

With the prospects of continued economic growth in the region, the effect of rising rents and house prices may need to be addressed in the regional plan process for the following reasons:

- Economic prosperity, while it will drive average personal and household incomes in the region upwards, may also increase disparities in wealth (i.e. the gap between the rich and the poor and, particularly, between the poor and the median may widen). This can make home ownership harder to achieve for lower income households than in the past.
- The rising cost of living can increase levels of household debt and homelessness and increase the demand for alternative, affordable housing as well as subsidized housing forms (social housing, seniors housing, long term care facilities etc.). Recognizing the potential impacts, a number of municipalities in the urban core and suburban corridor have undertaken studies of housing and homelessness in recent years.

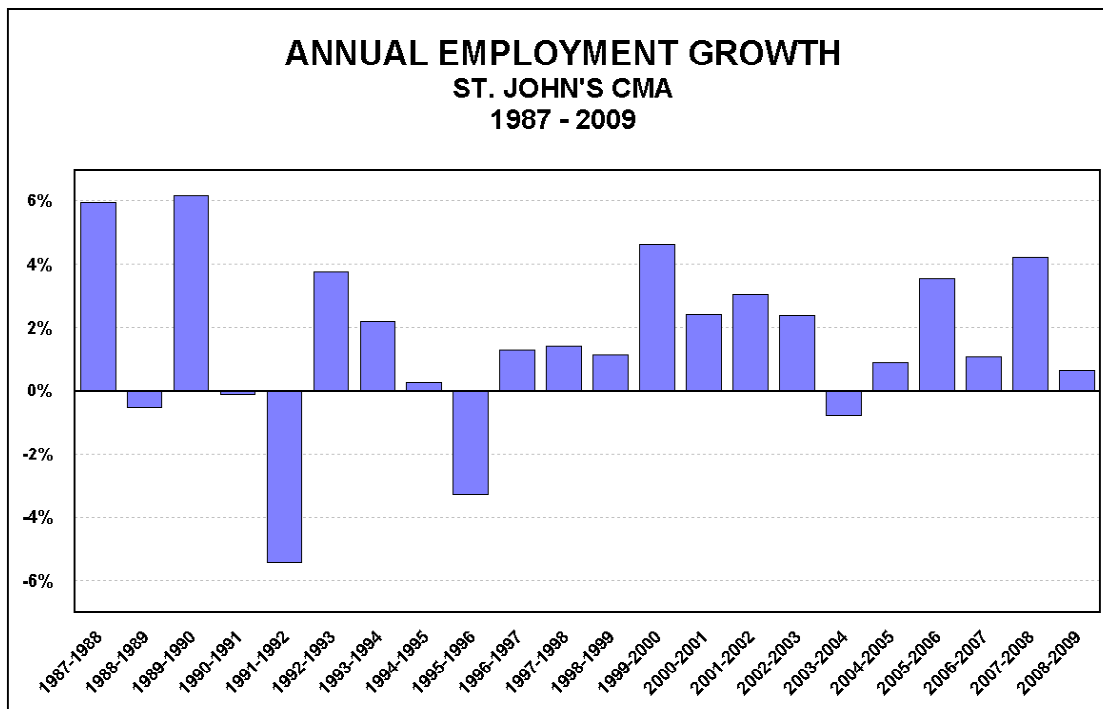


- Rents have been rising steadily in the region for more than a decade. The concentration of rental units in the urban core for the most part meets the demand of students and younger and lower income households. There is currently very little demand for housing forms other than the single-detached form in communities outside the City of St. John's. This could put pressure on the St. John's market during short term spikes in the regional demand for different housing forms.
- The extent to which the urban core is able to provide affordable and subsidized housing to meet regional demands may need to be addressed in the regional plan. However, it should be understood that the delivery of affordable and subsidized housing requires a coordinated policy response that extends far beyond just land use planning.

Generally, the degree to which the land supply for housing is constrained in the Northeast Avalon Region will, over the long term, directly affect housing affordability across the region. However, regional land use planning is, by itself, an insufficient tool for managing short term fluctuations and local variations in affordability. In this respect, planning needs to be combined with targeted provincial and municipal social and financial policies at promoting a desired housing availability.

4.1.7 Growth in Employment Has Been Steady Since the Late 1990s

Employment growth in the Northeast Avalon Region was highly volatile from the mid-1980s to the mid-1990s. The pattern of growth during this period is shown in Figure 4.11. This volatility was both the result of global and national economic conditions as well as the upheaval caused by the collapse of the fishery in the early 1990s.



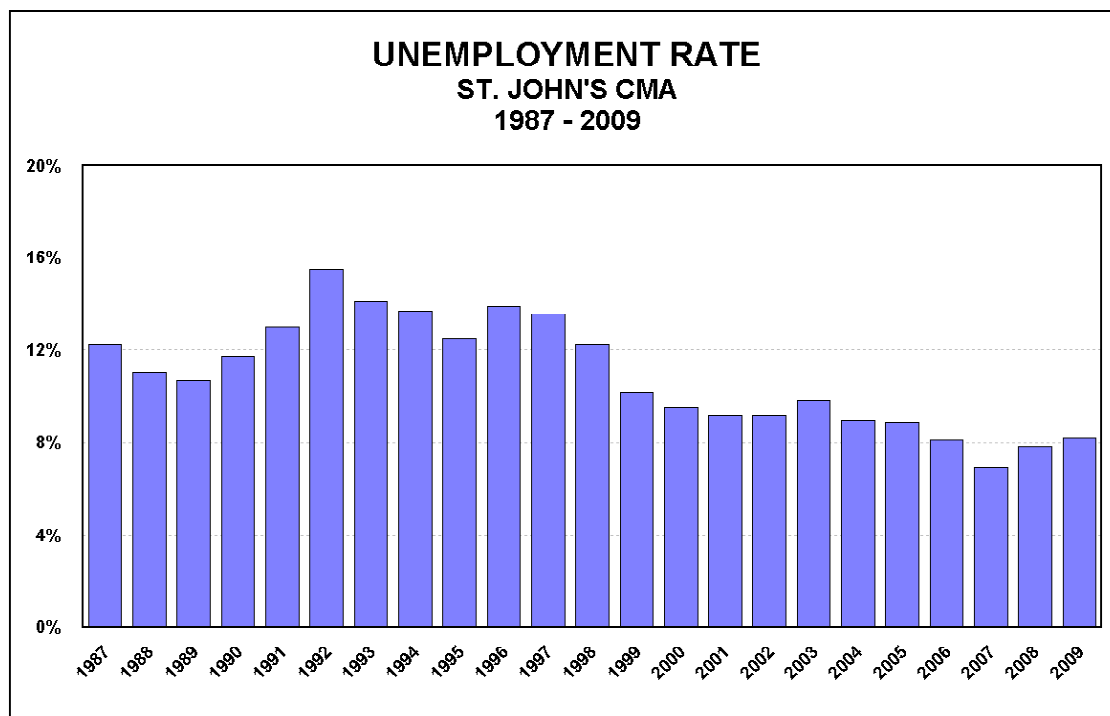
Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.
Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Wifless Bay Line Environs.

Figure 4.11: Annual Employment Growth, 1987-2009



However, in every year since 1997, with one exception, the region has experienced positive employment growth overall. This steady and continuous pattern of growth parallels (and is really the cause of) the population and housing patterns seen during the same period.

Employment in the Northeast Avalon Region has continued to grow faster than the region's labour force. This has led to a significant decline in the unemployment rate (shown in Figure 4.12). While always much lower than rates in the rest of the Province, the region has virtually always had relatively high unemployment compared to the national average — until now. In the past few years, the Northeast Avalon Region's unemployment rate has been close to the national average and as of July 2009, the unemployment rate in the region was much lower than in many other major Canadian cities including Montreal, Toronto and Kitchener-Waterloo.



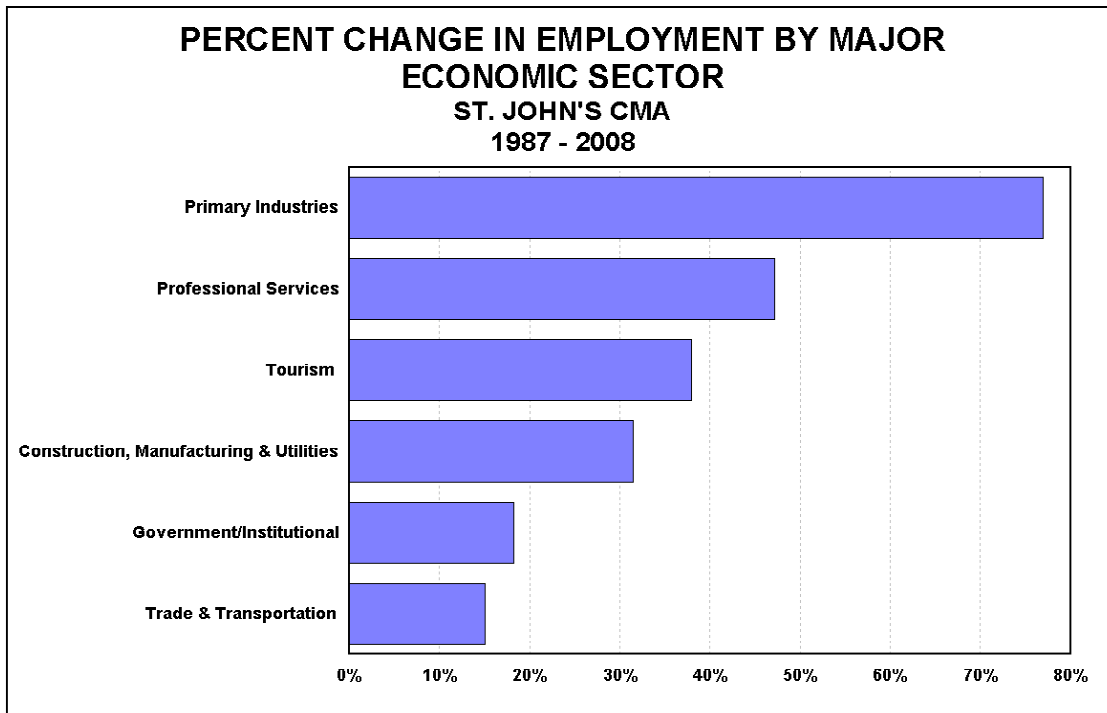
Source: Hemson Consulting Ltd., based on Statistics Canada, Annual Demographics Statistics.

Note: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.

Figure 4.12: Unemployment Rate, 1987-2009

The employment change by sector over the past 25 years is shown in Figure 4.13. The data indicate significant growth in “primary industries” over this time, which as defined by Statistics Canada includes the fishery, the oil and gas sectors, as well as forestry and mining. Unfortunately, from the way the data are published it is difficult to distinguish between these sectors. It is clear, however, that growth in specific primary industries (mainly oil and gas) has far exceeded job losses in the fishery.

It is important to recognize that, despite the region's strong economy overall, individual workers in economic sectors that are struggling may find it difficult to find jobs in sectors of the economy that are growing. Strong overall growth should not disguise the hardships that have been faced by many individuals either as result of the collapse of the cod fishery or



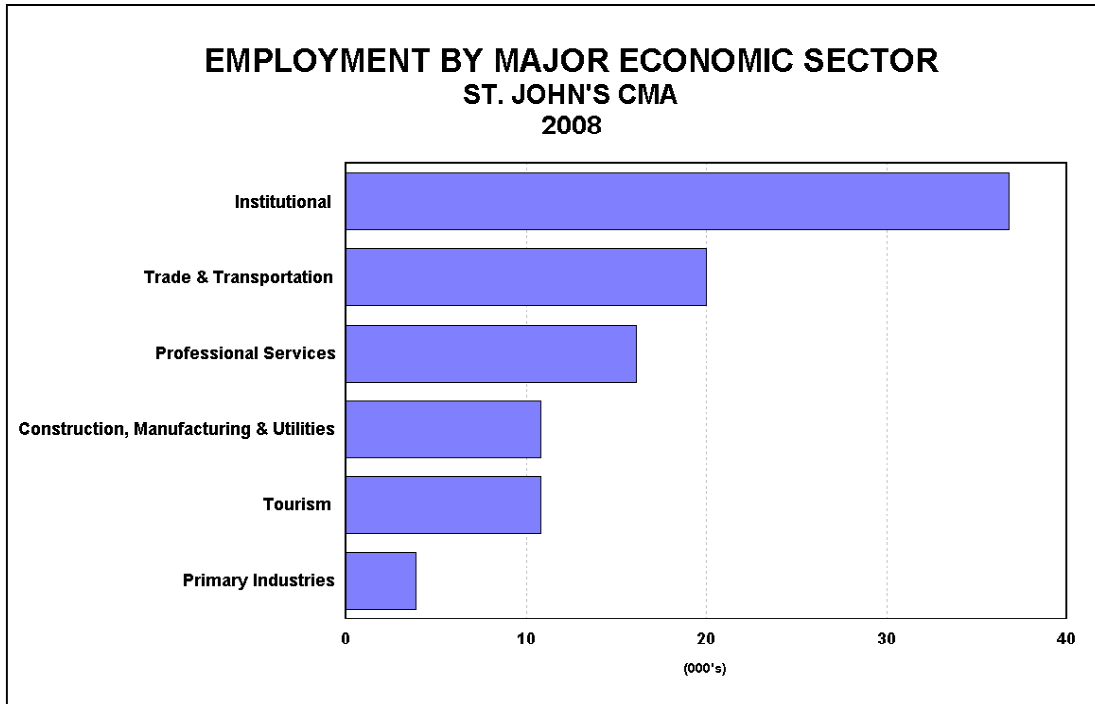
Source: Hemson Consulting Ltd., based on Statistics Canada, Labour Force Survey.
 Note 1: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.
 Note 2: Primary Industries include: Forestry, Fishing, Mining, Oil & Gas.

Figure 4.13: Percent Change in Employment

because of other economic changes, like mine closures, which have had localized impacts on communities and settlement patterns. For planning purposes, the movement of jobs between economic sectors can have a significant impact on land use even if overall employment remains constant.

Figure 4.14 provides the total employment in the Northeast Avalon Region by major sector. Although direct employment in primary industries is low relative to overall employment in the region a significant amount of the trade and transportation, professional services, and construction/manufacturing/utilities sectors is indirectly linked to the primary industries. The region does have a significant level of employment in the institutional sector—due to the concentration of government and health care and the presence of Memorial University and other post-secondary institutions—and in tourism.

With these general conclusions as backdrop, a more detailed economic analysis is provided in the next section, where an assessment of current conditions and prospects for the major industries in the region is made.



Source: Hemson Consulting Ltd., based on Statistics Canada, Labour Force Survey.
 Note 1: Data provided by Statistics Canada for St. John's CMA is the same as Northeast Avalon Region, less Wabana, Holyrood & Butterpot-Witless Bay Line Environs.
 Note 2: Primary Industries include: Forestry, Fishing, Mining, Oil & Gas.

Figure 4.14: Employment by major economic sector 2006

4.2 Recent and Future Economic Growth Tied to Mega-Projects

This section describes the current economy of the Northeast Avalon Region. It includes a discussion of the mega-projects that have fuelled recent economic growth and prosperity and that are likely to continue to drive growth in the coming years. In addition, an overview of other major economic sectors in the Northeast Avalon Region is provided. Finally, the influence of these economic activities on land needs and regional land use planning is discussed.

The oil and gas industry has in a relatively short period become the most important sector for the Newfoundland and Labrador economy. The province has historically been involved in the exploration, production and processing of fossil fuels. Discoveries of offshore oil in the Grand Banks have shifted the focus of the industry to oil production in recent years. Mega-projects, such as the Hibernia oil platform, have become the focus of the oil industry in the province. Three major oil fields are currently in production in the Grand Banks and a fourth—the Hebron field—is due to begin production within eight years. The development budgets of the three completed platforms and the Hebron project represent an estimated \$16 billion in capital investments. Offshore oil exploration continues and is expected to lead to new developments in areas such as the Orphan Basin, North Mara, offshore Labrador, Laurentian Sub-Basin and other sites in western Newfoundland.



A number of large non-oil-related projects have also been proposed in the province. These projects, together with the offshore projects, will continue to be the main drivers of the Northeast Avalon regional economy (and by extension the provincial economy) for some time. The mega-project operations themselves are not located in the Northeast Avalon. However, the many ancillary industries that provide support services to the projects will continue to be located in the region.

Population growth in the region will ensure that other, long standing mainstays of the regional economy will continue to flourish, including the fishing industry, tourism, and a range of cultural, governmental, educational, health and social services. It is important, however, to recognize that it is the exploration and production of natural resources that will fuel economic growth in the region for the foreseeable future.

The risk of a resource-based economy is that project success is often greatly dependent on the value of the commodity being produced, which is itself subject to global market forces. Notwithstanding this inherent risk, the prospects for the Northeast Avalon regional economy are extremely good. Revenues and employment generated by mega-projects will be significant and are relatively certain in the near future. Having a large international airport, a major university, and a growing number of institutional and professional services, also means that long term economic opportunities in the region are great and wide ranging.

4.2.1 Oil Industry Used to be Centred on Refining

The oil industry in the Avalon peninsula predates the discovery of offshore oil in 1979 and was centred on oil refining at two major refineries. The first, the Golden Eagle Refinery, was built on Conception Bay in the late 1950s but fell victim to the downturn in the oil industry during the early 1980s. As a result, refining was discontinued and the facility was turned into a storage facility for products refined at other locations.⁵

During the mid-1960s, the provincial government sponsored the construction of a second oil refinery at Come By Chance which had an ice free deep water harbour and easy access to a railway, highway and major shipping lanes. The plan was ambitious. Crude oil from the Middle East was to be imported and the refinery was to process approximately 100,000 barrels a day for sale in North America and employ up to 1,000 people. However, a number of setbacks, including the fallout from the oil embargo in the 1970s, led to project's financial collapse in 1976. After sitting inactive for a time the Come By Chance refinery was reopened in 1986. It has been profitable ever since and continues to be an important employer providing 600 full time jobs and generating \$160 million into the Provincial economy each year. As of 2007, the refinery processes some 115,000 barrels of oil per day, with exports in excess of \$2 billion per year.

Newfoundland and Labrador's experience with oil refining has been mixed. The size of the industry is small, even in the context of the refining industry on the Atlantic seaboard, and

⁵In the late 1960s, Holyrood was chosen as the site for an oil fired electric generating station. The construction period led to relative boom for the community as workers and their families were drawn to the area. The generating station continues to provide about 15%-20% of the Avalon peninsula's electricity supply.



although there have been indications from the owners of the Come By Chance refinery of an interest in expanding the facility's capacity this has been put off as a result of the recent economic downturn. The prospects for future refining are limited in the short term—domestic consumption is too small to sustain the industry during recessionary times and the Province's geographic isolation from the main North American markets puts it at a competitive disadvantage in the export market.

The Come by Chance refinery experience offers a good example of the risks and opportunities of mega-project investment. Its success has largely been a function of global economic forces beyond local and provincial control, namely (though not only) the price of oil. The experience and expertise built up at Come By Chance should now be seen in the context of long term downstream investment opportunities in the oil and gas sector that may exist, particularly in light of the recent activity in offshore oil production.

4.2.2 Oil Industry Now Focussed on Off-Shore Oil Production

With the discovery in 1979 of offshore oil deposits, the oil industry in Newfoundland and Labrador shifted from refining to production. In this section, the major offshore mega-projects are reviewed: Hibernia, Terra Nova, White Rose, Hebron, and the associated construction and repair facility at Bull Arm. It must be stressed that though these projects are located outside the Northeast Avalon Region they have had, and will continue to have, a significant effect on economic prosperity in the region. The infrastructure associated with these projects is huge, complex, and represents massive capital investments. There are, for example, components of the Hibernia oil platform that by themselves are equivalent to an entire airport terminal in terms of size, scope and cost.

Hibernia

The Hibernia offshore oil field was discovered in 1979 in the Grand Banks and construction of the Hibernia oil platform started in 1990. The platform is made up of three separate components: the topside, which accommodates all of the drilling, production and utility equipment as well as providing the living quarters for a crew of 185; the gravity based structure (GBS) which anchors the facility to the seabed; and the offshore loading system, which transfers oil from storage tanks to heavy tankers using sub-sea pipelines and flexible loading hoses.

The field contains approximately 3 billion barrels of oil, and recoverable reserves are estimated to be around 1.2 billion barrels. The Hibernia oil platform started production in 1997 and has produced 670 million barrels to date. The proposed development of a southern extension to the Hibernia field is projected to extend the platform's production to 2033.

Terra Nova

The Terra Nova Field was discovered in 1984. Oil production started in 2002 using a floating production platform (FPSO) instead of the gravity based structure employed by Hibernia. Constructed at Bull Arm, this vessel is a ship-shaped production platform which pumps oil out of the seabed and stores it in tanks. The oil is then offloaded by shuttle tankers which continually service the FPSO. The vessel can accommodate up to 120 personnel.



The wellheads and production equipment are located on the ocean floor in excavated pits that protect the equipment from icebergs. Flexible flowlines are used to convey oil and natural gas to and from the wells. The gas that is extracted is separated from the oil and re-injected into the field to maintain pressure; the gas remains within the field for possible future extraction. The FPSO is not designed to extract natural gas for market unlike the GBS platform that has this capability. The crude oil is transported by shuttle tankers to either a trans-shipment terminal located on the Avalon Peninsula or, if tanker schedules permit, directly to market. The oil delivered to the trans-shipment facility is stored until it can be loaded onto tankers for transport to markets in Eastern Canada.

The Terra Nova Field has 440 million barrels of recoverable oil. The remaining life of the field is between 13 and 20 years. There are currently no development applications under negotiation for expansion of the field.

White Rose

Discovered in 1984, the White Rose oil field is also located in the Jeanne d'Arc Basin. It is comprised of a core development and three satellite fields discovered between 2003 and 2006: North Amethyst, West White Rose and South White Rose. The fields consist of both oil and gas pools. White Rose is being developed with an FPSO vessel similar to the one used at Terra Nova. Production started in 2005.

Development of the North Amethyst field will represent the first satellite expansion to the project. Production from North Amethyst is projected for late 2009 or early 2010. Husky continues to explore the White Rose field for future expansion. The overall production system is currently designed to last 20 years.

Hebron

The Hebron oilfield was discovered in 1981. Subsequently two more discoveries were made in close proximity to the original find: the Ben Nevis and the Ben Nevis West fields. The estimated recoverable reserves discovered make it the second largest field in the Jeanne d'Arc Basin behind Hibernia.

The Hebron development involves the construction of a GBS similar but likely smaller than the Hibernia platform. Construction is scheduled to begin at Bull Arm in 2012 and peak in 2015 with an estimated 3,500 employees. Oil production is projected to begin around 2017. Current estimates predict that Hebron will produce oil for 25 years. The initial development of the Hebron and West Ben Nevis Fields is underway. There also remains future potential for development of the Ben Nevis field.

Bull Arm Fabrication Yard

"Bull Arm" is a world class drydock and fabrication facility built in 1990 in order to produce the Hibernia oil platform. It is located about 150 kilometres west of the Northeast Avalon Region along the Trans Canada Highway. The site is large—2,800 acres—and the facility cost \$480 million to construct (a significant part of the funding came from federal and provincial grants). The facility includes a fabrication yard (that contains the largest rebar shop in North America, a concrete batch plant, a massive assembly hall and blast, paint, pipe, cutting, and carpentry shops); a dry dock area; a camp for workers; and a deepwater port.



Bull Arm has been used to construct the Hibernia GBS and topside (during which the on-site labour force peaked at roughly 5,800) and to assemble the Terra Nova and White Rose FSPOs. The Hebron GBS and topside is slated to be constructed at the facility starting in 2012 and will create more jobs than the Terra Nova and White Rose projects combined. The Provincial government announced a \$2.75 million investment in the site in its 2008 budget to prepare for the Hebron project.

As well as the oil platforms themselves Bull Arm has been the site of construction for the Henry Goodrich oil drilling rig (used for drilling exploratory wells) and a shiploader assembly system for nickel extraction and processing activities at Voisey's Bay (see below).

The offshore oil projects described above are much more robust than past mega-project investments in Newfoundland and Labrador, such as the Come by Chance refinery, or other large scale investments in natural resource production facilities. This is because:

- The oil produced offshore is of high value. This makes the projects less sensitive to short term fluctuations in oil prices.
- Each project is owned by a consortium. A collective ownership structure is preferred by the oil companies—it spreads their investment risk. It is a sign of the good prospects of the projects that some of the largest oil companies in the world have major stakes in them. The Provincial government is also an equity partner in some of the projects: it owns a 10% equity stake in a forthcoming expansion of Hibernia and a 5% equity stake in the Hebron project (this is in addition to the royalties it receives).
- The life spans of current projects can be expanded (and new projects may be possible) should more oil be discovered. In this regard, there remains significant interest and investment in offshore oil exploration. Between 2000 and 2004 just two exploration licenses were issued for the Grand Banks Region and drilling has commenced at both of them. Since 2005 an additional 23 licenses were issued, on which drilling has begun at four.
- Significant engineering, construction and fabrication knowledge and expertise among local firms (many of them located in the Northeast Avalon Region) has been developed since the construction of the Hibernia oil platform. Having such local resources will increase the viability of future projects.

The short term prospects of the oil industry in Newfoundland and Labrador are good. The presence of the industry in the Province also brings with it long term opportunities to further develop existing oil fields, to build expertise in offshore gas production facilities,⁶ and to develop and operate of oil and gas platforms in other areas that experience extreme weather conditions and icebergs (in this regard, the potential of offshore Labrador, Greenland and the Arctic are all subjects of considerable interest right now).

⁶ The Province is very well positioned to take advantage of natural gas developments. Significant gas reserves exist in the Grand Banks Region. Many of the oil platforms have been constructed with a view to accommodating infrastructure for natural gas production. Moreover, the Port of St. John's contains a compressed natural gas research facility and maintains a close research relationship with Memorial University and the Marine Technology Institute on this issue.



4.2.3 Other Large Scale Projects Are Being Undertaken

In addition to the offshore oil projects two other significant mega-projects are expected to begin construction in the near future. Construction of the **Vale Inco Nickel Processing Plant** in Long Harbour, on the western shore of the Avalon peninsula, began in 2009 and is set to last until 2012. The cost of the facility has been estimated at \$2.2 billion. A peak construction labour force upwards of 2,000 will be required and, after production starts in 2013, the project will continue to employ 400 full-time people. A project office has already been established in St. John's. It remains to be seen how the recent fall in the price of nickel will affect the success of the project.

The **Lower Churchill Hydro Development** project is being undertaken by Newfoundland and Labrador Hydro, a crown utility. It involves two large hydroelectric dams on the Churchill River in Labrador and construction of a transmission line to the Northeast Avalon Region. Construction is planned to start in 2011 and continue for six years, with electricity production to begin around 2017. Peak employment during the construction phase is estimated at 2,000. The project costs are estimated at \$10 billion.

A number of other mega-projects have been proposed for the province in recent years, including major iron ore mining projects in Labrador. Many of these projects are still in the early planning stages and have been put on hold as a result of the economic downturn.

4.2.4 Features of a Mega-Project Based Economy

As and when the mega-projects described above are built they will generate a great deal of revenue, both direct (in the form of royalties) and indirect (in the form of support and spinoff activities), for the province and the Northeast Avalon Region. They will also be significant employment generators. An understanding of the lifecycles of these projects is required when evaluating their impacts on future growth patterns in the region. From a forecasting and land use planning perspective, the lifecycle of a typical project can be divided into four phases:

- **Research, Planning and Development** – many of these projects, especially the offshore oil and gas projects, require careful environmental assessment and planning. They can also involve significant up front capital investment and associated risk. As a result, the time period between a project being proposed and first production can be lengthy (11 years in the case of Hibernia).

The research, planning and design phase of a project can, however, generate significant economic benefits in the Northeast Avalon Region, especially in the urban core. Smaller projects can attract regular business visitors and conventions and the larger projects often set up offices in St. John's well ahead of construction. Local engineering firms have in recent years developed considerable capacity to provide research and design services to the oil and gas industry. The use of local research facilities and intellectual capital in the region—especially at Memorial University and the associated Marine Technology Institute—by local (and foreign) firms represents a significant economic opportunity in this regard.



- **Construction** – The project construction phase requires a significant labour force for a relatively short space of time. This labour force takes not only the form of on-site skilled labour, but also engineering, technological, administrative and other labour (warehousing; materials and equipment manufacturers and suppliers; ground and marine transport; business services) which are often located in the Northeast Avalon Region.

The construction phase can place significant demands on a local labour force and can result in the temporary settlement of migrant workers to construction sites like Bull Arm. In extreme cases, when a number of projects are being constructed concurrently, labour can become scarce and expensive, to the point where it leads to project delays. This situation recently occurred in northern Alberta where, even with a large migratory labour force drawn from across the country (most notably from Newfoundland), oil extraction projects in the Athabasca tar sands were delayed as the labour shortage became acute.

Labour shortages of the kind seen in Alberta are unlikely in Newfoundland and Labrador. First, the mega-projects in the province are very robust. The high quality of the offshore oil means that the oil and gas projects are not as heavily tied to the fluctuating price of oil as the Alberta projects. Second, the proposed timing of the mega-projects has been well staged so that one project is never competing for labour with another.

- **Operation** – During the operation phase, on site employment drops to a core labour force. However, the engineering, technological, administrative and other labour services based in the Northeast Avalon Region remain critical to the project and, though these services may change somewhat in scope over time, they still represent significant regional employers.
- **Shut Down** – None of the mega-projects described above have entered this phase. However, in the context of a 25 year growth forecast period it is likely that some of the projects will begin to scale back or decommission operations. This phase involves a host of specialized technical professionals and can also generate a second, usually smaller, spike in employment as skilled labour are brought in to dismantle facilities and equipment.

For the purposes of the employment forecasts contained in the following section the employment cycles of individual mega-projects have been “smoothed” as individual spikes in employment will not have major long term regional land use planning implications. What is important for planning is the long-term permanent jobs occupied by permanent residents of the region, which is the basis of the forecast described in the next section. It is the growth associated with these jobs and these people that the Northeast Avalon Regional Plan is facilitating.

4.2.5 The Northeast Avalon Region Provides Critical Professional and Support Services to Mega-Projects

Resource based mega-project operations are dependent on a range of industrial, office, retail and wholesale activities, which need to be considered as part of the regional planning exercise. In 2004 the City of St. John’s identified 200 companies in the city and surrounding communities directly involved in the oil and gas industry (either operators or companies with



direct contact with operators) (City of St. John’s, et al., 2004). A further 700 companies that provided supplies and services to the direct companies were also identified. The study surveyed 65 direct companies and 154 indirect companies and found the following:

- Only a very small number of the surveyed companies (3%) were directly involved in oil and gas extraction. Almost 60% of the companies were involved in providing professional, scientific and technical services, retail and wholesale trade, and food and accommodation services.
- Most of the companies had offices in the Northeast Avalon Region (55% in St. John’s) accounting for about 7,000 jobs.

Rapid growth in the oil and gas sector has very likely increased the level of employment since the study was completed in 2004. Moreover, the increased demand for heavy industrial storage space (“lay down” areas), light industrial office space in the region’s large scale business parks, and office space in St. John’s, is an indication of the effect of oil and gas growth on these supporting industries in the Northeast Avalon Region. How land is used by these industries is discussed below.

4.2.6 Land-Use and Land-Use Needs of the Mega-Project Economy

Land use needs in the Northeast Avalon Region for mega-projects and the network of industries that support them can be divided into three groups: business parks; offshore-onshore access (ports; harbours; and the airport); and offices. Commercial and industrially zoned land, as well as business parks in the region, are shown on Figure 4.15.⁷

Regional-Serving Business Parks in the Northeast Avalon Region are at Capacity

The region’s largest business park node is situated at the intersection of two of the Northeast Avalon Region’s major highways: the Trans Canada Highway and Highway 2 (Pitts Memorial Drive). The area has excellent transportation links to the urban core, including the port of St. John’s, as well as the airport and the major on-shore mega-project sites on the Avalon peninsula. There are four separate business parks in the area:

Donovan’s Business Park, in Mount Pearl, is a 450 acre light industrial park which was designed in the early 1970s along a rail spur. The park remained largely vacant until 1990 when Hibernia’s main suppliers established themselves there. This triggered significant development in the park from businesses eager to locate near the Hibernia operations. More than 300 businesses, the vast majority of them connected to the oil and gas industry either directly or indirectly, are currently located in Donovan’s Business Park. The park is essentially full and commands the highest industrial land values in the Northeast Avalon Region (more than \$150,000 per acre).

⁷ The map identifies the major business parks discussed in this section. There are other large areas shown on the map that are zoned “industrial” but are in fact either aggregate type uses (e.g. gravel pits, mineral extraction areas) or remain undeveloped. Only the active business park areas are described here.

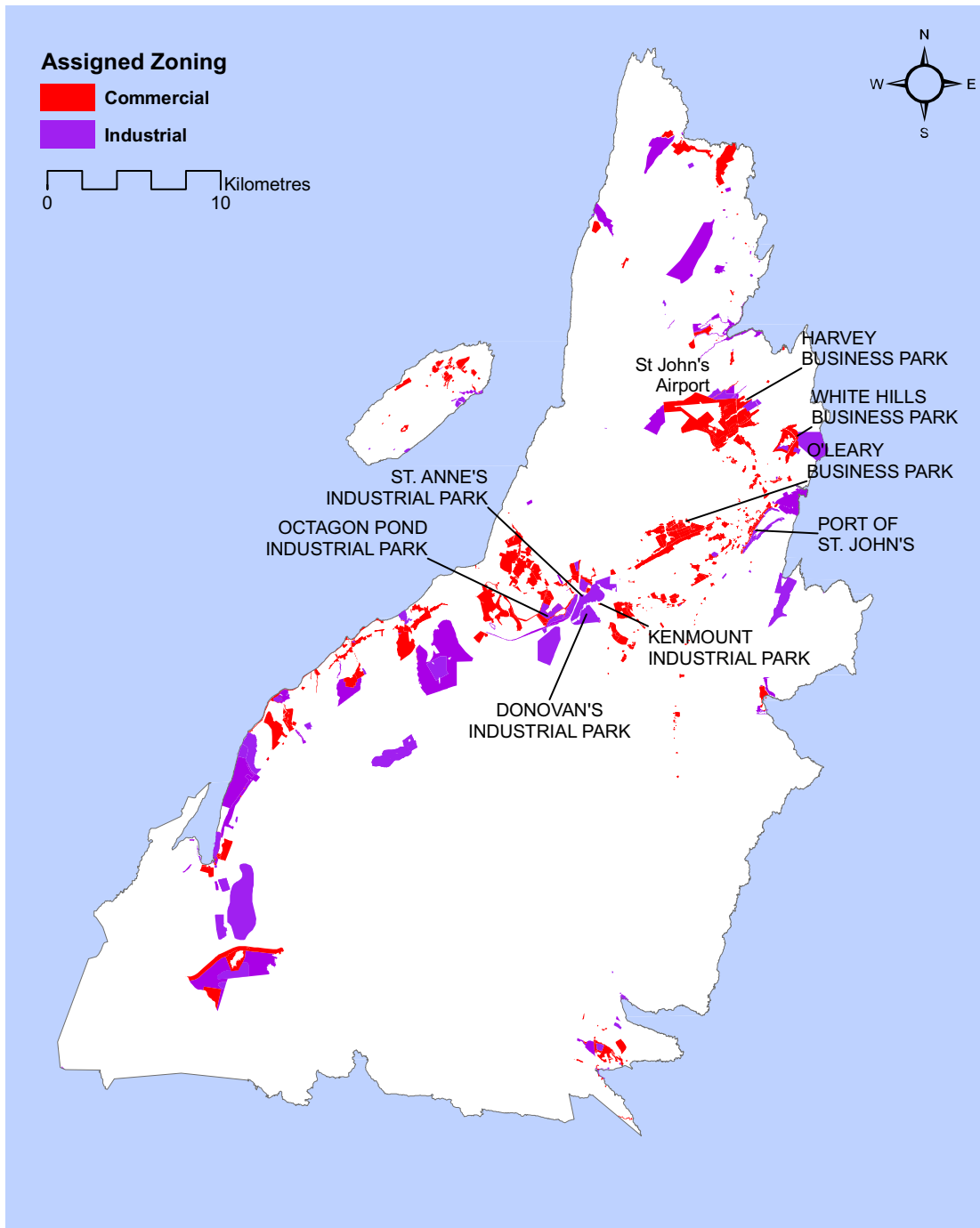


Figure 4.15: Commercial and Industrial Zoned Land and Major Industrial/Business Parks in the Region (Data Source: Department of Municipal Affairs and the municipalities in the region)



Kenmount Industrial Park, is a privately owned, fully serviced business park in Mount Pearl which caters to higher end commercial and light industrial uses. As with Donovan's Business Park, it has only a very limited supply of vacant land available for development.

St. Anne's Industrial Park, encompasses 50 acres in the Town of Paradise. The park is only partially serviced which makes it a desirable location for heavier industrial uses such as the outdoor storage of oil and gas pipes. This kind of "lay down" area is in short supply in the Northeast Avalon Region (see the discussion of the Bay Bulls port below). St. Anne's contains the second highest concentration of oil and gas suppliers in the region behind Donovan's and, like Donovan's, it is built out.

Octagon Pond Industrial Park is located to the west of Donovan's. It caters to business and light industrial uses and was built with the intention of accommodating overflow from Donovan's. The first phase of the park is fully serviced and is owned and operated as a public private partnership with the Town of Paradise. The second phase is privately owned, is not yet fully serviced, and contains the only remaining vacant industrial land in the area. Uptake, which had originally been slower than expected because of a lack of direct highway access and soil contamination, has been steady and sustained in recent years.

Other business parks in the Northeast Avalon Region function more as local serving industrial areas as they do not enjoy the excellent transportation links available at the regional-serving node anchored by Donovan's. Harvey's, an 85 acre park located in St. John's near the airport, is currently used by its owner for storage and is hampered by inadequate road access for truck traffic. St. John's has three other business parks: O'Leary, White Hills, and Pearl Place. The first (230 acres) appears to be built out with a mix of light industrial and commercial uses including the Avalon Mall. The second (33 acres) appears to have vacant land adjoining heavy industrial uses such as a quarry and the regional serving waste disposal and recycling facility. Pearl Place offers no regional opportunities because of its small size (17 acres).

Some small scale industrial uses are being planned for in the suburban corridor (e.g. Fowler's Road in Conception Bay South) and suburban perimeter communities. However, these are relatively small sites and are being designed to service local rather than regional needs. The preliminary forecasts in the following section indicate that a long term need for additional large scale business park areas needs to be considered under the regional plan.

There is currently a gap in the supply of industrial products demanded by the oil and gas industry. In 2004, companies located in the urban core and surrounding areas directly related to the industry purchased 48% of their total spending on raw materials and industrial products outside the Northeast Avalon Region (City of St. John's, et al., 2004). Providing these goods locally would not only provide the region with added economic activity but it would also reduce wait times and possibly costs for the oil and gas operators.



Ports Will Continue to Have a Fundamental Role in the Northeast Avalon Regional Economy

The region’s ports have many functions. They are the main points of access for critical industries such as offshore oil and gas, wholesale trade and industrial supply, fishing, and tourism (in the form of cruise ships, boat tours, and pleasure craft). They are also integral parts of the regional landscape and in many ways embody what the region has to offer the visiting tourist: a historic, picturesque but also functioning enterprise. The working ports in the region offer an excellent example of the mixing of land uses that make efficient use of land, protect the character of communities, and still play vital roles in the economy.

The **Port of St. John’s** is the major port in the Northeast Avalon Region and the historic center of the regional economy. The port is very much a working port that contains the main service centre for the offshore oil and gas industry and the largest roll-on roll-off container terminal in the Province. Other major industries located on its lands include commercial fishing, fuel storage, government marine agencies, and a dockyard for ship repair and offshore-related fabrication. The port does not by and large have ship building facilities or berths for pleasure craft (though it does berth about 15 to 20 cruise ships a year).

The port is not easily accessed by the public. However, the Port Authority (a federally constituted agency which operates most of the port lands) does maintain a public park and restaurant/bar along Water Street which runs parallel to downtown St. John’s. The port is also an integral part of the visual landscape and aesthetic appeal of the city.

The Port of St. John’s plays an important role in the regional economy:

- It contains the Province’s only major container operation through which more than 50% of cargo imports into the Province flow. Economic growth in the region will likely result in increased cargo traffic in the future; in fact, should the rapid increase in wealth in recent years continue then it is likely that the demand for imported goods will increase at a faster rate than population growth. More land, both at the port for container storage and in business park areas for wholesale/retail suppliers, will likely be required.
- The port also contains the main service operator to the offshore oil and gas projects. Operations are centered on the loading and offloading of offshore equipment and supplies. There is capacity to expand these operations though the number of berth spaces is limited.
- The port is well served by Highway 2, which links it to the regional business park node at the Mount Pearl/Paradise border. It does not, however, have direct highway access either to the airport or the major retail developments located in the north part of the urban core. Traffic between the port and these areas must travel around the entire urban core.
- Land constraints do exist at the port, mainly at the container terminal and with the number of berth spaces for ships (the port has had to turn back ships in recent years). Though possessed of some vacant lands on its north shore, the port also has limited capacity to store large offshore equipment. In this respect it fulfills a complimentary rather than competing role to the “lay down” facility at Bay Bulls (see below).



Port of St. John’s



The Bay Bulls Marine Terminal, a privately owned facility in the community of Bay Bulls, is the only other port that offers services directly to the oil and gas industry. These services take the form of a loading area as well as lay down areas for hoses and pipes. The harbour is well sheltered and in deep water and is therefore easily accessed by supply ships. The terminal is close to the urban core. However, for truck traffic, road access from the terminal to other parts of the region is poor. The terminal at Bay Bulls is a good example of how the redevelopment of existing infrastructure in outer edge communities can both revitalize those communities and contribute to the regional economy. Given the need for more lay down areas in the future, opportunities for other developments like Bay Bulls may exist in the region and beyond.



Bay Bulls Marine Terminal

No other port in the Northeast Avalon Region offers the lay down space that is in such short supply in the region. Much of the other ports and harbours are local serving—either accommodating local fishing activities (Petty Harbour; St. John’s), marinas for pleasure craft (Holyrood; Conception Bay South), or ferry services (Portugal Cove).

There is a High Demand for Class A Office Space

When thinking about a natural resource exploration and production based economy images of office buildings do not immediately spring to mind. That said, engineers, administrative personnel and technologists make up 81% of the workforce of companies directly involved in the oil and gas sector. Over one half of all the companies surveyed by the City of St. John’s in 2004 (direct and indirectly involved with oil and gas) were headquartered in the City (City of St. John’s et al., 2004). This suggests that as the industry grows so will the demand for office space with an emphasis on head office locations and Class A (i.e. high value) space. Demand for this space will almost certainly be concentrated in St. John’s in order to take advantage of the proximity to other firms, the financial sector, central government and the airport.

4.2.7 The Airport is Core Economic Infrastructure for the Regional Economy

Another critical element of the Northeast Avalon Region economic infrastructure is the St. John’s International Airport. Located north of the urban core the airport is the main point of entry for almost all regular business travel and much of the tourist-related travel into the region. It is also a significant component of the economy in its own right both in terms of employment and revenue. According to a recent study, airport activities generate 7,000 person years of employment and \$364 million of GDP/income revenue annually. Moreover, 75% of the employment and 65% of the revenue is generated within the Avalon peninsula (Strategic Concepts Inc. and Wade Locke, 2008).⁸

From a land use planning perspective the airport should not be treated as a separate economic unit. It fulfills a critical role in the regional transportation network, the business sector in the urban core, and, increasingly, business park activities throughout the region.

⁸The economic activity generated outside of Northeast Avalon Region would be focused on equipment and products purchased for maintenance and repair of buildings, aircraft, and capital investments, as well as specialized planning and design.



The following should be considered when developing the Regional Plan:

- Passenger traffic at the airport is growing rapidly. The terminal redevelopment which was undertaken between 2000 and 2003 was designed to size the airport for annual traffic of 900,000. Traffic in recent years has reached 1.2 million passengers annually.⁹ Recent passenger surveys indicate that about 60% of all passenger traffic is business-related, even though much of the recent growth can be attributed to leisure travel.
- Key elements of the airport’s capital development plans include additional parking capacity in the near term, an easterly expansion of the terminal within the next 5 years, a westerly expansion of terminal within 5-10 years, and a possible runway expansion within the 10-20 year timeframe. These investments would expand the airport’s capacity to 2 million passengers annually.
- Operating with passenger traffic of 2 million would trigger the need for improved transportation links to and from the airport: better road access and connections to public transit routes to the urban core.
- Notwithstanding the huge growth in leisure traffic in recent years, almost one third of all passenger traffic is military. Military traffic, particularly overnight stopovers, represents a significant economic generator for the Northeast Avalon Region’s urban core.
- Cargo represents a small part of current operations but is a lucrative business for many airports in Canada. The airport is planning to undertake study of its cargo operations. The expansion of cargo operations would tie in well with the future development of commercial/industrial lands at the airport.
- There is a considerable opportunity to develop a regional serving business park at the airport. The airport property itself currently contains 300 acres of vacant land that could accommodate a range of commercial and/or light industrial activities (such as repair and maintenance activities or industrial storage). The Airport Authority has submitted a plan to develop 175 acres along these lines. The effects of increased truck traffic on current routes in and out of the urban core area arising out of such an expansion will need to be carefully considered.
- Transportation to the offshore oil platforms takes place from the airport. The operations are carried out by helicopter on a separate runway from other aviation activities. An increase in oil and gas activity may trigger the need for additional land for offshore oil related air traffic.

4.2.8 Other Long Standing Mainstays of the Regional Economy Will Continue to Flourish

Notwithstanding that the exploration and production of natural resources will be the foundation of future growth in the Northeast Avalon Region, the region’s institutions, retail stores, fishery, and tourist industry, will continue be significant elements of the economy. The knowledge and expertise that exists in these long standing economic sectors are critical to opening up new opportunities in the future and maintaining a diverse economic base. Fostering a diverse economy will be important for the region as resource-based industries remain vulnerable to global forces beyond the control of local and provincial planning.

⁹Passenger traffic at the airport has steadied in recent years, partly as result of competition from other airports and partly as a result of a worldwide slowdown in passenger air travel. Transport Canada forecasts indicate that traffic at the airport will remain at current levels in the near term but will pick up after that. Despite the economic downturn Porter Airways has recently started regularly scheduled passenger services to St. John’s from Toronto’s City Centre Airport.



Institutional Sector

As noted in the previous section, the largest employment sector in the Northeast Avalon Region is the institutional sector (though many of the other sectors are closely tied to the primary industries). Institutional employment is expected to remain strong in the region over the forecast period and the Regional Plan should consider the following:

- Population growth drives much of the need for institutional activities. As the population continues to rise in the Northeast Avalon Region, primarily due to positive net migration, the institutions that support the population will continue to expand.
- The location of institutions is in part dependent on government policy—is health care to be provided in local serving clinics or larger regional serving hospitals in the urban core area? The reorganization and relocation of institutions into growth areas will likely have an effect on the distribution of future population and housing.
- The urban core of the region will continue to be the seat of government and the professional services that support government.
- The importance of Memorial University to the economic prospects of the Northeast Avalon Region cannot be overestimated. The university, and the research institutions linked to it, constitute the largest concentration of intellectual capital in the province by far. Marrying this intellectual capital with the economic activity currently developing in the region can translate into significant long term economic opportunities that will help the economy diversify. In this way the Marine Institute can support the expansion of marine technology activities for example.

Fishery Sector

The Northeast Avalon Region has a long history of commercial fishing and, notwithstanding the cod moratorium, the fishery remains an important element of the regional economy. A diverse range of fish species on the Grand Banks and elsewhere supports a diversity of inshore and offshore fisheries, with lobster, crab and shrimp fisheries being particularly lucrative in recent years. The industry has the advantage of being able to draw upon the great wealth of expertise and infrastructure that has accumulated in the region over time. Fishing activities also have a mutually beneficial relationship with the tourist industry in the Northeast Avalon Region: part of the demand for fish products in the region is driven by visitors; at the same time, visitors are drawn to the ports, harbours, and coastline where fishing occurs. For these reasons, the Regional Plan should support fishing activities and should consider the following:

- How to make efficient use of existing fishery-related infrastructure as well as aging or disused infrastructure (fishing processing plants for example)
- How to ensure that pollution from economic growth and urban development does not jeopardize fishing prospects. In this regard, the environmental damage caused by sewage outfalls, the (illegal) dumping of waste, the movement of tanker traffic, and possible oil leaks/spills on the fishery needs to be understood.

Tourism Sector

Tourism is an important element of the provincial and regional economy and the Northeast Avalon Region serves both as a tourist destination unto itself as well as a gateway to the rest of the province. As an established destination for both resident and non-resident tourists, the region has a mature cluster of attractions and services in St. John's and in other parts of the region that are in varying stages of development. In 2008, the St. John's Census Metropolitan Area received 975,280 visitors and they spent an estimated \$337.3M (Government of



Newfoundland and Labrador, 2009j). Over a third of the total visitors were from outside the province and they contributed \$201.5M in incremental spending to the provincial economy. Over 70% of non-resident visitors to the province pass through St. John's annually. The city is also growing as a year-round destination, particularly for the meetings and conventions market. Tourism and economic growth are not mutually exclusive activities. In fact, a number of opportunities exist for tourism and other elements of the regional economy to support each other. For regional land use planning the following should be considered:

- From an economic standpoint, tourism helps to diversify the regional economy by providing jobs that require different skill sets from those required for work in primary and secondary industrial sectors.
- Tourism in the region is as diverse as the region itself and a number of opportunities for tourism investments exist.
- Tourism is very important in helping to sustain other industries that might serve business functions. This is particularly true of retail activities or the hospitality industry for example – hotels that rely on weekday or seasonal business customers can be used by tourists on weekends and during the summer months.

How the Regional Plan ensures the protection of the rural and natural environment will be critical to the success of the tourist industry in future years. Planning for a number of employment uses—especially in and around the airport, the urban core, the ports—will also have to account for the potential benefits to be had by including tourism components.

Retail Sector

The Regional Plan has a role in ensuring that all residents of the region have adequate access to retail services. As the main driver for the need for local retail shopping is the size and distribution of the local population base, local retail patterns will continue to follow local population and settlement patterns. Regional retail shopping centres on the other hand need to be planned with care because they generally require large areas for parking and good arterial road access.

Large scale retail shopping is currently only available in and around the urban core at the Avalon and Village Malls in St. John's, and at new large scale developments in the east end of St. John's at Stavanger Drive, at Kelsey Drive off Kenmount Road, and in Mount Pearl at Richard Nolan Drive and Old Placentia Rd. The concentration of regional serving retail services contributes to traffic congestion as households in the growing suburban corridor and suburban perimeter communities often have to travel to the urban core to shop. The plan should therefore address the need for large scale regional shopping in growing communities and the balance required between providing a greater range of retail options and reducing traffic across the region with the appropriateness of developing large scale ("big box") retail developments in newer areas.

The Regional Plan will also need to address the likelihood that increased prosperity in the region will lead to the rate of growth in retail sales outpacing the rate of population growth. Planning for more retail uses than has been anticipated in the past may therefore be required.



4.3 Preliminary Growth Outlook for the Northeast Avalon Region and Municipalities

Based on the historic and current patterns of growth in the Northeast Avalon Region described above and in Chapter 3 and our understanding of the current economic base and outlook for the region, a specific growth outlook has been developed. For regional land use planning purposes the forecasts of primary importance are those which have major land use implications over the next 25 years. Planning for the accommodation of new housing and major employment areas, both in terms of timing, quantity, and location, is a primary task of the regional plan.

The forecast growth distributions provided in this section are to be considered preliminary, in the sense that they are a starting point for planning and not necessarily predictive of future growth distribution. The general approach taken reflects a continuation of current market patterns within the context of the current planning environment in the Northeast Avalon Region. The growth patterns are those that would be expected assuming growth was not directed by the new regional plan.

These forecasts and growth patterns will be reviewed by stakeholders and the public and then subjected to further technical analysis to determine if the results are desirable and appropriate for the Region. During the Regional Plan process, the forecasts will be revised to reflect the goals of the plan and how growth may be redirected through planning policy.

4.3.1 Provincial Forecasts Provide a Reasonable Basis for Total Population and Housing of the Northeast Avalon Region

In June of 2008, the Province of Newfoundland and Labrador prepared a report on Population and Household Projections: Northeast Avalon Region. The forecasts are for the Northeast Avalon Region as a whole, but do not address the distribution of population within the region. The forecasts rely on the standard technique of a cohort survival model to forecast population taking account of births, deaths and migration. The household forecast, in turn, uses the well established approach of forecasting households based on age-specific household formation rates. That is, the household forecast is based on the household characteristics of the population age groups and how these change as the age structure of the population changes.

The province's forecasts provide a low, medium and high forecast for growth. For the purposes of the Northeast Avalon Regional Plan preliminary forecasts distributions, the medium forecast is, in our view, the most reasonable basis for growth planning. The low and high forecasts will, however, be kept in mind through the preparation of the plan to understand where there may be risks should the forecasts trend toward either the lower or upper end of the range.

The population and housing growth for the region from the Provincial forecasts for population and households are shown in Table 4.4, through to 2026. The modelling conducted for this report has extended the Province's forecast to 2031, based on the same approach and assumptions. This has been done so that the long-term effects of the aging



HISTORIC & FORECAST POPULATION & HOUSEHOLDS				
Year	Population	Growth Rate	Households	Growth Rate
1981	159,000	-	47,000	-
1986	169,000	6.3%	50,000	6.4%
1991	178,000	5.3%	57,000	14.0%
1996	180,000	1.1%	62,000	8.8%
2001	178,000	-1.1%	67,000	8.1%
2006	186,000	4.5%	73,000	9.0%
2011	193,000	3.8%	78,000	6.8%
2016	197,000	2.1%	82,000	5.1%
2021	200,000	1.5%	84,000	2.4%
2026	201,000	0.5%	87,000	3.6%
2031	200,000	-0.5%	88,000	1.1%

Source: Newfoundland & Labrador, Population & Household Projections Northeast Avalon Region, June 2008.

*Note: Figures may not add due to rounding.

Table 4.4: Historic and Forecast Population and Households by Census Period in the Northeast Avalon Region, By Census Period, 1981-2031.

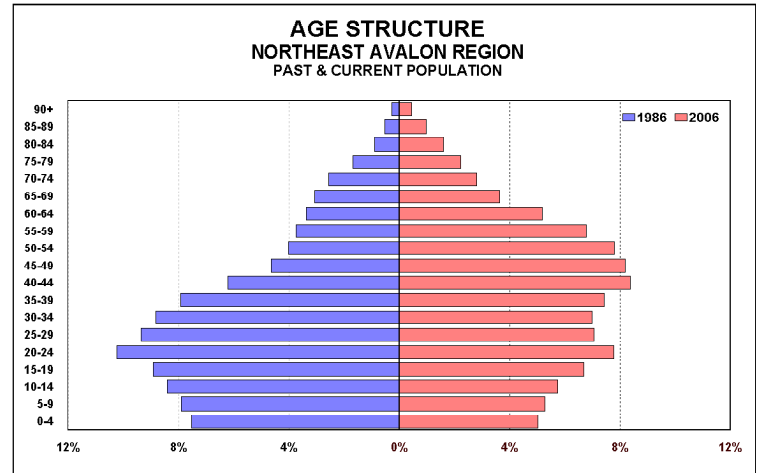
of the region's population can be more fully understood. The current period (2006-2011) is expected to witness the highest level of population growth through the forecast period. This is the result of the combination of natural increase and migration. In total, the population is expected to increase by 15,000 people over the planning period to 201,000. From that point the population will start to decline, as negative natural increase becomes the dominant demographic trend. This peak population is still well below that of the 1976 Regional Plan which was based on a population forecast to 215,000. Understandably, the forecasters of the early 1970s could not have anticipated fertility rates falling well below replacement levels in so short a time.

Natural increase (births less deaths) has declined significantly over the past 20 years as declining birth rates and an aging population have combined to reduce the natural increase to about zero today (i.e. an equal number of births and deaths). Over the next 25 years, the continuation of birth and aging patterns will mean accelerating rates of natural *decrease* in the population.



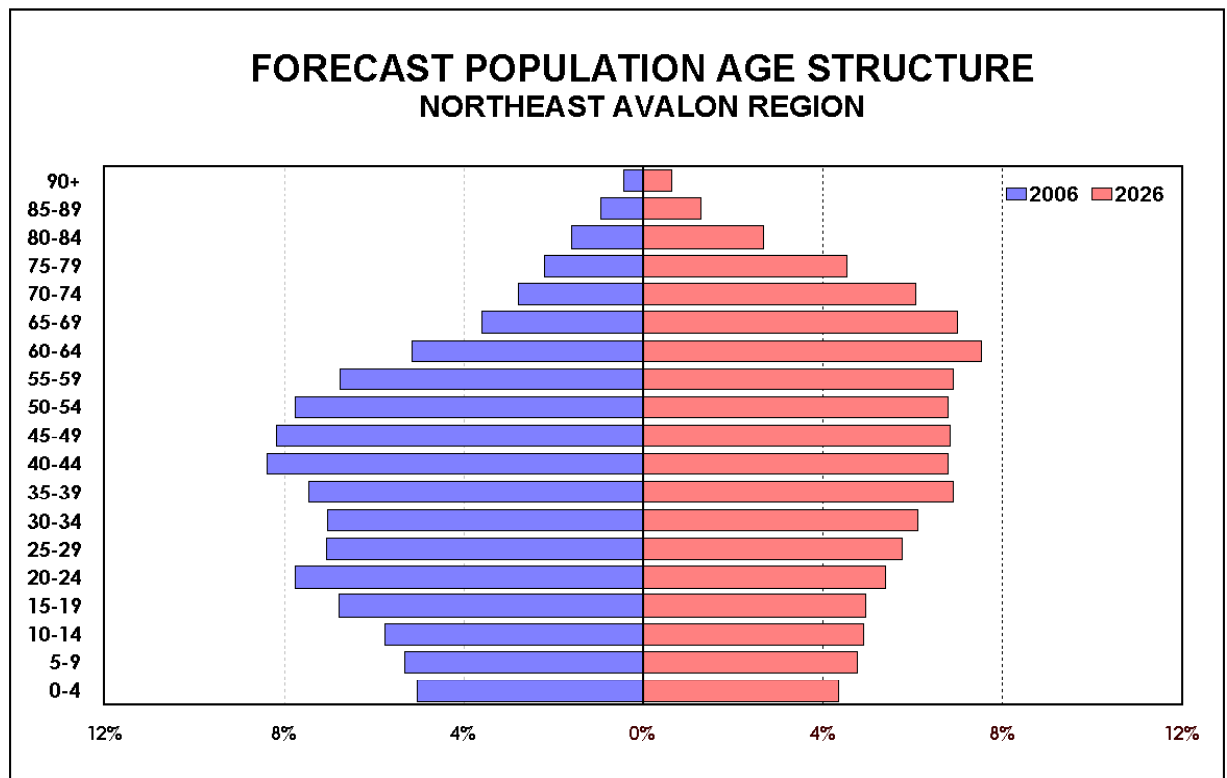
Migration is the primary source of population growth today. Even with the relatively robust rates of migration expected over the next 25 years, near the end of the forecast period overall population growth will slow as the natural decrease becomes greater than the in-migration. Similar patterns and relationships are expected in most parts of Canada through this time period.

The effect on natural increase of aging is clear from the significant aging of the population shown in the age structure charts below (Figures 4.16 and 4.17). The change in the number of children aged 0 to 4 is a clear indication of the effect of the current fertility rates. This age group comprised about 7.5% of the total population in 1986, fell to about 5% by 2006, and is forecast to decline to just above 4% by 2016 and beyond. The aging of the overall population can be clearly seen in the graphs by the peak age group moving from 20 to 24 in 1986 to 40 to 44 twenty years later. The aging continues in a predictable pattern so that the peak age group moves to 50 to 54 in 2016 and 60 to 64 in 2026.



Source: Hemson Consulting Ltd., based on Statistics Canada, 2006 Census of Canada and Newfoundland & Labrador, *Population & Household Projections Northeast Avalon Region*, June 2008.

Figure 4.16: Age Structure 1986 & 2006 *Repeated from earlier



Source: Hemson Consulting Ltd., based on Statistics Canada, 2006 Census of Canada and Newfoundland & Labrador, *Population & Household Projections Northeast Avalon Region*, June 2008.

Figure 4.17: Age Structure 2006 & 2026



What is striking, and has the greatest effect on natural increase, is the rise in the population 60 and over from 12% in 1986, to 17% in 2006, to 23% in 2016 and then to 30% by 2026. This demographic shift has enormous implications for all aspects of planning in the Northeast Avalon Region.

4.3.2 Preliminary Distribution of Growth Based on Where Housing Is Accommodated

While forecasting and planning are often discussed in terms of population, the most important factor in regional land use planning is often the distribution of the physical growth of housing units. Where new households are accommodated is dependent on many factors, such as:

- the real estate market, including the preferences of individual households and their ability to afford housing;
- the ability of a community to physically accommodate new housing: once built out to its boundaries a community can only accommodate growth through infilling;
- the ability of municipalities to finance and build infrastructure to accommodate new housing; and,
- land use planning policies that may result in directing housing demand to (or away from) specific locations.

Technically, the approach to the forecasts involves two major steps. First, a distribution of household growth within the Northeast Avalon Region is prepared. Second, a person per unit factor is applied to the total number of households to determine the population of the community. To assist the reader in understanding the approach and assumptions, the forecast has organised the communities into four groupings with common growth characteristics: the urban core, the suburban corridor, the suburban perimeter, and the outer perimeter categories. These categories are more fully described in Chapter 3.

For the purposes of this preliminary forecast, it is expected that for much of the next 25 years housing demand in the region will continue to be dominated by single-detached units. While the population is aging, the peak age groups are still within the age ranges where the majority of households prefer single detached units. A major shift toward apartment units desired by the elderly is likely to occur beyond this plan in 2030s as the current peak population age groups age into their 70s. Should this housing demand profile not coincide with other key planning goals, the Northeast Avalon Region Plan could put policies into place that would encourage a shift in housing demand by type within the planning period.

Key assumptions are made for the forecast distribution of housing growth. The historic patterns and trends in the distribution of housing growth are summarized by the number and shares of new housing starts in the Northeast Avalon Region communities shown below in Table 4.5. The patterns shown here are a consistently high share of growth in the suburban corridor with a significant shift from Mount Pearl to Paradise and Conception Bay South as the land supply in Mount Pearl nears build out. The other key patterns are the rising share of growth in the suburban perimeter, especially in Torbay and Portugal Cove-St. Philip's and, finally, a more stable small share in the outer perimeter communities.



BUILDING PERMITS 1989 – 2008						
	1989-90	1991-95	1996-00	2001-05	2006-08	TOTAL
St. John's	1,195 (48%)	1,635 (39%)	1,835 (44%)	3,365 (46%)	2,400 (44%)	10,435 (44%)
Mount Pearl	540 (21%)	855 (20%)	435 (10%)	425 (6%)	185 (3%)	2,435 (10%)
Urban Core	1,735 (69%)	2,490 (59%)	2,265 (54%)	3,795 (52%)	2,585 (48%)	12,870 (55%)
Paradise	105 (4%)	310 (7%)	715 (17%)	1,240 (17%)	1,165 (22%)	3,535 (15%)
Conception Bay South	395 (16%)	795 (19%)	580 (14%)	1,135 (16%)	770 (14%)	3,670 (16%)
Suburban Corridor Communities	500 (20%)	1,105 (26%)	1,290 (31%)	2,375 (33%)	1,935 (36%)	7,200 (31%)
Portugal Cove-St. Philip's	90 (4%)	180 (4%)	235 (6%)	400 (5%)	215 (4%)	1,120 (5%)
Torbay	65 (3%)	95 (2%)	110 (3%)	340 (5%)	340 (6%)	945 (4%)
Logy Bay-Middle Cove-Outer Cove	15 (1%)	75 (2%)	70 (2%)	75 (1%)	55 (1%)	290 (1%)
Suburban Perimeter Communities	170 (7%)	350 (8%)	415 (10%)	815 (11%)	610 (11%)	2,355 (10%)
Holyrood	35 (1%)	60 (1%)	45 (1%)	70 (1%)	45 (1%)	255 (1%)
Bell Island	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Bauline	1 (0%)	10 (0%)	10 (0%)	5 (0%)	10 (0%)	35 (0%)
Pouch Cove	20 (1%)	55 (1%)	20 (0%)	50 (1%)	40 (1%)	180 (1%)
Flatrock	35 (1%)	30 (1%)	35 (1%)	60 (1%)	55 (1%)	215 (1%)
Petty Harbour-Maddox Cove	20 (1%)	35 (1%)	20 (0%)	30 (0%)	15 (0%)	115 (0%)
Bay Bulls	0 (0%)	25 (1%)	35 (1%)	60 (1%)	100 (2%)	215 (1%)
Witless Bay	0 (0%)	35 (1%)	40 (1%)	45 (1%)	30 (1%)	150 (1%)
Outer Perimeter Communities	110 (4%)	245 (6%)	210 (5%)	310 (4%)	290 (5%)	1,165 (5%)
Total	2,515 (100%)	4,185 (100%)	4,185 (100%)	7,295 (100%)	5,415 (100%)	23,595 (100%)

Source: Hemson Consulting Ltd. based on Statistics Canada building permit data.*Note: Figures may not add due to rounding.

Table 4.5: Share of Housing Starts by Building Permits 1989-2008



Based on the patterns and trends observed the forecast shares of growth (shown in Table 4.6) are developed. The key assumption is the continued majority of growth occurring in the urban core and suburban corridor. In particular, it is assumed that St. John's can maintain current levels of growth through a combination of additional development areas and infill and redevelopment. Likewise, stable shares in Mount Pearl and Conception Bay South reflect a continuation of existing patterns. The share in Paradise is forecast to decline slightly from the historically high levels of growth as more growth is attracted to other areas. Most of the suburban perimeter community growth is forecast to remain concentrated in Torbay. In the outer perimeter communities, small shares of the regional growth are forecast to continue, but with a slow and steady rate of increase.

SHARE OF FORECAST GROWTH TO 2031						
	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total Growth 2006-2031
St. John's	40%	40%	40%	40%	40%	40%
Mount Pearl	3%	3%	3%	3%	3%	3%
Urban Core	43%	43%	43%	43%	43%	43%
Paradise	24%	24%	24%	23%	23%	24%
Conception Bay South	15%	15%	15%	15%	15%	15%
Suburban Corridor Communities	39%	39%	39%	38%	38%	39%
Portugal Cove-St. Philip's	4%	4%	5%	5%	5%	4%
Torbay	7%	6%	6%	6%	6%	6%
Logy Bay-Middle Cove-Outer Cove	1%	1%	1%	1%	1%	1%
Suburban Perimeter Communities	12%	11%	12%	12%	12%	12%
Holyrood	1%	1%	1%	1%	1%	1%
Bell Island	0%	0%	0%	0%	0%	0%
Bauline	1%	1%	1%	1%	1%	1%
Pouch Cove	1%	1%	1%	1%	1%	1%
Flatrock	1%	1%	1%	1%	1%	1%
Petty Harbour-Maddox Cove	0%	0%	1%	1%	1%	0%
Bay Bulls	2%	2%	2%	2%	2%	2%
Witless Bay	1%	1%	1%	1%	1%	1%
Outer Perimeter Communities	6%	7%	7%	7%	7%	7%
Total	100%	100%	100%	100%	100%	100%

Source: Hemson Consulting Ltd. based on Statistics Canada data.
Table 4.6: Share of Forecast Growth to 2031 by Census Period



Applying these shares to the regional household growth provides a forecast of household growth by community, shown in Table 4.7. Table 4.8 provides the forecast total housing by community.

FORECAST HOUSING UNIT GROWTH TO 2031						
	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total Growth 2006-2031
St. John's	2,025	1,620	995	935	440	6,010
Mount Pearl	150	120	75	70	35	450
Urban Core	2,175	1,740	1,070	1,005	470	6,460
Paradise	1,215	970	585	535	250	3,560
Conception Bay South	760	605	375	350	165	2,255
Suburban Corridor Communities	1,975	1,580	960	885	415	5,815
Portugal Cove-St. Philip's	220	175	110	110	50	665
Torbay	330	245	150	145	70	935
Logy Bay-Middle Cove-Outer Cove	50	45	30	30	15	165
Suburban Perimeter Communities	595	460	290	280	130	1,765
Holyrood	35	30	15	15	10	105
Bell Island	15	10	5	5	5	45
Bauline	25	20	10	10	5	75
Pouch Cove	40	35	25	25	10	135
Flatrock	50	45	25	30	15	165
Petty Harbour-Maddox Cove	20	15	10	10	5	65
Bay Bulls	95	80	50	45	20	295
Witless Bay	30	30	15	15	10	100
Outer Perimeter Communities	315	265	170	160	75	985
Total	5,060	4,045	2,490	2,335	1,095	15,025

Source: Hemson Consulting Ltd. based on Statistics Canada data. *Note: Figures may not add due to rounding.

Table 4.7: Forecast Housing Unit Growth to 2031 by Census Period



TOTAL FORECAST HOUSING UNITS						
	2006	2011	2016	2021	2026	2031
St. John's	41,620	43,645	45,260	46,260	47,190	47,630
Mount Pearl	9,215	9,370	9,490	9,565	9,635	9,670
Urban Core	50,835	53,010	54,755	55,825	56,825	57,300
Paradise	4,500	5,715	6,685	7,270	7,810	8,060
Conception Bay South	7,925	8,685	9,290	9,665	10,015	10,180
Suburban Corridor Communities	12,425	14,400	15,975	16,935	17,820	18,240
Portugal Cove-St. Philip's	2,350	2,570	2,740	2,855	2,965	3,015
Torbay	2,220	2,550	2,790	2,940	3,085	3,155
Logy Bay-Middle Cove-Outer Cove	675	725	770	800	830	845
Suburban Perimeter Communities	5,250	5,845	6,305	6,600	6,880	7,010
Holyrood	725	760	790	810	825	830
Bell Island	1,045	1,060	1,070	1,075	1,085	1,090
Bauline	135	160	180	195	205	210
Pouch Cove	650	690	70	755	775	790
Flatrock	420	470	515	545	570	585
Petty Harbour-Maddox Cove	325	345	360	375	385	390
Bay Bulls	395	490	575	625	670	690
Witless Bay	385	415	445	460	480	485
Outer Perimeter Communities	4,085	4,400	4,665	4,835	4,995	5,070
Total	72,595	77,655	81,700	84,190	86,525	87,620

Source: Hemson Consulting Ltd. based on Statistics Canada data.*Note: Figures may not add due to rounding.

Table 4.8: Total Forecast Housing Units to 2031 by Census Period

Finally, the forecast of population is based on applying the forecast persons per unit to the total number of households. The average persons per unit in any community will decline over time as the population ages. On a regional basis, the declining person per units is the direct result of the total number of households growing at a faster rate than the population. The overall region is forecast to decline in average household size from 2.46 to 2.28 over the 25 years. While this change may appear to be small, its effect is significant as it applies across the entire existing base of housing. It has particularly dramatic effects in the largest municipalities of St. John's and Mount Pearl. The forecast decline in persons per unit by community is shown in Table 4.9 and generally indicates a rate of decline in each community about the same as the change in the overall region. The following Table 4.10 provides the resulting population followed by the population growth in Table 4.11. As described previously, the purpose of these preliminary forecasts is to provide a starting point for considering how regional planning may facilitate or redirect the growth patterns of the region.



PERSONS PER UNIT						
	2006	2011	2016	2021	2026	2031
St. John's	2.42	2.34	2.27	2.23	2.18	2.15
Mount Pearl	2.68	2.59	2.52	2.47	2.41	2.38
Urban Core	2.55	2.47	2.40	2.35	2.30	2.27
Paradise	2.80	2.70	2.63	2.58	2.52	2.48
Conception Bay South	2.77	2.68	2.61	2.56	2.50	2.46
Suburban Corridor Communities	2.79	2.69	2.62	2.57	2.51	2.47
Portugal Cove-St. Philip's	2.80	2.70	2.63	2.58	2.52	2.48
Torbay	2.83	2.73	2.66	2.61	2.55	2.51
Logy Bay-Middle Cove-Outer Cove	2.92	2.82	2.75	2.70	2.63	2.59
Suburban Perimeter Communities	2.83	2.73	2.66	2.61	2.55	2.51
Holyrood	2.76	2.67	2.59	2.55	2.49	2.45
Bell Island	2.67	2.58	2.51	2.46	2.40	2.37
Bauline	2.81	2.71	2.64	2.59	2.53	2.49
Pouch Cove	2.70	2.61	2.54	2.49	2.44	2.40
Flatrock	2.89	2.79	2.71	2.66	2.60	2.56
Petty Harbour-Maddox Cove	2.81	2.71	2.64	2.59	2.53	2.49
Bay Bulls	2.73	2.64	2.57	2.52	2.46	2.42
Witless Bay	2.77	2.68	2.61	2.56	2.50	2.46
Outer Perimeter Communities	2.74	2.65	2.58	2.54	2.48	2.44
Total	2.56	2.48	2.42	2.37	2.32	2.28

Source: Hemson Consulting Ltd. based on Statistics Canada data.

Table 4.9: Persons Per Unit by Census Period, by Census Period, 2006-2031



FORECAST POPULATION AND OVERALL GROWTH							
	2006	2011	2016	2021	2026	2031	Change 2006 – 2031
St. John's	100,650	102,025	102,955	103,310	102,925	102,210	1,560
Mount Pearl	24,670	24,240	23,890	23,640	23,260	22,960	-1,710
Urban Core	125,320	126,265	126,840	126,950	126,185	125,175	-145
Paradise	12,585	15,445	17,585	18,775	19,690	20,000	7,415
Conception Bay South	21,965	23,265	24,220	24,735	25,035	25,035	3,070
Suburban Corridor Communities	34,550	38,715	41,805	43,515	44,725	45,030	10,480
Portugal Cove-St. Philip's	6,575	6,945	7,215	7,375	7,475	7,485	910
Torbay	6,280	6,970	7,430	7,685	7,870	7,915	1,635
Logy Bay-Middle Cove-Outer Cove	1,975	2,050	2,120	2,160	2,185	2,185	210
Suburban Perimeter Communities	14,830	15,965	16,760	17,215	17,535	17,585	2,755
Holyrood	2,005	2,035	2,050	2,060	2,050	2,035	30
Bell Island	2,780	2,725	2,685	2,655	2,610	2,575	-205
Bauline	380	435	480	500	520	525	145
Pouch Cove	1,760	1,805	1,850	1,880	1,890	1,890	130
Flatrock	1,215	1,315	1,400	1,450	1,485	1,495	280
Petty Harbour-Maddox Cove	915	940	955	970	980	975	60
Bay Bulls	1,080	1,295	1,470	1,570	1,645	1,675	595
Witless Bay	1,070	1,115	1,160	1,185	1,195	1,195	125
Outer Perimeter Communities	11,205	11,670	12,050	12,265	12,30	12,365	1,160
Total	185,905	192,615	197,465	199,945	200,820	200,155	14,250

Source: Hemson Consulting Ltd. based on Statistics Canada data. *Note: Figures may not add due to rounding.

Table 4.10: Forecast Population and Overall Growth by Census Period, 2006-2031



FORECAST POPULATION GROWTH						
	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total Growth 2006-2031
St. John's	1,375	930	350	-385	-715	1,560
Mount Pearl	-430	-350	-250	-385	-295	-1,710
Urban Core	945	580	100	-765	-1,010	-145
Paradise	2,860	2,140	1,190	915	310	7,415
Conception Bay South	1,300	955	515	295	0	3,070
Suburban Corridor Communities	4,165	3,095	1,705	1,210	310	10,480
Portugal Cove-St. Philip's	370	270	160	105	5	910
Torbay	690	460	255	190	45	1,635
Logy Bay-Middle Cove-Outer Cove	75	65	40	25	0	210
Suburban Perimeter Communities	1,135	795	455	315	50	2,755
Holyrood	30	20	5	-10	-15	30
Bell Island	-55	-45	-30	-45	-35	-205
Bauline	55	40	25	20	5	145
Pouch Cove	45	45	30	15	-5	130
Flatrock	100	85	50	40	10	280
Petty Harbour-Maddox Cove	25	20	15	5	0	60
Bay Bulls	215	175	100	80	25	595
Witless Bay	45	45	25	15	0	126
Outer Perimeter Communities	465	380	215	115	-15	1,160
Total	6,710	4,850	2,480	875	-665	14,250

Source: Hemson Consulting Ltd. based on Statistics Canada data. *Note: Figures may not add due to rounding.

Table 4.11: Forecast Population Growth by Census Period, 2006-2031



4.3.3 Preliminary Employment Distribution Based on Growth in All Communities to Serve Local Needs Plus Major Business Park Areas, Yet to Be Located

The employment forecast is important for regional planning in order that communities are able to plan appropriately for growth in employment in their local communities, while at the same time enabling major regional employment concentrations to be planned from a regional perspective. The distribution of employment in the forecast is of employment by *place of work*. Place of work employment refers to the location of actual jobs not where the job holders live (which is generally referred to as the *labour force* of a community).

The employment forecast provided here is a “smooth” forecast as it shows a realistically steady growth pattern over the period. In reality employment growth always occurs in waves following from the general economic cycles. For long-term planning purposes it is not reasonable or helpful to speculate on the timing of such cycles. Overlaying the economic cycles there will also be employment cycles associated with the large resource-based projects. Again, it is not useful to speculate on the specific timing of these projects, nor the construction-based employment “spikes” as they typically do not have major long term regional land use planning implications of the type to be addressed in the Northeast Avalon Regional Plan. These spikes may, however, create short-term land needs for marshalling and assembling as well as for housing. More important for planning purposes is the long-term permanent jobs occupied by permanent residents of the region.

The approach to the distribution of employment in the Northeast Avalon Region is tied, in part, to the population forecast as a significant portion of the growth in employment within each community is driven by the increasing demand for local services. Some of the employment base, while not directly tied to providing services to the population, is nevertheless associated with a larger or growing community. This local employment represents a little over one-third of the employment growth in the region over the period to 2031. The “population-related” portion of the employment is determined using an activity rate method in which local employment growth is forecast in relation to the population in a community.

The majority of the employment in the region, however, is not specifically tied to the population in one community. Most of the employment that is generating the region’s wealth of (rather than just providing local services) is located either in the urban core or in the major business parks in the surrounding communities, particularly in Mount Pearl and Paradise.



Table 4.12 provides the activity-rate based forecast for the employment that is primarily providing local services to communities or jobs in the smaller more localized business parks that currently exist or are planned within the region's communities.

FORECAST ACTIVITY RATES						
	2006	2011	2016	2021	2026	2031
St. John's	71.8%	73.0%	72.5%	72.0%	72.0%	72.0%
Mount Pearl	41.8%	43.0%	43.0%	42.5%	42.5%	42.5%
Urban Core	56.8%	58.0%	57.8%	57.3%	57.3%	57.3%
Paradise	19.1%	19.0%	19.5%	20.0%	20.0%	20.0%
Conception Bay South	16.5%	17.0%	17.0%	17.0%	17.0%	17.0%
Suburban Corridor Communities	17.8%	18.0%	18.3%	18.5%	18.5%	18.5%
Portugal Cove-St. Philip's	10.4%	10.5%	11.0%	11.0%	11.0%	11.0%
Torbay	11.7%	12.0%	12.5%	13.0%	13.0%	13.0%
Logy Bay-Middle Cove-Outer Cove	8.9%	9.0%	9.0%	9.0%	9.0%	9.0%
Suburban Perimeter Communities	10.8%	11.8%	11.4%	11.6%	11.6%	11.7%
Holyrood	28.4%	29.0%	29.5%	29.5%	29.5%	29.5%
Bell Island	15.6%	15.5%	15.5%	15.5%	15.5%	15.5%
Bauline	2.6%	2.5%	2.5%	2.5%	2.5%	2.5%
Pouch Cove	5.4%	5.5%	5.5%	6.0%	6.0%	6.0%
Flatrock	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Petty Harbour-Maddox Cove	4.9%	5.0%	5.0%	5.0%	5.0%	5.0%
Bay Bulls	20.4%	20.5%	20.5%	21.0%	21.5%	21.5%
Witless Bay	34.1%	34.0%	34.0%	34.0%	34.0%	34.0%
Outer Perimeter Communities	15.8%	16.5%	15.9%	16.0%	16.0%	16.0%
Total	49.5%	51.0%	52.0%	52.5%	52.5%	52.5%

Source: Hemson Consulting Ltd. based on Statistics Canada data.

Table 4.12: Forecast Activity Rates by Census Period, 2006-2031

Applying the activity rates to the population forecast provides the employment growth forecast and the total employment forecast for each of the region's communities as shown in Table 4.13.



In this table the most important element is the “unallocated” employment. The unallocated employment is the major employment concentration, the location of which needs to be carefully considered through the Northeast Avalon Regional Plan process. Of the 8,400 projected jobs a portion will be office jobs which have historically been concentrated in St. John’s (and mostly downtown). The majority of the jobs are likely to be accommodated in industrial or business park type environments. The locational needs of this component of the employment forecast is a key consideration for regional land use planning. The following section provides a distribution of some of the key matters related to the existing and future business parks in the region.

As with the population forecast, the employment forecast should be considered as preliminary pending completion of the regional planning process work which may seek to redirect growth away from the current market patterns described above.

FORECAST EMPLOYMENT AND OVERALL GROWTH							
	2006	2011	2016	2021	2026	2031	Change 2006 – 2031
St. John’s	72,230	74,480	74,645	74,380	74,105	73,590	1,360
Mount Pearl	10,315	10,425	10,275	10,050	9,885	9,760	-555
Urban Core	82,545	84,900	84,915	84,430	83,990	83,350	805
Paradise	2,400	2,935	3,430	3,755	3,940	4,000	1,600
Conception Bay South	3,630	3,955	4,120	4,205	4,255	4,255	625
Suburban Corridor Communities	6,030	6,890	7,550	7,960	8,195	8,255	2,225
Portugal Cove-St. Philips	685	730	795	810	820	825	140
Torbay	735	835	930	1,000	1,025	1,030	295
Logy Bay-Middle Cove-Outer Cove	175	185	190	195	195	195	20
Suburban Perimeter Communities	1,595	1,750	1,915	2,005	2,040	2,050	455
Holyrood	570	590	605	605	605	600	30
Bell Island	435	425	415	410	405	400	-35
Bauline	10	10	10	15	15	15	5
Pouch Cove	95	100	100	115	115	115	20
Flatrock	30	35	35	35	35	40	5
Petty Harbour-Maddox Cove	45	45	50	50	50	50	5
Bay Bulls	220	265	300	330	355	360	140
Witless Bay	365	380	395	400	405	405	40
Outer Perimeter Communities	1,770	1,850	1,915	1,960	1,985	1,980	210
Unallocated	0	2,845	5,880	7,585	8,190	8,425	8,425
Total	91,940	98,235	102,680	104,970	105,430	105,080	13,140

Source: Hemson Consulting Ltd. based on Statistics Canada data. *Note: Figures may not add due to rounding.

Table 4.13: Forecast Employment and Overall Growth by Census Period, 2006-2031



4.4 Key Issues and Opportunities for the Northeast Avalon Regional Economy

Based on the recent economic and demographic trends and preliminary growth forecasts provided in this chapter, the following questions and issues will be addressed throughout the remainder of the regional planning process:

Migration rather than natural increase will continue to be the main driver of growth in the Northeast Avalon Region. The most significant component of future migration will be the movement of people to the Northeast Avalon Region from other parts of Newfoundland and Labrador and, increasingly, from other parts of Canada. The performance of the regional economy relative to the economies of the province and nation as a whole will be a key factor determining future levels of net migration.

Aging Population - The region's population will continue to age so that by 2031 the peak age group in the region will be people in their late 60s. Overall population growth in the region will decline from the mid-2020s.

Growing Housing Demand - As household growth in the Northeast Avalon Region continues to outpace population growth over the next 25 years the regional plan should address the growing demand for new housing. A forecast 15,000 new housing units will be required to accommodate this demand.

For much of the next 25 years housing demand in the region will continue to be for single-detached units as peak population age groups will only just be reaching the age at which downsizing typically occurs at the end of the forecast period. The question should be asked—is the current rate and pattern of housing growth that is unfolding in the region desirable? If not, how might growth be redirected to:

- Make efficient use of existing infrastructure
- Protect the natural environment
- Protect the character of communities
- Ensure housing affordability

Mega-Project Economy - Economic growth prospects in the Northeast Avalon Region will be tied to mega-project development, particularly those projects associated with offshore oil and gas. The scale and timing of known projects will ensure that, in the short term, employment growth and prosperity remain strong. A range of long term opportunities exist for the Northeast Avalon Regional economy. What economic future is most desirable for the region? What infrastructure is required to achieve the desired economic future? In this respect consideration should be given to promoting complimentary rather than competing economic clusters and intensifying and/or expanding existing employment areas.



Regional-Serving Business Parks - Preliminary employment forecasts suggest a need for additional regional-serving business parks. There is currently a regional business park node located in the urban corridor between Mount Pearl and Paradise with good transportation links but a rapidly diminishing supply of available land. Opportunities for developing other business parks in the region exist, most notably around the airport. However, major infrastructure investments would likely be required to accommodate increased truck traffic in these areas. The effect of truck traffic across the region should be a major consideration when planning for lands for regional employment uses.

At a minimum, new urban business park lands in the range of 200 ha (about the size of the Donovan's Business Park in Mount Pearl), enough to accommodate about 5,000 jobs, should be considered as part of the regional plan. In addition, lands will likely be required for lay down, assembly and marshalling of equipment associated with the large offshore oil and gas projects. Meeting the high demand for office space, particularly Class A office space, in the urban core, and the growing demand for retail services in the suburban corridor will need to be addressed.

Servicing Implications - New urban infrastructure will be required in the region to service both residential and non-residential growth. Where possible, the following principles for financing such infrastructure should be applied:

- Equity – where feasible, new development should pay for the cost of servicing that development (“growth should pay for growth”)
- Cost sharing – where the benefits of growth are shared between jurisdictions costs should also be shared.



5 Regional Servicing

5.1 Water Servicing

5.1.1 St. John’s Regional Water Supply System

Potable water is supplied to the St. John’s area through two systems:

- the St. John’s Regional Water Supply System that services six municipalities, i.e. the City of St. John’s, Mount Pearl, Conception Bay South, Paradise, Portugal Cove – St. Philip’s, and Petty Harbour – Maddox Cove; and
- the Windsor Lake system that services the downtown and eastern areas of the City of St. John’s.

The source of supply is from three watersheds:

- Bays Bull Big Pond,
- Petty Harbour Long Pond (supplemented by Beer Pond), and
- Windsor Lake (occasionally supplemented by Little Power’s Pond in the Broad Cove River watershed).

The water infrastructure system is operated and maintained by the Regional Water System Division of the City of St. John’s and is administered by the St. John’s Regional Water Supply Authority. Most of the watershed areas are within the City of St. John’s boundary. The City of St. John’s has shared jurisdiction with neighbouring municipalities for portions of the watersheds outside of the City’s municipal jurisdiction.

The present and future projected populations for these areas are summarized in Table 5.1. The projected growth from 2006 to 2031 for the St. John’s area (11,245 people) is approximately 79% of the total projected population increase (14,250) for the whole study area.

The “St. John’s Regional Water Supply Update to 1994 Report” (City of St. John’s, 2007) presented projected populations by St. John’s Water Authority for 2006 and 2031 as 159,380 and 209,964, respectively. As shown in Table 1.1, this study projects populations of 166,445 and 177,690 for 2006 and 2031, respectively.

Water Demand Projections

The per capita water consumption rates used to calculate 2006 and 2031 water demands are based on rates extracted from the “St. John’s Regional Water Supply Update to 1994 Report”. The per capita water demands range from 650 litres/capita/day (L/C/D) for areas with a commercial / industrial / institutional component, to between 360 and 500 L/C/D for primarily residential areas. These water demands were calculated for service areas that do not have individual household water meters. For new residential development with universal metering, a per capita water demand of between 400 and 500 L/C/D would be reasonable. For the purposes of this study, a 500 L/C/D water demand was applied to all of the communities



Water Servicing Population Projections							
Year	2006	2011	2016	2021	2026	2031	Population Increase 2006 to 2031
Municipality							
St. John's	100,650	102,025	102,955	103,310	102,925	102,210	1,560
Mount Pearl	24,670	24,240	23,890	23,640	23,260	22,960	-1,710
Paradise	12,585	15,445	17,585	18,775	19,690	20,000	7,415
Conception Bay South	21,965	23,265	24,220	24,735	25,035	25,035	3,070
Portugal Cove-St. Philip's	6,575	6,945	7,215	7,375	7,475	7,485	910
Sub-Total St. John's Area Water Supply	166,445	171,920	175,865	177,835	178,385	177,690	11,245
Torbay	6,280	6,970	7,430	7,685	7,870	7,915	1,635
Logy Bay-Middle Cove-Outer Cove	1,975	2,050	2,120	2,160	2,185	2,185	210
Holyrood	2,005	2,035	2,050	2,060	2,050	2,035	30
Bell Island	2,780	2,725	2,685	2,655	2,610	2,575	-205
Bauline	380	435	480	500	520	525	145
Pouch Cove	1,760	1,805	1,850	1,880	1,890	1,890	130
Flatrock	1,215	1,315	1,400	1,450	1,485	1,495	280
Petty Harbour-Maddox Cove	915	940	955	970	980	975	60
Bay Bulls	1,080	1,295	1,470	1,570	1,645	1,675	595
Witless Bay	1,070	1,115	1,160	1,185	1,195	1,195	125
Sub-Total Communities Outside St. John's	19,460	20,685	21,600	22,115	22,430	22,465	3,005
Total for Study Area	185,905	192,605	197,465	199,950	200,815	200,155	14,250

Data: Hemson Consulting Ltd. Based on Statistics Canada data.

Table 5.1: Water Servicing Population Projections, 2006-2031

outside the St. John's Regional and Windsor Lake Water Supply System area unless demands were obtained from other sources. Results of the calculations are contained in Table 5.2. Approximately 90% of the total projected increase in water demand between 2006 and 2031 is in the St. John's Regional and Windsor Lake Water Supply System. For comparative purposes, Table 5.2 also presents the projected water demands for communities outside the core St. John's Area Water Supply service area but within the Study Area. The year 2031 total projected water demand for the outside areas is just over 10 percent of the projected demand for the St. John's area (note: the "St. John's Area Water Supply" service area is not defined other than it implies the "core water supply area" It does not include all of the Regional Supply area as presented).



Projected Water Demands - Year 2006 and 2031					
Municipality	Median Water Demand per Person L/C/D	Year 2006		Year 2031	
		Population	Total Demand m ³ /D	Population	Total Demand m ³ /D
St. John's	650	100,650	65,423	102,210	66,437
Mount Pearl	650	24,670	16,036	22,960	14,924
Paradise	450	12,585	5,663	20,000	9,000
Conception Bay South	500	21,965	10,983	25,035	12,518
Portugal Cove-St. Philip's	360	6,575	2,367	7,485	2,695
Sub-Total St. John's Area Water Supply		166,445	100,471	177,690	105,573
Torbay	500	6,280	3,140	7,915	3,958
Logy Bay-Middle Cove-Outer Cove	500	1,975	988	2,185	1,093
Holyrood	500	2,005	1,003	2,035	1,018
Bell Island	500	2,780	1,390	2,575	1,288
Bauline	500	380	190	525	263
Pouch Cove	500	1,760	880	1,890	945
Flatrock	500	1,215	608	1,495	748
Petty Harbour-Maddox Cove	500	915	458	975	488
Bay Bulls	500	1,080	540	1,675	838
Witless Bay	500	1,070	535	1,195	598
Sub-Total Communities Outside St. John's		19,460	9,730	22,465	11,233
Total for Study Area		185,905	110,201	200,155	116,805

Table 5.2: Projected Water Demands - Year 2006 and 2031

Water Source Capacity

Adequately supplying the total projected water demands in a proposed service area requires a reliable water source. The reliability of surface or ground water sources is measured by the “safe yield” of the source, as determined by a number of hydrogeological and environmental criteria. The St. John's Area Water Supply System is supplied with water from two surface water sources; Bay Bulls Big Pond and Windsor Lake. The Windsor Lake source presently supplies approximately 44 percent of the total system supply. The source lakes and respective watersheds are shown on Figure 5.1. Table 5.3 summarizes the existing reliable yield of Bay Bulls Big Pond and Windsor Lake. The existing combined total reliable yield for the two



lakes is 116,300 cu. m/day. This reliable yield has to be equal to or greater than the average day demand of the water service area. A comparison of results in Table 5.2 and Table 5.3 indicates the two water sources have sufficient yield capacity to service the projected 2031 water demands (yield capacity 116,300 cu. m/day versus 105,573 cu. m/day projected 2031 water demand).

Watershed	Reliable Yield m ³ /D
Bay Bulls Big Pond	104,600
<i>Subtract Power Generation Supply</i>	-30,000
Total	74,600
Windsor Lake	41,700
Total Bay Bulls & Windsor Lake	116,300

Table 5.3: Watershed Yield Capacities - Existing

Previous water supply studies have evaluated options to increase the reliable yield of existing watersheds and to add new water sources in order to adequately supply long term future growth demands. Table 5.4 presents a summary of the reliable yield potential of the proposed expansions.

Watershed	Reliable Yield m ³ /D
Bay Bulls Big Pond - Windsor Lake	116,300
Petty Harbour Long Lake	15,900
Upgrade Little Powers Pond	27,500
Thomas Pond	49,500
Total Potential Yield Capacity	209,200

Table 5.4: Potential Total Watershed Sources



Bay Bulls Big Pond Water Treatment Plant

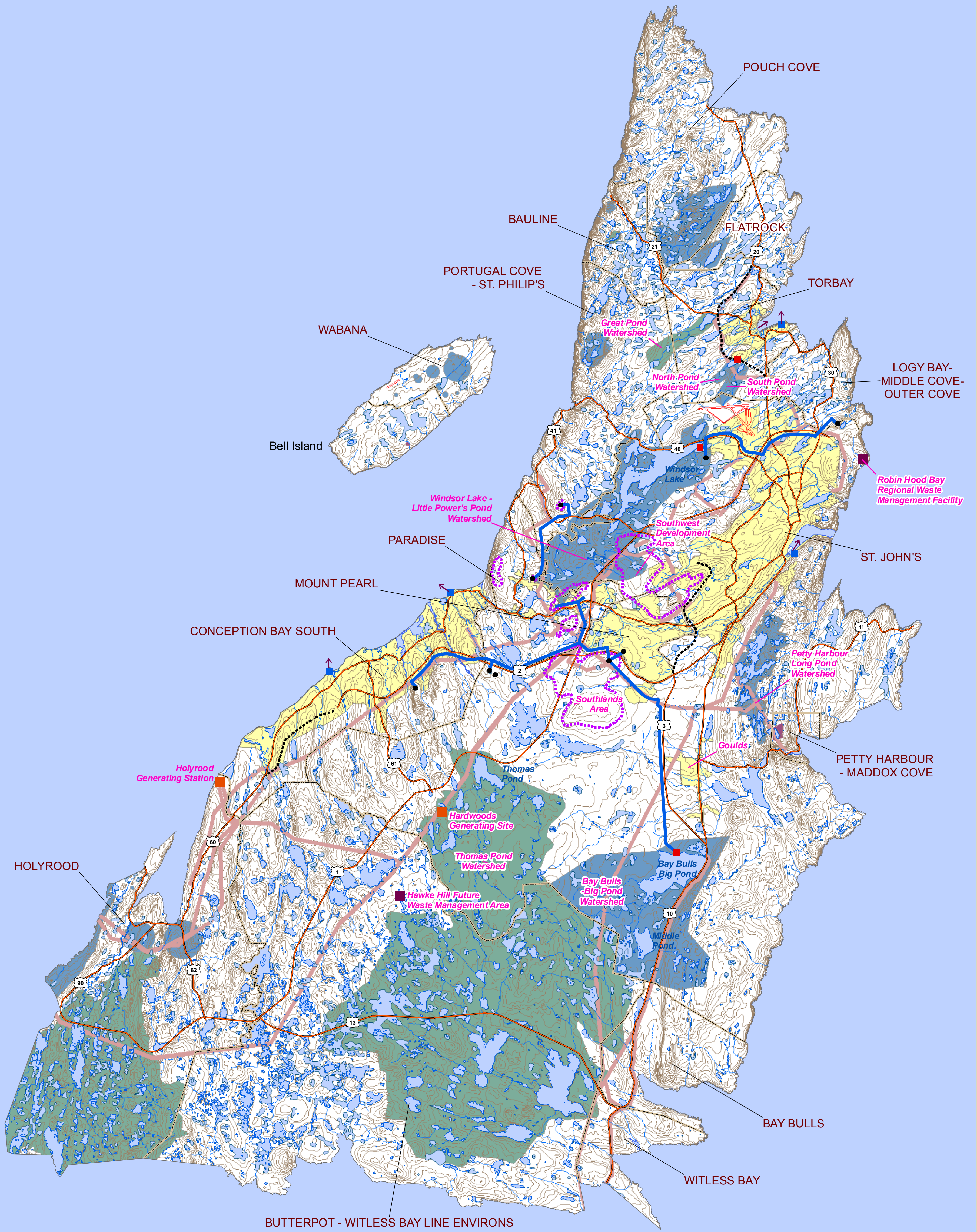
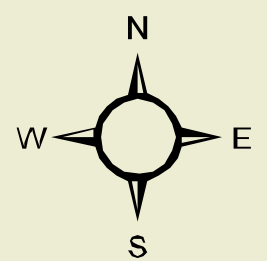
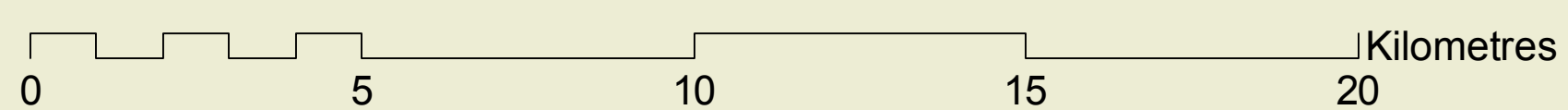


FIGURE 5.1: Regional Utilities & Servicing



- | | | | |
|-----------------------------|---|--------------------|--------------|
| Outfall | 190 m Contour | Powerline Corridor | Water Supply |
| Reservoir | Proposed Road | Contours | Protected |
| Water Treatment Plant | Arterial Roads | Rivers / Stream | Unprotected |
| Waste-water Treatment Plant | Municipal Boundary | Airport | |
| Water Transmission Main | Existing Serviced Limits - Water and Sanitary | | |

Source: Department of Municipal Affairs & Municipalities in the Region
 Projection: NAD 83 Modified Transverse Mercator (NAD83 MTM 1)
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Treated Water Capacity

Water treatment plants are located on Bay Bulls Big Pond and Windsor Lake. The present rated capacity of the two plants is 109,000 cu. m/day and 70,000 cu. m/day, respectively, for a total of 179,000 cu. m/day. Water treatment plants are designed to supply treated water to meet maximum day demands of the service area. Previous reports have presented a variety of maximum day factors (factor applied to the average day demand to obtain the maximum day demand) based on historical data and comparisons to similar water supply areas. The factors vary between 1.5 and 1.75. For the purposes of this study a factor of 1.6 is used. Table 5.5 compares the present treatment plant capacities with the projected maximum day water demands.

Water Treatment Facility	Rated Capacity m ³ /D	2031 Water Demands	
		Average Day Demand m ³ /D	Maximum Day Demand m ³ /D
Bay Bulls Big Pond WTP	109,000	59,121	94,594
Windsor Lake WTP	70,000	46,452	74,323
Total Treated Capacity	179,000	105,573	168,917

Table 5.5: Treated Water Supply Capacity - 2031 Projected Demands

The total 2031 projected maximum day demand of 168,917 cu. m/day for the St. John's Regional Water Supply System service area is slightly less than the rated capacity of the Bay Bulls Big Pond and Windsor Lake water treatment plants. A long term planning / servicing study should be carried out to develop water (and wastewater) servicing strategies for the projected population growth within the St. John's Region. Regional land use planning and development controls should be adopted based on feasible, sustainable, and cost effective servicing strategies, typically for 10 year, 20 -25 year, and ultimate build-out development projections. The study should include a detailed analysis of water infrastructure requirements for a variety of development scenarios. The location and density of growth within a serviceable area of either of the two treatment plants could have a significant impact on the cost of required infrastructure. Ideally development should be encouraged within each of the water treatment plant's service area in proportion to their rated capacity so that plant capacities are not reached prematurely. Both water and wastewater infrastructure requirements need to be assessed for each of the development scenarios.

Water Transmission and Storage Infrastructure

In the serviced areas of St. John's, the existing water transmission mains and storage reservoirs have been studied to determine required additions and expansions to meet future demands. A cursory review will be carried out once the future development growth areas are determined. There is very



Water Tower



little serviced development on land above the 190 metre ground contour as development restrictions were placed on these lands in the past. Studies of the two larger undeveloped lands above the 190 metre contour, Southlands and Southwest Development areas (*See Figure 5.1*) were carried out to determine infrastructure requirements to service development. Results of a review of the information indicate water booster stations, storage reservoirs and some new water transmission mains will be required to service the Southlands and Southwest Development lands. In addition, previous reports state recommendations contained in the “St. John’s Regional Water Supply Update to the 1994 Report”, including reactivating the Petty Harbour Long Pond water supply with full treatment, will have to be implemented in order to service lands above the 190 metre contour. However the report was based on large population growths (23,360 people for Southlands and 16,000 people for the Southwest Development area. Therefore, the findings in the report should be revisited once potential population numbers are finalized.

Portugal Cove – St. Philip’s Water Supply

Portugal Cove – St. Philip’s is provided with water from the St. John’s Regional Water Supply System. Approximately 700 of a total 2400 homes are serviced with central water. Using 3 people per household, the present serviced population is 2,100 people. Previous studies indicate a new water storage tank will be required on Meadow Heights once the service population reaches 5000 to 6000 people. Reports indicate the 1700 homes with onsite water and sewer have very few problems.

5.1.2 Torbay Water Supply System

The Town of Torbay is presently serviced with water from the North Pond. The 2006 population of 6,281 is projected to grow to 7,915 in 2031. Presently, approximately 45% of the population is serviced with water and sewer (2826 people).

As indicated in Table 5.1, the projected 2031 population for Torbay is 7,915 people. This will result in a total average water demand of 3,958 cu. m/day using a 500 L/C/D water consumption rate. The estimated reliable yield of North Pond is 1,900 cu. m/day. Therefore, the North Pond watershed will not have adequate capacity to service the 2031 projected water demand of 3,958 cu. m/day. The Town has investigated South Pond and Great Pond as possible additional water supply sources. The estimated reliable yield for the South Pond and Great Pond is 1,500 and 3,900 cu. m/day respectively. Presently, the Department of Environment and Conservation will not approve South Pond as a potable water supply source, primarily due to the proximity to industrial lands and contaminated soil near the airport. If Great Pond is developed as a water supply source, the total reliable yield for South Pond and Great Pond will be 5,800 cu. m/day, more than sufficient to provide the 2031 projected water demands.

Chlorination and PH adjustment is located at South Pond. Most likely new Federal Regulations will require full treatment at both South Pond and Great Pond.



5.2 Wastewater Servicing

5.2.1 St. John's Wastewater Servicing

The existing St. John's wastewater collection and treatment system services the City of St. John's and Mount Pearl and a portion of the Town of Paradise. The projected 2031 population for St. John's and Mount Pearl is 102,210 and 22,960, respectively for a total of 125,170 people. A new wastewater treatment plant was recently constructed at the shoreline of St. John's Harbour, with an outfall into the Harbour. The facility was designed to service a population of 157,100. The existing system includes a number of combined sewer pipes. Significant interceptor sewers were constructed along the shoreline. Wet weather overflows are located on Temperance and Prescott Streets.

As indicated earlier, land above the 190 metre ground contour may be serviced with water if the required water infrastructure is installed. Previous reports indicate the lands above the 190 metre contour in Southlands and the Southwest Development area can be provided with wastewater services by connecting to the existing trunk sewers. The existing Waterford Valley Relief Trunk Sewer has the capacity to service Southlands, and the Rennies River Relief Trunk Sewer has the capacity to service the Southwest Development area.

5.2.2 Portugal Cove – St. Philip's Wastewater Servicing

Portugal Cove and St. Philip's have separate wastewater service systems. Both communities have a wastewater treatment plant (SBR process). The Portugal Cove and St. Philip's system are working well. The 2006 and projected 2031 population for Portugal Cove - St. Philip's is 6,575 and 7,485, respectively. The wastewater treatment plant in St. Philip's can service a population of 1000 people before it requires an upgrade to the facility to service an additional 1500 people. The new wastewater treatment plant in Portugal Cove can presently service 3000 people and, with an upgrade, can service an additional 4500 people. Upgrades to existing pipes and pump stations will be required as development occurs.

5.2.3 Conception Bay South Wastewater Servicing

A wastewater treatment plant was constructed 30 years ago at Topsail. The service population flow exceeds the design capacity of the treatment plant by at least two times and effluent is now on permanent bypass, resulting in raw sewage flowing into Conception Bay near the Topsail Beach. Plans are being made to redirect sewage flows to a treatment plant at Cronin's Head where sufficient capacity exists to accommodate it.



St. John's Harbour Wastewater Treatment Plant



The Cronin’s Head facility was designed and constructed to accommodate design flows to 2040 for the portion of the town west of Manuels River. While the plant can accommodate the additional flows from east of Manuels River in the short term, the overall result will be a reduction of the service life of the plant. An evaluation of the population projections done during design and the impact of adding Topsail flows indicates that there would be a 10 year reduction in the service capacity at Cronin’s Head (Town of Conception Bay South, pers. comm., 2009).

Upgrading of the Cronin’s Head plant will be required (along with new secondary treatment processes) to take all the flows from the Town with an effective design life to 2030.



Stormwater Management

5.2.4 New Wastewater Effluent Discharge Regulations

Assessing infrastructure requirements for new development will require a review of the latest wastewater effluent discharge guidelines that may apply to existing and new treatment plants. New requirements may reduce the reserve capacities of existing plants unless expansions are undertaken, if feasible. The Canadian Council of Ministers of the Environment (CCME) guidelines for “Canada Wide Strategy for the Management of Municipal Wastewater Effluent” is one of the more recent documents that communities are expected to address.



Stormwater Management

5.3 Stormwater Servicing

The evaluation of stormwater servicing requirements and capacities is typically carried out for small individual parcels of land. Stormwater master plans for large watersheds are valuable tools to help coordinate cross-jurisdictional issues and individual designs to ensure the proposed infrastructure fully addresses stormwater in the entire watershed in an integrated manner. Development regulations should include requirements to ensure post construction surface water flows are restricted to those that existed prior to construction. Restrictions on building in floodplains, alterations to wetlands and re-alignment of watercourses all require implementation to ensure stormwater is effectively addressed. See Section 6.2.3 for further discussion on wetlands, waterways and stormwater management issues.

5.4 Unserviced Development

While the majority of development in the region is occurring on the basis of full municipal services, most communities in the region permit development serviced with wells and on-site septic systems. Most communities, including the City of St. John’s, permit this form of development along existing streets on an infill basis, usually in areas that are within the Limits of Servicing established in agreements with the province for streets planned for future servicing. In other communities, such as Logy Bay-Middle Cove-Outer Cove, Flatrock, Bay Bulls and Witless Bay where there are currently no municipal services, this form of development as well as new unserviced subdivisions are permitted, usually on lots of between one half and 1 acre with large street frontages.



In communities such as Paradise, unserviced residential subdivision developments are limited to identified locations where no services are planned. In Torbay, more than half of new development is on an unserviced basis. In Portugal Cove–St. Phillips and Pouch Cove, subdivision development on an unserviced and partially serviced basis are permitted. The Town of Conception Bay South does not permit unserviced subdivision development, although this policy is currently under review.

5.5 Energy

5.5.1 Electricity

The generation and distribution of electricity in the Northeast Avalon is provided by two utilities, Newfoundland Power and Newfoundland & Labrador Hydro. The majority of customers served by these two utilities are on the island of Newfoundland with a total of approximately 1,775 megawatts (MW) of installed generating capacity. Newfoundland Power is responsible for the majority of electricity consumers in Northeast Avalon Region which accounts for a significant portion of the electricity demand in the province due to the concentration of population, and rapid economic development that is occurring here (Government of Newfoundland and Labrador, 2002a; 2009). On the island portion of the province, the 230kV transmission system is considered adequate to meet current demands for the foreseeable future (Government of Newfoundland & Labrador, 2007).

Most of the electricity consumed in the region is generated by the 604 MW Bay D’Espoir generating station. The main sources of energy generated in the region are large-scale hydroelectric dams and thermal generation plants. Electrical generation sites in the region include hydro-electric related sites in Seal Cove, Topsail, Petty Harbour, and Pierre’s Brook; diesel-powered site in St. John’s; a 54 MW gas turbine site in Hardwoods; and a 500 MW Thermal Generating Plant in Holyrood.

The Holyrood Thermal Generating Station provides about one-quarter of the electric power capacity on the island of Newfoundland. It burns heavy fuel oil and emits on average, 1.3 million tonnes of greenhouse gases and other pollutants. As the only major generating facility on the Avalon Peninsula, it provides generating capacity to meet demand during winter and, during summer dry periods when less water is available for hydro generation.

Nalcor Energy, the parent company of Newfoundland Hydro, is proposing to construct a transmission line to carry power from the proposed Lower Churchill Hydroelectric Plant to the island portion of Newfoundland to support future economic development and growth on the island portion of the province. The proposed transmission corridor crosses the island, terminating at a proposed site near Soldiers Pond (*See Figure 5.1*). A converter station is proposed near Soldiers Pond to convert the DC electricity transmitted across the high voltage transmission lines into AC form for onward transmission to consumers in the region. An electrode line corridor is also proposed to connect electrode lines from the Soldiers Pond converter station to the Holyrood generation station (Nalcor Energy, 2009).



With the availability of power to the region from the Lower Churchill development, it is the Province’s intention to replace the Holyrood Generating Station. While this will not occur until at least 2015, it will significantly reduce the GHGs and other pollutants. In the meantime, the Provincial Government has mandated the use of lower-sulphur fuel which is expected to reduce sulphur dioxide by 50 percent and particulate emissions by 40 percent.

5.5.2 Alternative Energy Sources

There is potential for development of more sustainable alternative sources of electricity generation to supply the growing needs of the Northeast Avalon region. Wind power generation is regarded as having great potential in the region due to prevailing winds both onshore and offshore. The Provincial Energy Plan identifies opportunities to maximize the value from resource developments, including the benefits from wind generation. Through NALCOR, the province exercises control over wind energy projects in the province. At the present time, no new leases for wind development on Crown Land are being issued except to NALCOR or companies acting in partnership with NALCOR. (Government of Newfoundland and Labrador, 2007)

At the present time, there are no developed wind energy sites in the region. One approved wind energy development in the area of the Goulds has not proceeded to the development phase. Two wind farms in the province located at Fermeuse and St. Lawrence provide additional power that helps to reduce generation at the Holyrood station and meet demand growth. The province is currently limited in the amount of wind energy (80 MW) that can be integrated into the island system because the Island’s hydro reservoirs have a finite capacity to absorb excess power. With the development of the Lower Churchill and associated access to the rest of the continent that provides a market for power, increased potential for wind generated power can be expected.

A number of other technologies offer additional possibilities. The Provincial Energy Plan lists gas cogeneration (using natural gas from offshore or, on a smaller scale, methane recovered from landfills as is currently being done at Robin Hood Bay), cogeneration, biomass (wood), peat, tidal, small-scale wind, solar power and micro-hydro, as possible means to contribute to the provincial electrical supply. Some, such as cogeneration, are mature alternatives while others are still in the developmental stages.



There is potential for wind power generation in the region



5.6 Transportation

5.6.1 Regional Road Network

Development and maintenance of the provincial road network is the responsibility of the provincial government through the Department of Transportation and Works. In the Northeast Avalon, the province has been guided by early transportation studies completed as part of the preparation the original St. John’s Urban Region Regional Plan in the 1970s that set out proposals for the regional road network. Since that time, the provincial government has been implementing the regional plan and today, only three sections as envisaged in the Regional Plan remain to be constructed. These include:

- The Torbay Bypass Road, currently under construction;
- Completion of the Conception Bay South Bypass Road. Funds have been allocated to complete this road from Legion Road to its intersection with the Conception Bay Highway. The road reservation is wide enough to accommodate 4 traffic lanes, however there are no plans at present to increase the number of traffic lanes.
- Completion of the Bifurcation Road (Team Gushue Highway) from Kenmount Road to its connection with the Harbour Arterial. Construction is expected to begin within the next year.

Relocating a portion of Portugal Cove Road between the City of St. John’s and Portugal Cove–St. Phillips along Windsor Lake, away from the lake City is another change that will be made in the future.



Conception Bay South Bypass Road

Figure 5.2 shows the current regional road network. Today, the region is served by an effective network of arterial highways that have improved access from areas outside the City of St. John’s to the region’s employment, shopping, healthcare and education facilities with typical commuting time from most outlying areas within an hour. The arterial network provides good access to the port at St. John’s harbour, the airport, the regional landfill, and major commercial and industrial areas within the region.



Outer Ring Road

The Outer Ring Road which is part of the Trans Canada Highway (Route 1), provides connections between most of the arterial roadways radiating away from St. John’s to outlying communities. Construction of this highway reduced pressure on Kenmount and Topsail Roads and facilitated commuting from Paradise, Mount Pearl and Conception Bay South to the major employment centres at Confederation Building, educational institutions and the hospital.

Pitts Memorial Drive (Route 2) facilitates the movement of goods from the port facility in St. John’s to the Trans Canada Highway and industrial parks in Mount Pearl and Paradise, and commuting traffic to the downtown employment centre. Construction of the Goulds Bypass Road (Route 3) and the Conception Bay South Bypass Road (Route 2) have facilitated growth in Bay Bulls, Witless Bay and Conception Bay South respectively, by significantly reducing commuting times to these areas.

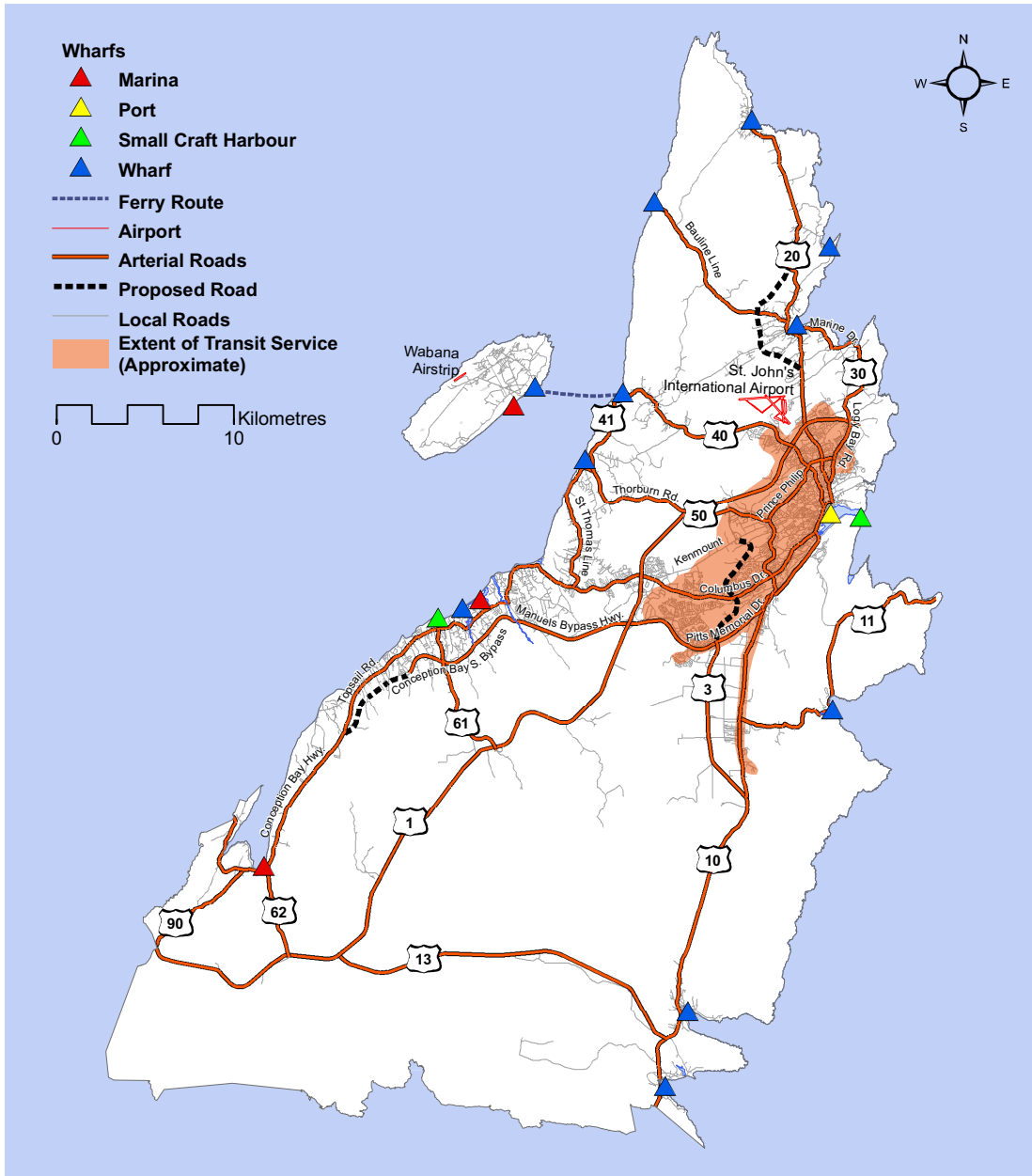


Figure 5.2: Regional Transportation Network (Data Source: Department of Municipal Affairs; Department of Environment and Conservation – Surveys and Mapping Division)

Kenmount Road and Topsail Road, both older roads, continue to function as important arterial roads. Kenmount Road is a major arterial for commuting traffic from Paradise and other areas to the O’Leary Industrial Park, and the Avalon Mall. Commuting traffic and new residential and commercial development in the Kenmount Hill area are increasing pressure on Kenmount Road. Development above the 190m contour elevation, will also have an impact on the functioning of Kenmount Road.



Topsail Road (Route 60) is significant both as an axis for settlement and as an arterial route. Over the past 30 years the highway has been upgraded to 4 lanes along much of its length. It carries local and through traffic to Conception Bay South, Paradise and Mount Pearl and the West End of St. John's.

Growth of communities north of the City of St. John's, particularly in Torbay, and commercial development in the Stavanger Drive area, have increased pressure on Torbay Road (Route 20). Development of the Torbay Bypass Road currently under construction will improve the flow of traffic to Torbay and communities of Flatrock and Pouch Cove.

5.6.2 Regional Transportation Planning

Discussions with officials in the Provincial Department of Transportation and Works indicate that the regional road network is functioning adequately and has capacity to serve the region well into the future. The network has facilitated growth and development in areas outside the urban core, particularly in Conception Bay South and Paradise, Bay Bulls and Witless Bay, and it is expected to have a similar effect on development north of the city with the completion of the Torbay Bypass Road.

Monitoring of traffic volumes are done periodically within the region by the Department of Transportation and Works, typically in response to an issue or request by a municipality. Municipalities periodically require traffic studies to be prepared to assess the impact of traffic generated as a result of a development proposal. While the City of St. John's has developed a traffic model for areas within its boundaries, there is currently no regional transportation plan or model that would enable the assessment of the impacts of development plans or urban growth strategies on the regional road network (John Morrissey, Department of Transportation, pers. comm., 2009)

The City of St. John's has requested that a regional model be developed to evaluate regional growth and its impact on the regional road network. Such a model could evaluate the interrelations between various modes of transportation, as well as the relative costs of new roadways, active transportation networks and public transportation infrastructure. A transportation demand management framework could consider "whether, why, when, where and how people travel" and include the use of policies, programs, services and products to be considered for transportation planning in the region.

5.6.3 Public Transportation

Public transportation in the Northeast Avalon Region is available through a bus transit system operated by Metrobus Transit. The bus transit system is designed for urban public transportation, and operates within St. John's and Mount Pearl. Metrobus operates sixteen year-round routes and one summer seasonal route for a regular cash fare of \$2.25 per adult trip, as well as a free route within downtown St. John's. Buses run daily from early morning to midnight, with reduced hours and routes on weekends.



Figure 5.2 shows the current extent of the bus transit system.

In 2008, the City of St. John's contributed \$7,855,710 to receive transit service. The City of Mount Pearl pays \$660,000 for transit service. (City of Mount Pearl, 2008; City of St. John's 2008). Additional routes were considered to improve access to Donovan's Business Park and other areas within Mount Pearl, but due to cost considerations, no additional routes were added.

Urbanizing municipalities such as Conception Bay South and Paradise have studied the feasibility of introducing public transit to and within their communities. While some areas of Paradise have sufficient densities to warrant transit service, the feasibility of providing transit in these communities was considered cost prohibitive due to the low density of development

A system review was carried out by Metrobus in 2007. This review identified changes to routes to improve the service and increase ridership which in 2006 was 3,325,223 (Metrobus, 2009). While there are no plans to expand or significantly alter the bus transit system in the near future, discussions with officials of Metrobus indicate that considerations for alternative transit options such as express bus routes to outlying communities, particularly Paradise and Conception Bay South are possible and could easily be added to create a more regional network (Metrobus, pers. comm., 2009).

Para-Transit

Public transportation is provided to individuals who are unable to use Metrobus services through the Para-Transit accessible bus system. The system is operated by Wheelway Transportation Inc. under contract to the City of St. John's. Point to point service is available through advance bookings and on the day of service when available.

The program has been highly successful and beneficial to people with disabilities in St. John's and Mount Pearl. In 2008 Wheelways Transportation Inc. provided more than 90,000 passenger trips. It has been heavily used for transportation related to medical needs, including patient transfer between hospitals. Although the data has not been confirmed, it is estimated that between 25% and 40% of all trips are for medical purposes.

Passenger trips provided annually have more than tripled over the past 10 years. In response, the City of St. John's conducted a system review in 2009 to determine how to best manage the dramatic increase in demand. Recommendations included increased funding from the province for patient transfer trips, the addition of accessible buses to the Metrobus fleet, and improved accessible taxi service. It is expected that demand will increase with the rising proportion of elderly people in the population over the next decade, throughout the Northeast Avalon Region (iTRANS Consulting Inc., 2009).



Metrobus Transit



Bus Stop on Harvey Road



5.6.4 Active Transportation

Throughout the Northeast Avalon Region, there is growing participation and interest in active transportation for health benefits and as an alternative to vehicular travel. Communities throughout the region have recognized this interest, have developed recreational trail networks and are placing more emphasis on provision of sidewalks and pedestrian routes that facilitate access to services and facilities. There are no formalized comprehensive municipal or regional plans for an active transportation system that would integrate pedestrian, cycling, public transit, and associated infrastructure to reduce reliance on the use of automobiles as the dominant form of travel. The City of St. John's has recently developed and begun implementation of a 20 year integrated Cycling Plan that will create a cycling and multi-use trail system within the City (Hatch Mott MacDonald, 2009).



Active Transportation

5.6.5 Ferry Transportation

Automobile and passenger ferry transportation service is provided as part of the provincial ferry service, between Portugal Cove and Bell Island. On average 20 return trips are provided daily, with a variety of fares depending on vehicle and frequency. The majority of the approximately 500,000 ferry trips made annually are by residents of Bell Island. Tourists constitute a small percentage (10%) of users of the ferry service.



Ferry Transportation

In 2009, the province made several improvements to the terminal area to alleviate traffic congestion, particularly at Portugal Cove. A new ferry is being built to replace the aging ferry and this will be brought into service within the next few years, improving the reliability and quality of the service (John Morrissey, Department of Transportation and Works, pers. comm., 2009).



St. John's International Airport



5.6.6 Air Travel

The St. John's International Airport is an important component of the provincial transportation system. The Airport Environs Policy that formed part of the 1976 St. John's Urban Region Regional Plan recognized this by establishing restrictions to prevent encroachment of residential development and subsequent land use conflicts and to ensure the continued functioning and future growth of the airport.

Today, scheduled flights are available through six airlines to locations within Newfoundland and Labrador, and to Halifax, Montreal, Toronto, Ottawa and Alberta, as well as Newark, New Jersey and the Caribbean. In recent years with the development of the offshore oil and gas industry in Newfoundland and Labrador, passenger traffic through the airport has increased. As a result of increased traffic, a major overhaul of the airport terminal building was undertaken to increase capacity to 900,000 passengers per year; however, by 2006 upwards of 1.2 million passengers passed through the airport - an increase of 40% above the terminal design capacity. Despite the increase in growth of passenger traffic through the airport, it is currently not served by public transit. Discussions between the Airport Authority and Metrobus are currently underway to address this.

Airport officials expect that helicopter traffic could increase from the current level of 4 flights per day and consideration is being given to the necessary improvements required to accommodate increased traffic. Military traffic also represents a significant volume of traffic. Between 1200 and 1300 military flights/year use the St. John's airport.

Two extensions to the terminal building are currently in the planning stages, as well as a \$25M extension of runway 11-29 (Torbay Road side) to accommodate long-haul overseas flights, and improve lighting. Airport parking is at capacity and a multi-level parking garage is in the planning stages. Air cargo services require new facilities and sites and as a result a cargo analysis is being undertaken. In addition, the Airport Authority is also in the process of updating their Master Plan to identify airport needs over the next decade. Part of this work includes the preparation of a new Noise Exposure Forecast (NEF) that is used to identify noise levels generated from the volume and type of aircraft landing and taking off at the airport. Figure 5.3 shows areas impacted by the noise exposure forecast. Certain land uses, such as residential, are more sensitive to airport noise. Transport Canada established guidelines to help planners determine appropriate land use in the vicinity of airports based on noise exposure forecasts (Transport Canada, 2005).

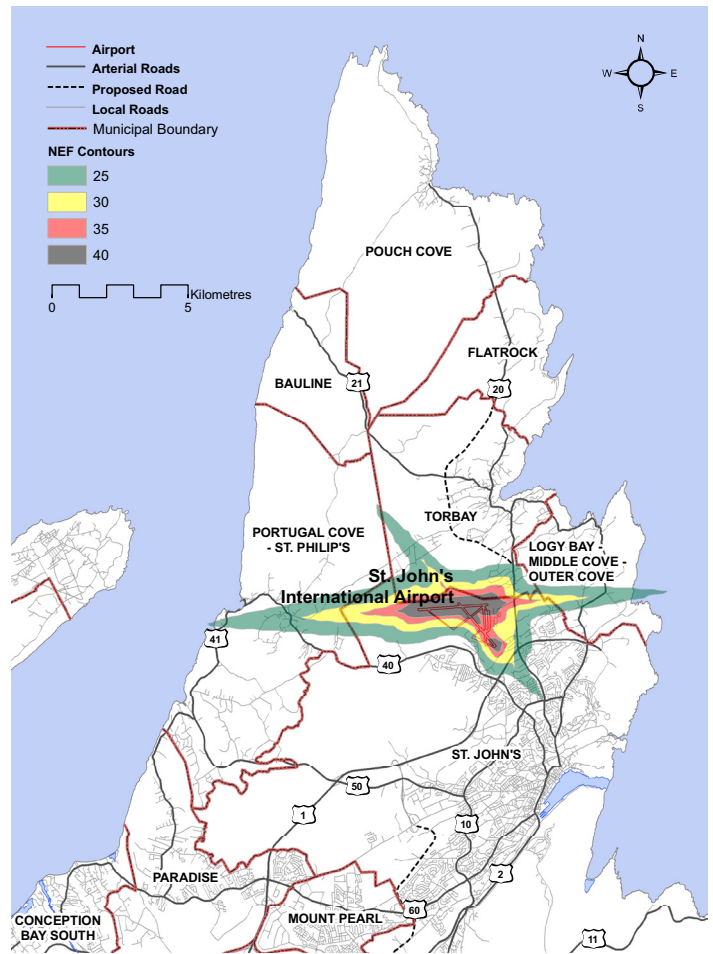


Figure 5.3: Noise Exposure Forecast (Data Source: Department of Municipal Affairs; Department of Environment and Conservation – Surveys and Mapping Division; St. John's Airport)



The current Regional Plan allows residential development up to NEF 35. Amendment No. 1 in 1994 opened up the land between NEF 28 and NEF 35 for residential development, thus allowing residential use closer to the airport and within areas with a higher noise impact. According to Transport Canada guidelines, this is generally considered too close to the airport, and too high an exposure to airport noise. The guidelines state that new residential development should not be undertaken between NEF 30 and 35. They further specify that if a land use planning authority chooses to proceed contrary to this recommendation, then certain conditions should be met, including a noise impact study, acoustic insulation in the proposed buildings, and that all prospective tenants and purchasers be informed that annoyance caused by aircraft noise grows at NEF 30 and becomes quite significant at NEF 35. The City of St. John's expressed concern that the current policy that allows residential development too close to the airport and recommends that the new Northeast Avalon Regional Plan restrict development to the maximum of NEF 30 (City of St. John's, 2009). As the Northeast Avalon Regional Plan is developed consideration will be given to the Transport Canada guidelines and regional land use policies on residential, and other land uses in the vicinity of the St. John's International Airport.

Commercial and industrial development is being proposed on airport and other lands around the airport. Three hundred acres on Torbay Road (a portion known as Field's farm) and 200 acres on Portugal Cove Road, have been identified and proposed for future development (Peter Avery, St. John's International Airport Authority, pers. comm., 2009).

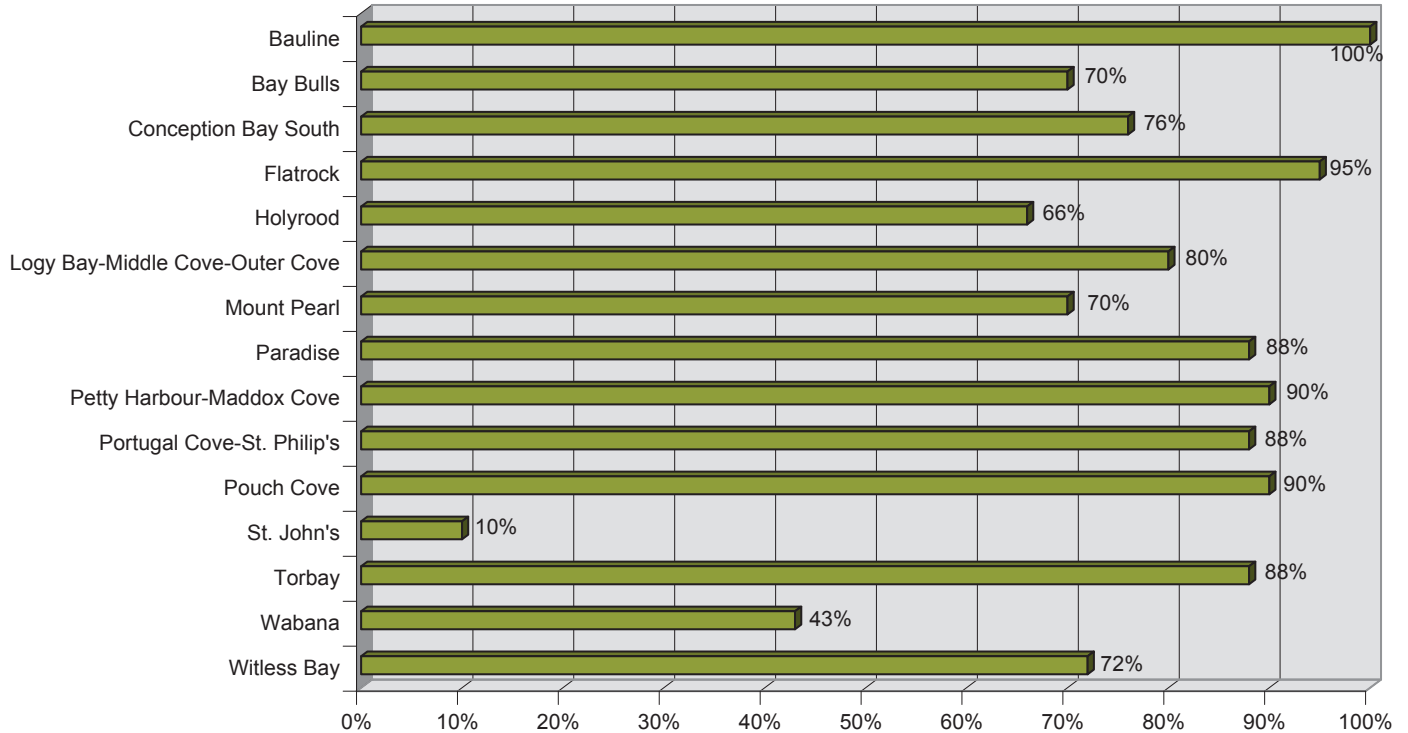


Figure 5.4: Residents in the Northeast Avalon who commute outside of their municipality to work (Statistics Canada, 2006 Census Data).

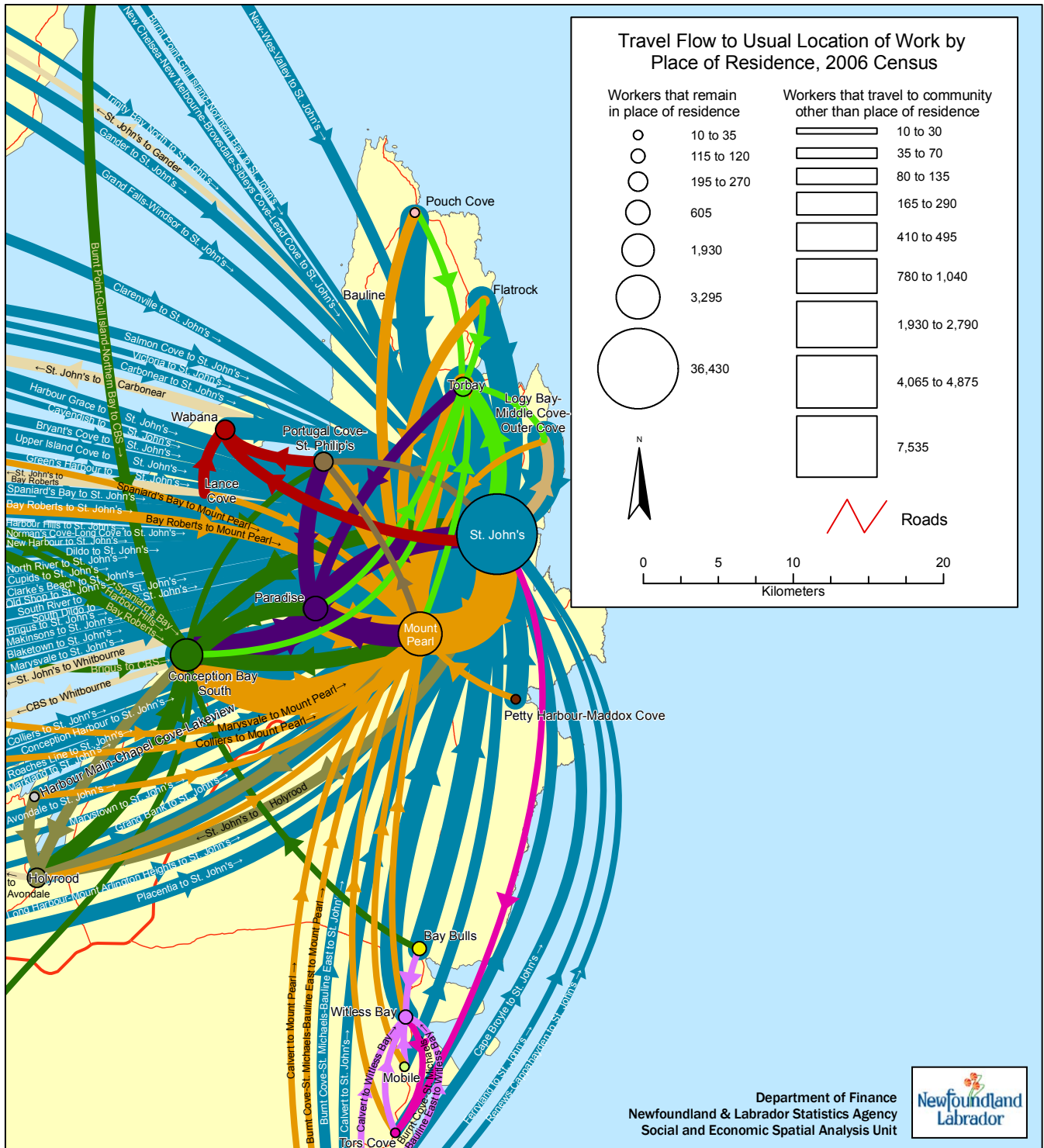


Figure 5.5: Travel Flows to Work (Community Accounts, 2006 Census Data)



5.6.7 Regional Commuting Patterns

The importance of St. John's and other communities within the Northeast Avalon Region for employment is evident from the latest census' commuting data. Figure 5.4 shows the percentage of residents in each community within the Northeast Avalon Region who commute outside of their home municipality to their usual place of work. St. John's has the lowest percentage workers commuting outside of the city for work.

Figure 5.5 shows the travel flows to usual location of work by place of residence across the Northeast Avalon Region. The busy map reflects the activity and traffic often felt on the ground by commuters in the region. Blue arrows represent the flow of workers into St. John's. There is a large movement of workers into St. John's from communities within the Northeast Avalon Region, as well as from other communities on Conception Bay, the southeastern coast of the Avalon Peninsula, Placencia, and beyond. The blue circle represents the large number of workers who remain in St. John's for work. Mount Pearl represented by orange, has the second largest amount of workers flowing into the municipality and workers who remain, followed by Conception Bay South (dark green), Paradise (purple), Torbay (light green), Wabana (red) and Portugal Cove-St. Philip's (brown).

The 2006 census data on regional commuting patterns is supported by the online survey results, collected as part of the Northeast Avalon Region Plan public engagement Phase 1 "What are the issues?" Survey respondents were asked whether or not they worked or went to school in the community in which they live. The majority of respondents identified as being from St. John's and answered yes to this question (50.4%), while 35.4% indicated that they commute outside of their community for work or school. Most respondents commute to St. John's for work (82%). Mount Pearl follows at a distant second place (9.6%) as a commuting destination (*See Chapter 7 for more information and graphs*).

5.7 Solid Waste Management

In 2002, the provincial government developed a provincial waste management strategy. The objective of the strategy was to reduce the number of outdated municipal solid waste facilities throughout the province and replace them with fewer, upgraded regional waste management facilities. Regional waste management committees were appointed to study and recommend the best options for achieving a modernized waste management system.

The Greater Avalon Region includes half the entire population of the province, 72 municipalities, 35 local service districts and 30 unincorporated areas. A Regional Waste Management Committee was appointed and began work to identify a site for a new regional landfill and associated facilities. The Committee's work identified a site off the Trans Canada Highway in an area known as the Hawke Hills. Crown Land was identified and has been set aside for a future site.

In May 2007, the Provincial Government announced \$200-million in funding to implement the provincial solid waste management strategy, with a goal for full implementation by 2020. The strategy calls for three full-service regional waste management facilities in the Avalon, Central and Western areas of the island portion of the province, and programs that will be developed for the zones in Labrador to meet the provincial waste management goals (Department of Environment 2002). The City of St. John's argued that its existing landfill at



Robin Hood Bay could serve as the Greater Avalon Regional Waste Site and with upgrading and development of additional facilities could serve the region well into the future and postpone the need for development of a new facility. The province subsequently approved the Robin Hood Bay site as the greater Avalon regional site and, with improvements that are currently being implemented, will be fully operational by 2010. The overall cost of developing Robin Hood Bay as the regional site is estimated at \$38.5 million - \$6.5 million was contributed by the City of St. John's for site preparation with the balance of the capital cost for development of the waste system to be absorbed by the Province. Operational costs will be covered by the municipalities through tipping fees and other user fees (City of St. John's, 2009).

The Greater Avalon Regional Waste Management Committee is now responsible for implementing waste management activities such as recycling, waste diversion and composting, as well as management of waste that is harmful to the environment and disposing of true waste materials at one of the regional host sites. Within the Greater Avalon Region, this also includes the closure of 25 municipal waste sites. Current activities include studies to determine the most cost effective methods of transport of municipal waste to the regional landfill site – either through direct transport or waste transfer stations, development of facilities for collection and recycling of construction wastes and so on. This work is currently ongoing and no specific plans have yet been put in place. Within the Northeast Avalon, old municipal waste disposal sites that have been closed include incinerator sites in Bay Bulls, Holyrood and Conception Bay South (Department of Environment 2002).

5.8 Fire Protection Services

Figure 5.6 shows fire service in the Northeast Avalon Region. The Cities of St. John's, Mount Pearl, and Towns of Paradise, Petty Harbour-Maddox Cove are served by the St. John's Regional Fire Department. The Central Fire Station in downtown St. John's serves as the Emergency Operation Centre and 911 Command Centre for the Northeast Avalon Region.

Fire stations operated by the St. John's Regional Fire department include:

- Kents Pond Fire Station – Portugal Cove Road
- West End Fire Station – LeMarchant Road
- Brookfield Fire Station – Topsail Road
- Kenmount Fire Station – O'Leary Avenue
- Mount Pearl Fire Station – Olympic Drive
- Goulds Fire Station – Main Road Goulds

The Town of Conception Bay South has its own Fire Department with two stations located in the east and west ends of the community. The Town of Torbay has a fire station and provides services to the Town of Flatrock, which has a sub-station. Pouch Cove provides fire protection through its volunteer fire department to the Town of Bauline. Portugal Cove-St. Phillips has a volunteer Fire Department with a station at Portugal Cove and in St. Phillips. Logy Bay-Middle Cove-Outer Cove has its own volunteer fire department. To the south the towns



of Bay Bulls and Witless Bay share fire protection services from one fire station in Witless Bay. The communities of Mobile and Tors Cove to the south, also receive fire protection from this station. On Bell Island, Wabana has its own volunteer Fire Department. The Town of Holyrood has their own volunteer Fire department, but is the only town in the Northeast Avalon Region that is not part of the regional 911 system.

As communities in the region continue to expand, their ability to provide efficient fire protection services with adequate response times will be challenged. The Town of Paradise does not have a fire station and consideration is currently being given to whether one is required to provide adequate coverage to the community.

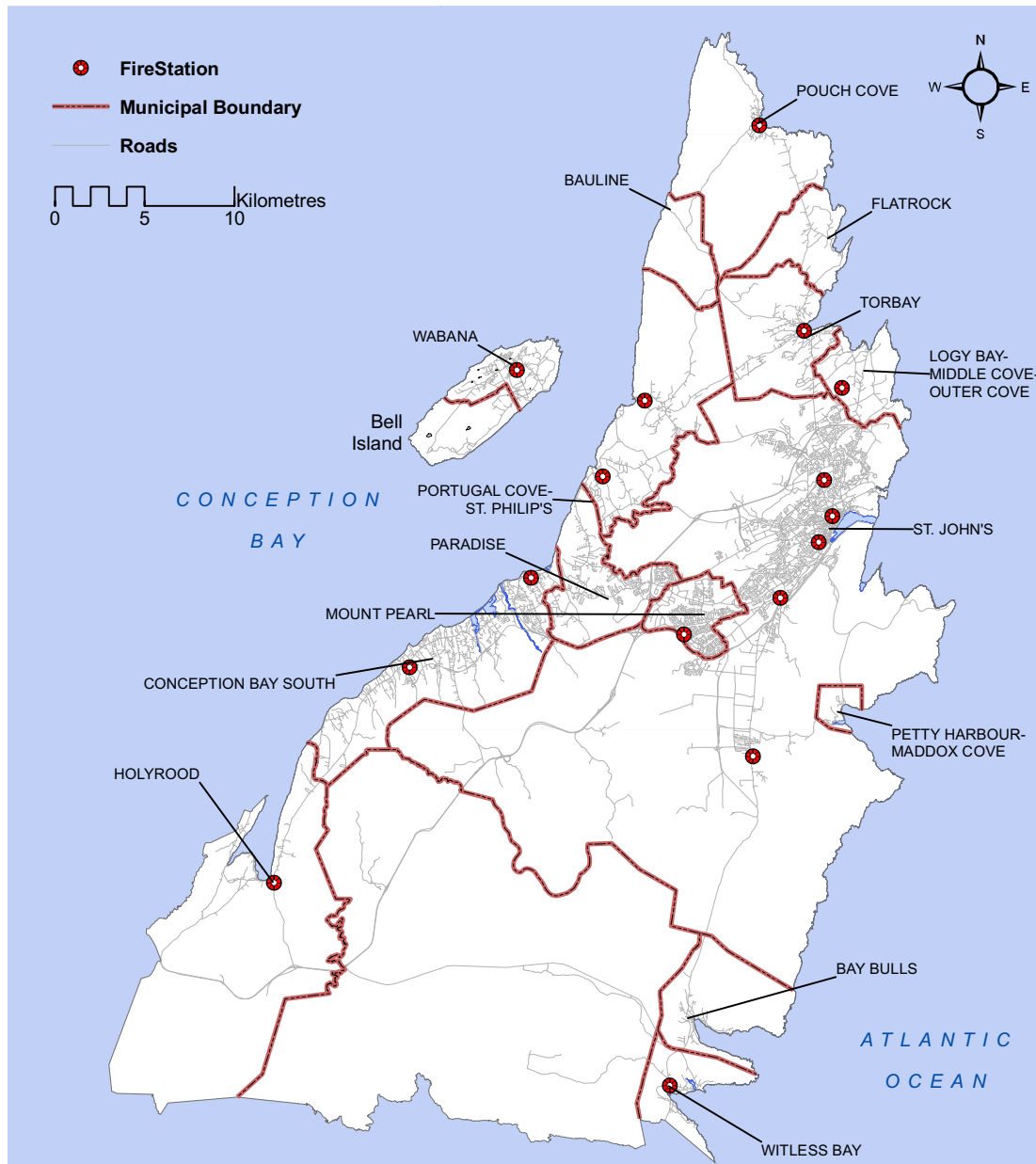


Figure 5.6: Fire Service (Data Source: Department of Municipal Affairs; Department of Environment and Conservation – Surveys and Mapping Division)



5.9 Key Issues and Opportunities

Water and Wastewater Management - The existing combined total reliable yield for the Windsor Lake and Bay Bulls Big Pond water supplies is 116,000 cu. m/day. These supplies have sufficient yield capacity to service the projected 2031 water demands of 105,573 cu. m/day.

The total 2031 projected maximum day demand of 168,917 cu. m/day for the St. John's Regional Water Supply System service area is slightly less than the rated capacity of the Bay Bulls Big Pond and Windsor Lake water treatment plants. Although the two plants have capacity to supply projected water demands, further analysis is required to determine the split of demand requirements between the two plant flows to ensure they are balanced in proportion to their capacity and future demands. Planning for expansion to this system will need to start before 2031 to ensure that there are no interruptions to supply.

In Torbay, the North Pond watershed will not have adequate capacity to service the 2031 projected water demand of 3,958 cu. m/day. Other water sources have been investigated but these will likely require a water treatment plant to ensure adequate water quality.

Transportation - The region is served by an efficient regional road network that facilitates commuting traffic from suburban areas to employment, shopping and educational centers in the urban core, creating parking issues in downtown St. John's and traffic congestion on major arterials. The development of a regional transportation model to evaluate the impact of development plans or urban growth strategies on the regional road network should be considered.

Public transit in the region is limited to the City of St. John's and Mount Pearl. A regional public transit system should be considered to service other areas of growth in the region. Appropriate density is required to support financially viable transit expansions.

The airport is an important component of provincial and regional transportation as well as an economic generator. Land use around the airport should enable continued functioning and expansion of the airport through land use controls and an ample supply of commercial and airport-related lands.



6 Land Use Availability and Opportunities

Prior to moving forward with the regional plan, it is necessary to have a regional picture of current land use zoning, an understanding of where future development is anticipated, and an evaluation of whether the current supply of land is adequate for meeting expected future demand. The following sections examine the supply of land available for development and discuss where new development could be accommodated.

6.1 Future Land Use

Municipalities in the region were requested to provide information on land use zoning within their planning areas. This information was assembled, consolidated, and assessed on a regional basis. Figure 6.1 illustrates the major land use zoning categories within the region¹.

The area of land zoned for particular uses is shown in Table 6.1. The percentage of zoned land that falls into each land use zoning category is shown in Figure 6.2. Eighty-five (85%) of the total land in the region is zoned for rural and resource use, agriculture, open space/conservation, and watershed. Fifteen percent (15%) is allocated for urban uses such as residential, commercial, industrial, and public/institutional land use.

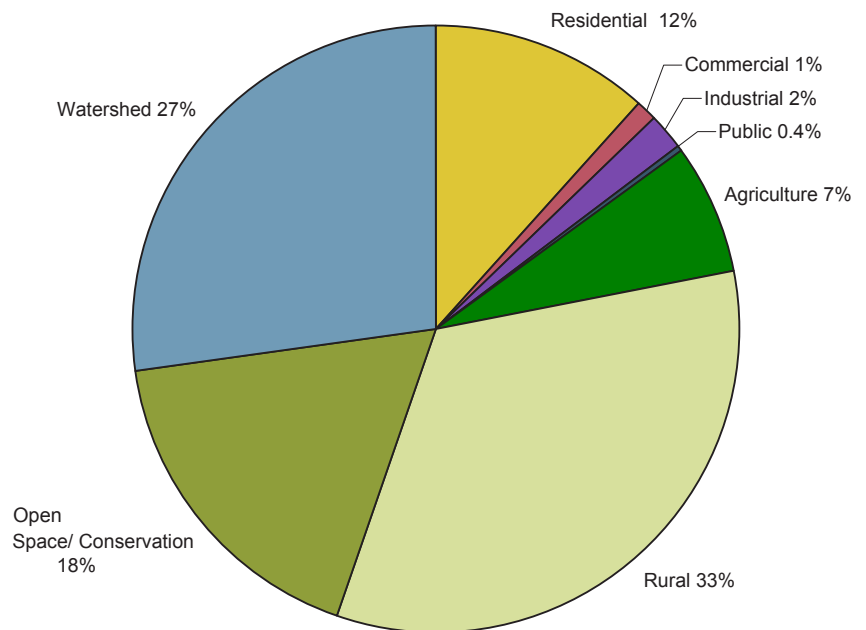


Figure 6.2: Percentage of area zoned by land use in the Northeast Avalon Region

¹ Land uses were generalized and streamlined into the categories shown in Table 6.1. Mixed use zones were grouped with the residential category. On Figure 6.1 the mixed use zones in Mount Pearl are shown as commercial. It should be noted that lands zoned for comprehensive development were grouped with the appropriate land use category envisaged by land use policy set out in the respective Municipal Plans. Mineral workings were categorized as industrial uses.



Municipality	Areas Zoned by Land Use (hectares)							
	Residential	Commercial	Industrial	Public	Agriculture	Rural	Open Space / Conservation	Watershed
St. John's	3,618	976	892	300	6,594	11,538	10,180	12,350
Mount Pearl	754	78	288	31	0	43	336	0
Urban Core	4,372	1,054	1,180	331	6,594	11,581	10,516	12,350
Paradise	1,865	101	165	24	0	306	654	0
Conception Bay South	2,779	198	167	50	80	1,879	623	0
Suburban Corridor Communities	4,644	299	332	74	80	2,185	1,277	0
Torbay	1,341	2	63	33	555	893	238	457
Portugal Cove-St. Philip's	1,526	0	0	13	802	2,579	108	589
Logy Bay-Middle Cove-Outer Cove	689	2	0	10	202	515	288	0
Suburban Perimeter Communities	3,556	4	63	56	1,559	3,987	634	1,046
Bay Bulls	325	0	14	3	0	2,705	18	0
Witless Bay	446	16	17	6	0	1,097	78	2
Petty Harbour-Maddox Cove	69	0	6	0	0	240	44	99
Bauline	84	8	1	0	0	1,037	453	61
Pouch Cove	258	6	9	10	367	3,436	976	992
Flatrock	688	1	6	2	178	684	19	337
Holyrood	615	68	909	7	0	5,024	323	6,407
Wabana	152	23	29	34	0	1,097	124	88
Butterpot Witless Bay Line Environs	0	0	0	0	150	10,617	8,474	14,146
Outer Perimeter Communities	2,637	122	991	62	695	25,937	10,509	22,132
Regional Total	15,209	1,479	2,566	523	8,928	43,690	22,936	35,528
Land Use Zone as a percentage of the total	12%	1%	2%	0.4%	7%	33%	18%	27%

Table 6.1: Area of current land use zoning in the Northeast Avalon Region (hectares)

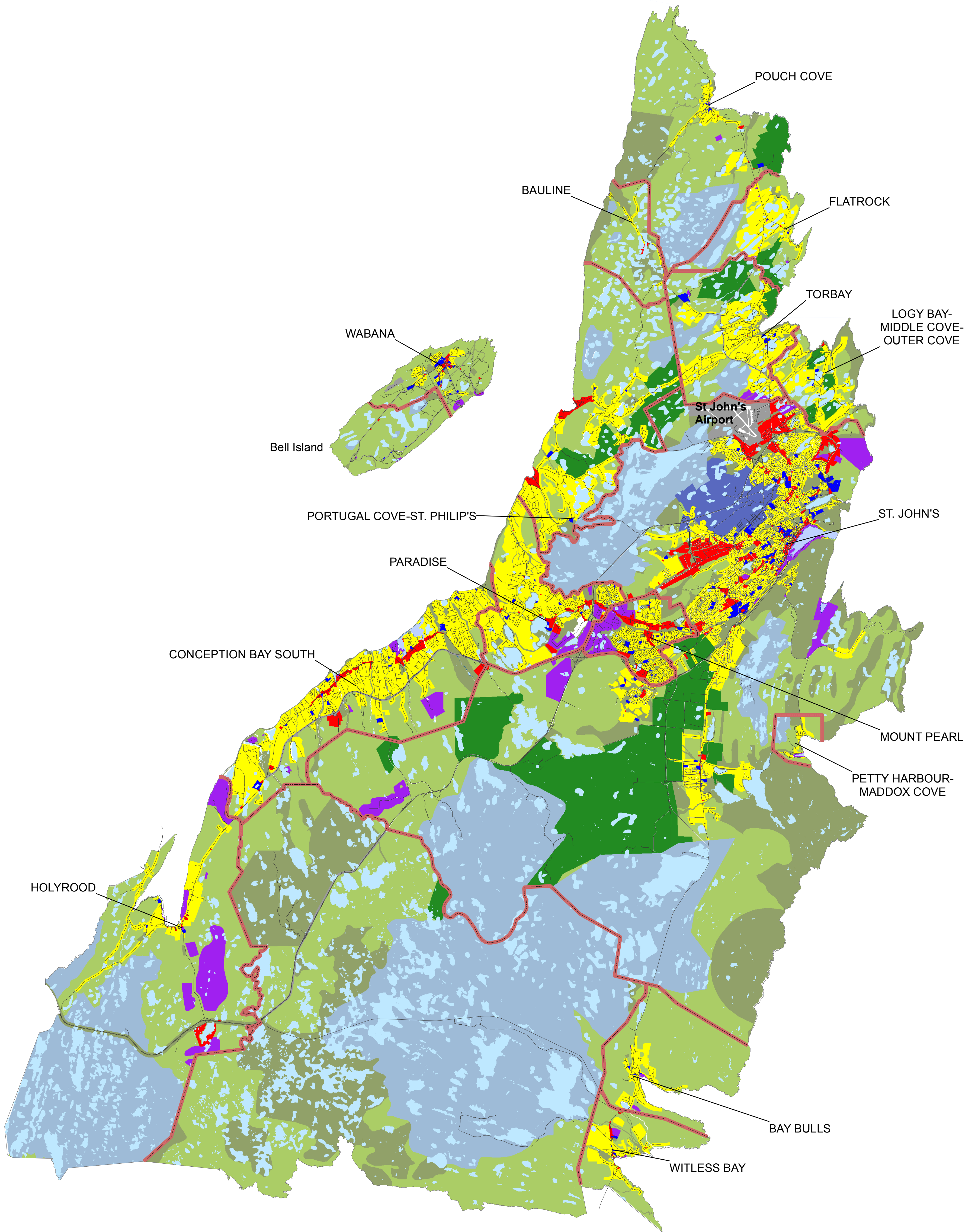
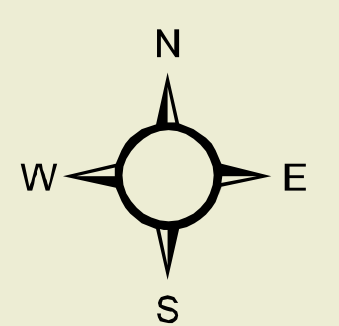
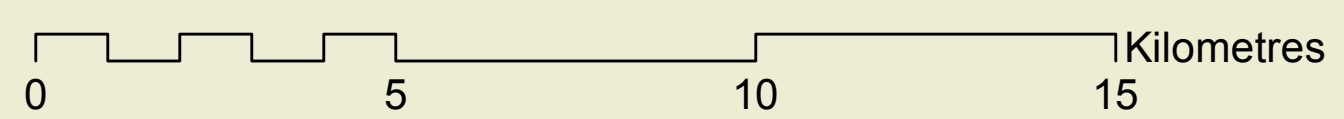


FIGURE 6.1: Zoning

- | | | | |
|--------------------------|------------------------|---------------------------|--------------------------|
| — Roads | Assigned Zoning | Open Space / Conservation | Watershed |
| - - - Proposed Road | Residential | Industrial | Airport / Transportation |
| — Municipal Boundary | Commercial | Public | |
| Waterbodies and Wetlands | Agriculture | Pippy Park | |
| | Rural | | |



Source: Department of Municipal Affairs and Municipalities in the Region
 Projection: NAD 83 Modified Transverse Mercator (NAD83 MTM 1)
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6.1.1 Land Available for Future Development

Further general analysis using 2008 aerial photography, was undertaken to compare the amount of land within each land use category with the amount of land that is already developed². The comparison is shown on Figure 6.3

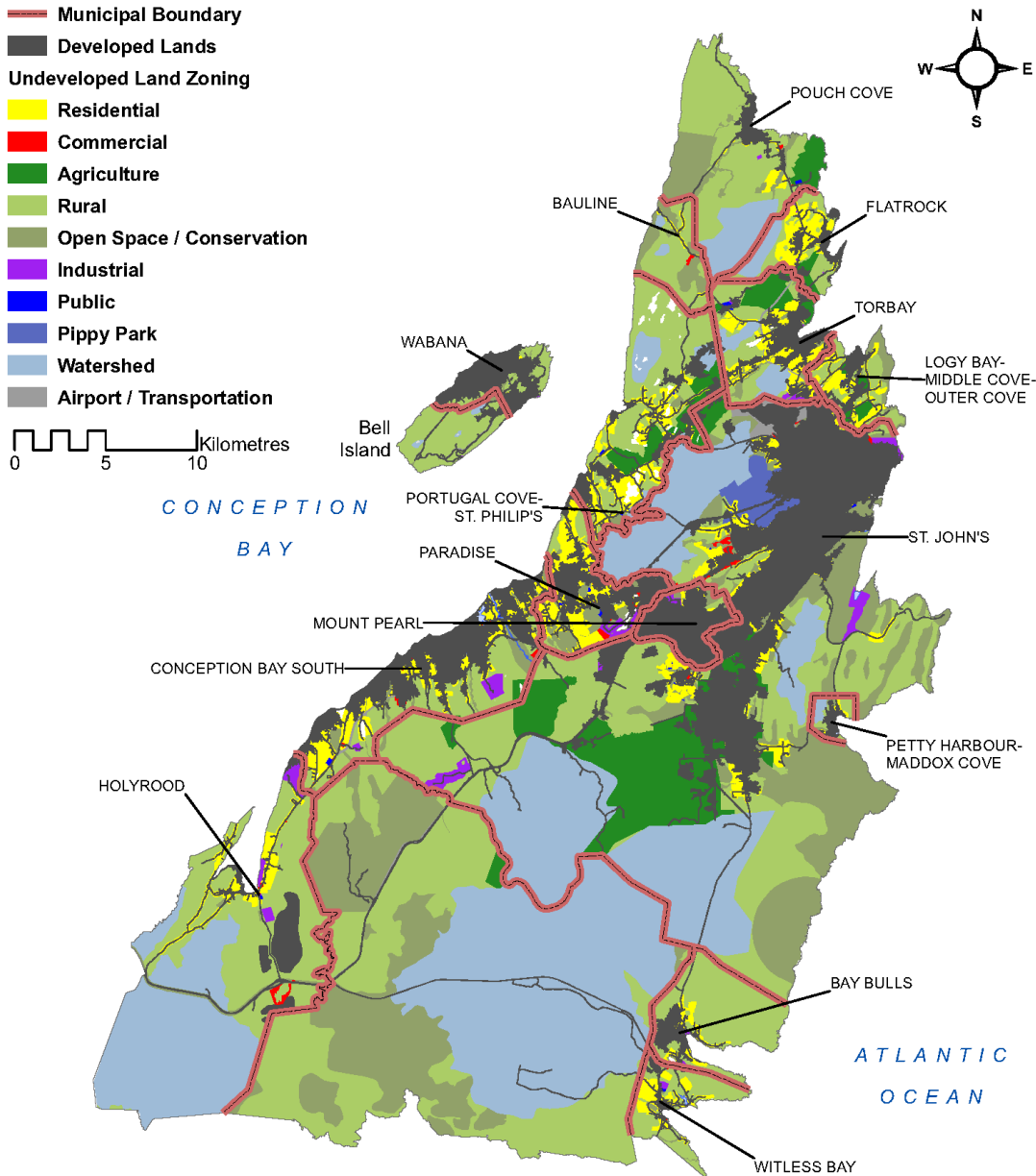


Figure 6.3: Developed Land in relation to land use zoning (Data Source: Department of Municipal Affairs and the municipalities in the region)

² Developed vs undeveloped land area was determined using multi-band satellite image (Landsat7) classification. The image classification algorithm used visible (Red, Green and Blue wavelengths) and infrared wavelengths to segment the imagery based on representative sample points for various types of land cover (specifically: urban, forest, field, barrens and water). For the purposes of this regional study, developed areas represent an amalgamation of landcover types including roads, fields and urban areas.



Of particular interest for regional planning is the area of land that remains undeveloped, and available for future residential, commercial and industrial land use. Table 6.2 shows the total area of undeveloped land by urban land use in each community in the region.

Municipality	Urban Land Uses					
	Undeveloped land zoned residential (ha)	% undeveloped of land zoned residential	Undeveloped land zoned commercial (ha)	% undeveloped of land zoned commercial	Undeveloped land zoned industrial (ha)	% undeveloped of land zoned industrial
St. John's	962	27%	129	13%	426	48%
Mount Pearl	33	4%	0	0%	32	11%
Urban Core	995	23%	129	12%	458	39%
Paradise	999	54%	23	23%	100	61%
Conception Bay South	956	34%	39	20%	114	68%
Suburban Corridor Communities	1,955	42%	62	21%	214	64%
Torbay	695	52%	0	0%	56	89%
Portugal Cove-St. Philip's	948	62%	0	n/a	0	n/a
Logy Bay-Middle Cove-Outer Cove	479	70%	0	0%	0	n/a
Suburban Perimeter Communities	2,122	60%	0	0%	56	89%
Bay Bulls	187	58%	0	n/a	7	50%
Witless Bay	341	76%	5	31%	14	82%
Petty Harbour-Maddox Cove	24	35%	0	n/a	1	17%
Bauline	52	62%	8	100%	0	0%
Pouch Cove	111	43%	4	67%	8	89%
Flatrock	509	74%	0	0%	4	67%
Holyrood	450	73%	62	91%	181	20%
Wabana	7	5%	2	9%	6	21%
Outer Perimeter Communities	1,681	64%	81	66%	221	22%
Total	6,753	44%	272	18%	949	37%

*Note: The Butterpot-Witless Bay Line Environs has been left out of this table as it does not have any land zoned for urban land uses. **Note: n/a indicates that there is no land zoned for this use in the municipality

Table 6.2: Undeveloped land area by urban land uses



Residential

With respect to residential development, 6,753 ha (44%) of the total 15,209 ha zoned for residential use in the region remains undeveloped. In the urban core, St. John's still has 962 ha of undeveloped land available for future residential development, while Mount Pearl has developed more than 95% of the land it has zoned for residential use and has only 33 ha remaining. In the suburban corridor, Paradise and Conception Bay South have 1,955 ha of land zoned for residential development that remain undeveloped. The suburban perimeter communities combined have 2,122 ha of land available for residential development. When considered together, communities on the outer perimeter also have an additional 1,681 ha available for future residential development.

Commercial

In the region, 1,479 ha of land are zoned for commercial land use, most of which is located in the urban core. A large majority of the land zoned for commercial use has been developed, leaving 272 ha or 18% undeveloped and available for future use. Almost all of the available land zoned for commercial use is located in St. John's, Paradise, Conception Bay South, and Holyrood.

Industrial

Of the 2,566 ha zoned for industrial land use in the region, 949 ha or 37% is undeveloped and potentially available for future use. St. John's has 426 ha of undeveloped industrial land, Conception Bay South (114 ha), and Paradise (100 ha). *See Chapter 4 for a detailed discussion about industrial and commercial land use and anticipated need in the region.*

6.1.2 Future Development Areas

Anticipated Development

Throughout the region there are many developments under construction and in various stages of review. Municipalities were asked to submit information about the developments they are anticipating (developments that have been proposed as well as those that have already been approved). This information was compiled so that an estimate of how much development is anticipated and where. The majority of the known anticipated future developments are for residential land use.

St. John's

The City of St. John's is anticipating growth in various places throughout the city, with some of the largest subdivision applications for areas within the Goulds, Kilbride, Southlands on the west side of Ruby Line, the areas around Kenmount and Thorburn Roads, and Airport Heights. Approximately 14,000 units³ can be expected within the City of St. John's boundaries if all developments currently under construction and future subdivision developments are fully built out.

³ Most of the anticipated development is for subdivision lots and some apartment units. For the purposes of this estimate, all types of anticipated development have been combined as an approximate number of housing units.



Mount Pearl

As shown in Table 6.2 Mount Pearl has only 4% of land zoned residential available for future development. The City has however, recently approved a development on some of the available lands in the Blackmarsh Road area that will include up to 555 new housing units.

Paradise

Residential expansion is expected to continue in the rapidly growing Town of Paradise in developments including: Paradise Ridge, Meadow Heights, Karwood and in the area around Adam’s Pond. The next major anticipated growth area is adjacent to Octagon Pond. A Concept Plan has been developed for the 263 hectares of land around Octagon Pond and Rocky Pond. The Concept Plan envisions four residential neighbourhoods comprised of large lot low density housing forms, areas with a higher density of single detached houses, and some areas set aside for higher density development. Local retail commercial uses and open space also form part of the concept plan. The overall residential unit count is approximately 2,800, which is projected to developed over a 25-40 year time frame (Fairview Investments et al., 2009). Assuming that there are at least 100-200 other lots/units being added to other Paradise subdivisions, there is potential for 3,000 additional lots/units over the next 25 years.

Conception Bay South

Future residential development is anticipated in several subdivisions throughout Conception Bay South, including the Seal Cove and Upper Gullies Comprehensive Development Areas, pending extension of municipal services. If all phases of development for subdivisions that are currently under construction, and the proposed large subdivisions in the CDAs are fully built out, 4,860 units (or lots) can be expected. Conception Bay South also anticipates development of 40 hectares for big box retail use and 16 hectares for a light industrial park.

Torbay

In various subdivisions throughout the town, Torbay has approved the construction of 550 lots. Torbay has 56 ha zoned for future *industrial* comprehensive development north of the airport.

Lands Proposed for Development that are Not within Current Zoning

A number of proposals for changes in land use policy have the potential to open new areas for development.

Development above the 190m contour

The City of St. John’s has proposed that the Regional Plan Policy be amended to permit development above the 190m contour elevation. Removal of this policy would open up an additional 290 ha of developable land in the Southlands area (between Southlands and the Trans Canada Highway and Cochrane Pond Park), and 200 ha in the Southwest Development Area (area off Kenmount Road).

Land to be removed from the St. John’s Agriculture Development Area

A recent review of the St. John’s Agriculture Development Area (ADA) by the provincial government (Government of Newfoundland and Labrador, Department of Natural Resources, Agrifoods Branch, 2008) recommends that 567 ha of agriculturally zoned land be removed from the ADA and made available for urban development. The largest of these



areas is approximately 443 ha off Old Broad Cove Road in Portugal Cove-St. Philip's near Windsor Lake. The Town of Portugal Cove-St. Philip's is currently considering what land use designation would be appropriate for this area should it be removed from the ADA.

Conception Bay South Proposed Regional Plan Amendment

The Town of Conception Bay South has recently made application for a Regional Plan Amendment that would see 53 ha of Rural lands, redesignated for residential development. The area is located between Fowlers Road and the boundary of the Town of Paradise and could accommodate up to 1,000 residential building lots.

6.1.3 Regional Land Use Supply and Demand

Table 6.3 provides a summary of the anticipated amount of land that could be developed for urban uses in the future.

Municipality	Anticipated Residential Development (lots/units)	Land Proposed for or with Potential for Future Urban Development
St. John's	14,000	Above 190m: 490 ha
Mount Pearl	555	
Paradise	3,000	
Conception Bay South	4,860	Fowler Rd: 53 ha
Torbay	550	
Portugal Cove-St. Philip's	388	St. John's ADA: 567 ha
Total	23,353 units 1,796 ha	1,110 ha

Table 6.3: Anticipated Potential Development in the region

As detailed in Chapter 4, the demand for residential units for the period between 2006 and 2031 is expected to be in the order of 15,000 additional units. According to current trends, it can be assumed that 75% of these residential units will be single, semi-detached or rowhouses constructed in new subdivision developments. The other 25% will be apartments, some duplexes, and infill development. 11,250 units are thus expected to be constructed in new subdivisions. This translates to approximately 865 ha of land required to meet anticipated demand.⁴

Currently, between St. John's, Mount Pearl, Paradise, Conception Bay South, Torbay and Portugal Cove-St. Philip's, an additional 23,353 lots/units in residential subdivisions could be developed if every proposed development is fully built out. This translates to approximately

⁴Area of required land is based on the number of expected units in new subdivisions and density. The net density for the region is 20 units per hectares, using a typical lot size of 50'x100', and accounting for some larger lots. The net density to gross density ratio is 65% (includes removal of local roads, elementary schools, neighbourhood parks, and some local retail. Major facilities such as secondary schools, utilities, regional roads and regional retail uses would require additional lands). The gross density of the areas is thus assumed to be 13 units per ha.



1,796 ha of land planned for future residential development. Additionally, if the areas proposed for future urban development are approved and developed as residential, another 1,110 ha could be opened up for future housing development. When considered together, this amounts to 2,906 ha of land planned for and potentially available for residential development, which is greater than 3 times more land than will be needed to meet the expected housing demand.

It should be noted that not every municipality provided information on the anticipated developments; therefore, because more developments are expected in other municipalities, the total approximate area for planned residential development is probably understated. This means that there is even more land planned for residential development, further adding to the over-supply.

Anticipated development of new commercial and industrial land, in communities such as Torbay and Conception Bay South, will supply the local retail, light industrial and business park demand. As discussed in detail in Chapter 4, there are commercial and industrial needs related to the growing mega-project economy. Additional required office space can likely be met in the urban core in areas zoned as commercial, and through infilling, although the supply of Class A office space in downtown St. John's is currently constrained. A new urban business park in the range of 200 ha (or enough to provide about 5,000 jobs) will be needed in an area that can serve the industry well at the regional level. In addition to this new urban business park, land zoned for heavy industrial use will be needed for lay down areas. These expected land use needs will be considered throughout the regional planning process.

6.2 Physical Environment

6.2.1 Topography and Soils

The topography of the Northeast Avalon Region reflects past glacial activity. Most of the area is covered by gently rolling ground moraine interspersed with gigantic boulders left by retreating glaciers. The landscape is dotted with ponds which are also remnants of retreating ice and the region is covered by a relatively thin layer of till. The hummocky terrain of the slopes and valleys of this region is also the result of glacial activity. Figure 6.4 and 6.5 show the slopes and aspect areas in the region. The Atlantic coast and the area on the northern portion of Conception Bay tends to be an irregular coastline consisting predominantly of cliffs deeply indented with bays and coves. This coastline generally becomes less steep as one moves south. The landscape is slightly less harsh inland from areas exposed to the full brunt of the Atlantic Ocean. While steep coastal slopes provide excellent views of the ocean, they limit access to the water and the development of safe harbour facilities. The steeply sloped areas can also be prone to erosion creating hazards to development. The interior consists of a rolling plateau, 90 m to over 200 m above sea level with isolated hills above this elevation. The western coast of the region south of Topsail beach tends to be lower and smoother than the Atlantic side.

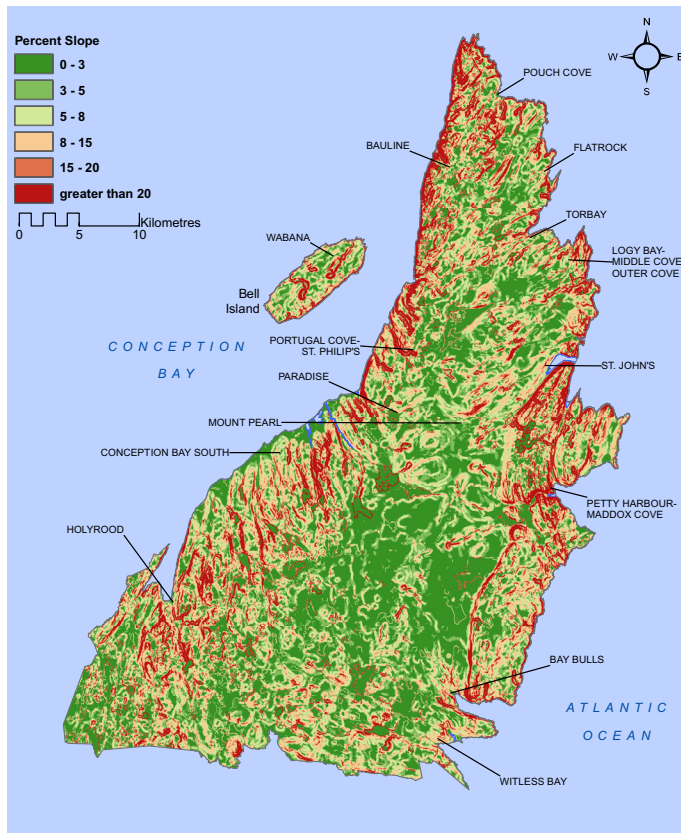


Figure 6.4: Slope (Data Source: Prepared using data from Department of Environment and Conservation – Surveys and Mapping Division)

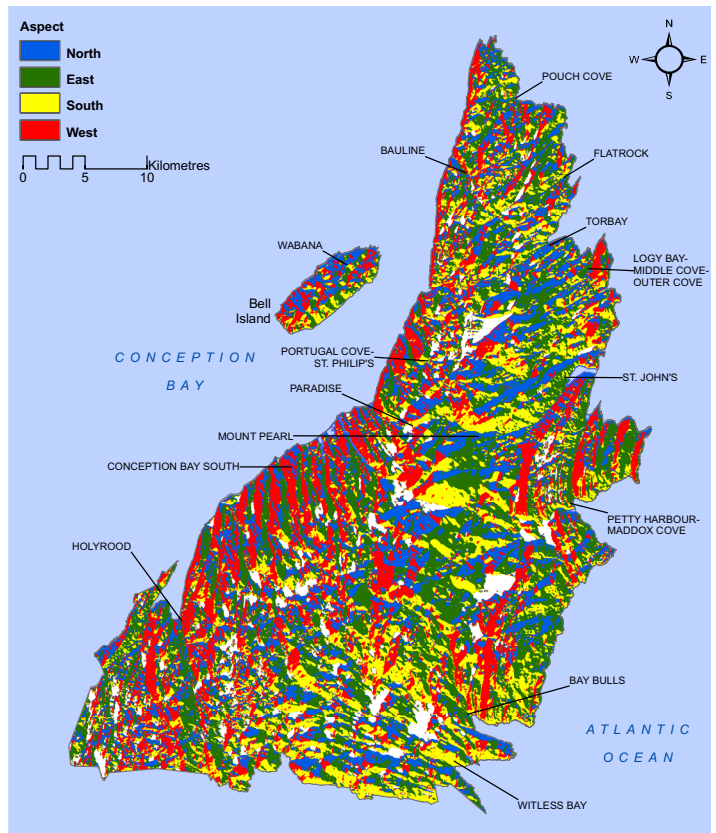


Figure 6.5: Aspect (Data Source: Prepared using data from Department of Environment and Conservation – Surveys and Mapping Division)

The soils of the Northeast Avalon Region broadly include Humo ferric podzols of medium to coarse texture that have high inorganic content. These brown soils which are the predominant soil type and occur on relatively dry sites are typically found in coniferous or boreal forests and are particularly poor for agriculture. Some wet sites within the region are dominated by Ferro humic podzols which are dark soils with high organic content.

The soils of the Northeast Avalon Region developed from materials derived from underlying slate, siltstone, sandstone, shale, limestone, conglomerate, and granitic and volcanic rocks. The whole area was glaciated and the materials were deposited in the form of ground moraine (accumulated earth and stones deposited by glacier), outwash, and glaciofluvial deposits left by meltwater from the glaciers. Glacial till, the heterogeneous material deposited directly from glacial ice, is common, except for a few riverbeds and beach ridges that generally consist of recently deposited, fairly coarse textured Regosols, which are very weakly developed mineral soils in unconsolidated materials. The south and southeast coast of the region generally developed on medium to coarse glacial till. The coastal soils have a peaty surface up to two feet thick. Most of the mineral soils are coarse to moderately coarse textured, stony, acid to extremely acid, and low in natural fertility (Thie, 2006).



Farther inland and also near the northern shores, Gleyed Ferro-Humic Podzols are found. They are imperfectly drained soils with thinner surface peat, and less accumulation of organic material under a gray leached horizon. Organic soils, very extensive in the southwest, decrease in importance toward the northeast. Podzol soils on the eastern half of Bell Island and near the southeastern shore of Conception Bay contain more clay and fewer stones (Thie, 2006). Rock outcrops and excessively stony soils occupy extensive regions of Conception Bay South and the northeastern tip of the Avalon Peninsula. About 85 percent of St. John's and surrounding area is covered by relatively thin layer of till and various other minor surficial deposits. These tills are very compact and have relatively low agricultural capability (Henderson, 1959; Arthur, 1990).

The depths and types of soils affect the installation of on-site septic systems and the provision of water supply. The south central part of the region which is more or less devoid of vegetation or permits only the sparse growth of very few species, called "the barrens" typically does not have the depth of soil suitable for septic installations. Peaty and marshy areas of the inland areas in the north are also less desirable for the development of septic fields. For development purposes, well-draining soils of sufficient depth are preferred for the development of basements and septic fields.

Figure 6.6 illustrates the locations of soil suitability for development in the region based on information from the Canada Land Inventory (CLI). The most suitable areas are those that have sufficient soil depth and soil quality for the installation of on-site septic systems. The moderate soils are those that are generally have sufficient soil depth but are excessively stony. The least suitable soils are areas with bedrock within one metre or less of the surface, steep topography, excess water or areas of organic soils (like peats).

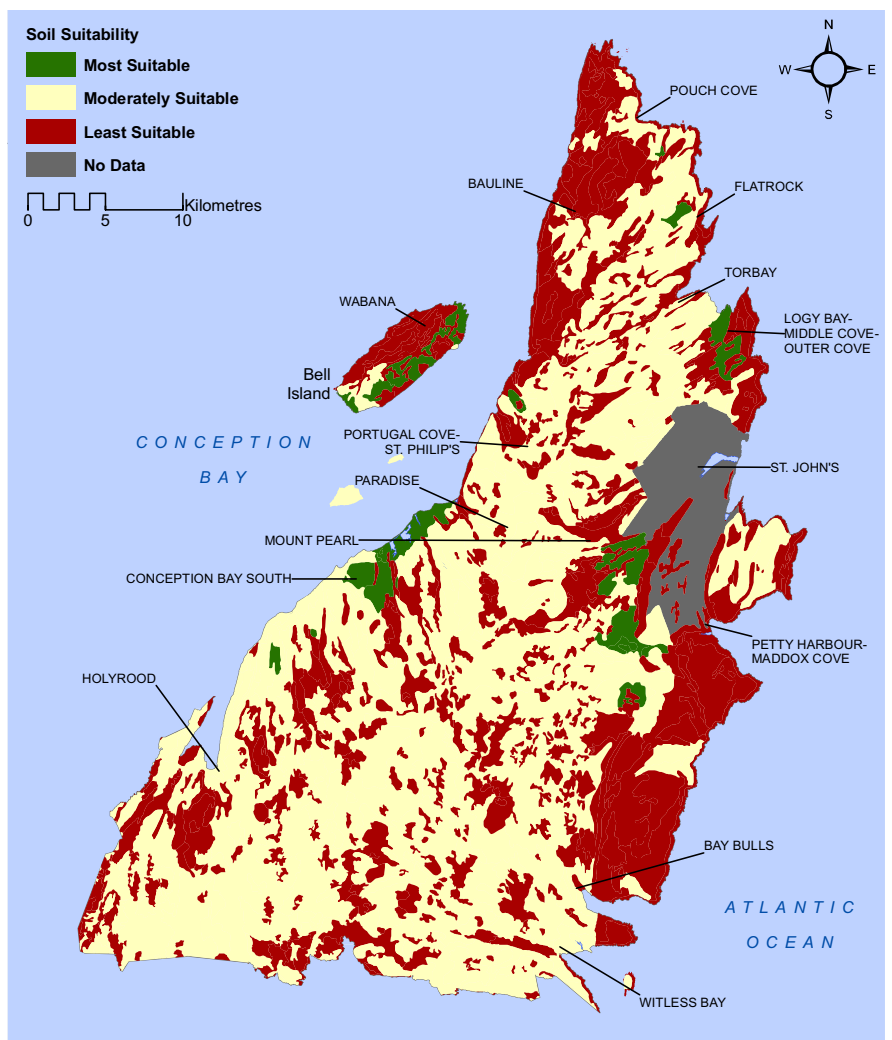


Figure 6.6: Soil Suitability (Data Source: Prepared using data from Department of Natural Resources – Land Resource Stewardship Division)



6.2.2 Climate, Vegetation and Wildlife

The Northeast Avalon Region is located within the Maritime Barrens ecoregion, a relatively large area that is characterized by a distinctive climate, ecological features and plant and animal communities. This ecoregion can be further subdivided into the Northeast Barrens and the Southeast Barrens subregions (See Figure 6.7). The climate of the region is dominated by ocean and, to a much lesser extent, by the North American continent. The Labrador Current, which consists partly of arctic water, encircles the Avalon Peninsula with cold water in spring and summer, but with fairly warm and saline water in winter. In spring, sea ice along the coast often keeps water temperature close to freezing and delays the growing season until late May. The pack ice is at its peak in March. The warm air masses approaching the island are chilled by the ice, and the sun is not strong enough to dispel the chill entirely. These sea ice

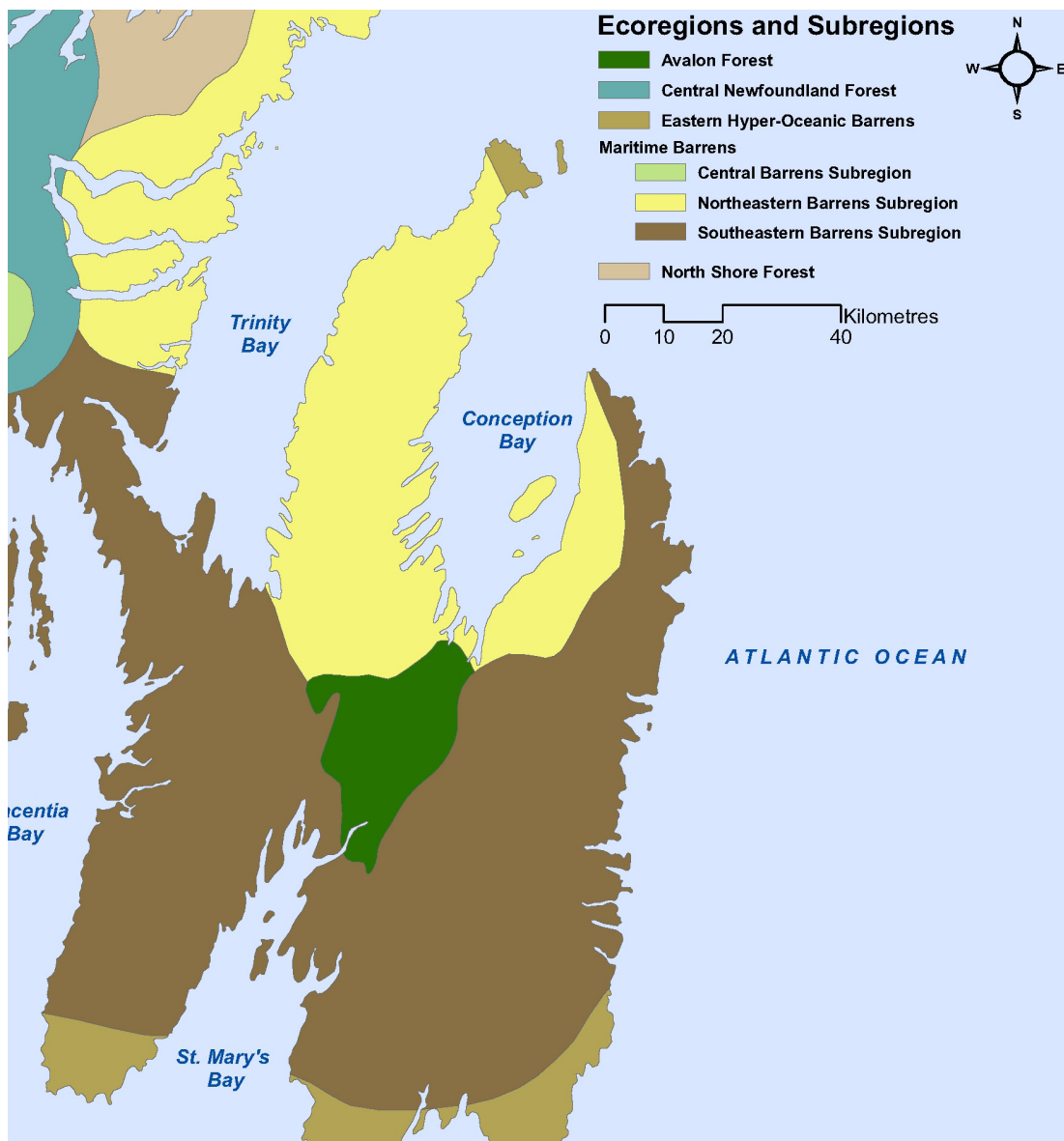


Figure 6.7: Ecoregions and Subregions in the Avalon Peninsula (Data Source: Department of Environment and Conservation – Parks and Natural Areas Divisions)



conditions vary, but mild winters with no sea ice are not uncommon. The summers are short with much cooler temperatures prevailing along the coast than farther inland. The warmest temperatures are experienced in July (13°C to 16°C) and the coldest temperatures in February (-3°C to -8°C). Precipitation increases in the autumn and in the early winter. Snowfall is heavy in the latter part of December and lasts until early April. Annual rainfall in the region ranges between 1250mm and 1300mm (Government of Newfoundland and Labrador, 2009d).

Prevailing winds are predominantly from the west year-round in Newfoundland, with wind direction west-southwest in the summer months. Coastal regions and exposed uplands experience greater winds than inland areas and valleys, and the winter is generally windier than summer. In general, Newfoundland is the windiest province, and St. John's is the windiest city in the country with an average wind speed of 24.3 km/h (Environment Canada, 2006).

The Northeast Barrens subregion covers the western portion of the Northeast Avalon area including parts of Pouch Cove, Bauline, Portugal Cove-St. Philip's, Paradise, Conception Bay South, Bell Island, and Holyrood. Widespread barrens are characteristic of this subregion, with slope bogs, basin bogs (bogs are freshwater wetlands that are poorly drained and characterized by a build-up of peat) and fens (wetlands fed by surface and/or groundwater) occurring regularly on the landscape. The scattered patches of forest found in this subregion are dominated by balsam fir, black spruce and some white birch. On the forest floors broom moss, feather moss, and other mosses are common. Mountain alder dominates the vegetation found along the banks of rivers and streams in the subregion, and forms dense thickets along the edges of brooks and streams. Dwarf shrub heath, especially sheep laurel is common on the open barrens although rhodora and low bush blueberry are well represented. Other vegetation found in this subregion includes dogberry, larch, and mountain holly. Partridgeberry and black crowberry dominate interior and coastal uplands.

Most land birds found in this subregion are migratory and include the ruby-crowned kinglet, northern waterbrush, white-throated sparrow, hermit thrush, fox sparrow and yellow-rumped warbler. Some year-round forest resident birds include dark-eyed junco, boreal chickadee, and pine grosbeak. Other birds that frequent the various wetland habitat types include swamp sparrow, several shorebird and waterfowl species. Common mammals in the forest and shrub habitat include moose, mink, snowshoe hare, and red fox, while beaver and muskrat are found in ponds and rivers. Other mammals include red squirrel, little brown bat, and several species of rodents. Caribou may also be occasionally found on the barrens (Government of Newfoundland and Labrador 2009d).

The eastern portion of the Northeast Avalon is within the Southeastern Barrens subregion, characterized by exposed bedrock and extensive barrens. Tree growth is even more limited than in the Northeastern Barrens subregion, and concentrated in protected valleys and coves. This barren landscape is as a result a history of forest harvesting and repeated and widespread forest fires. Dwarf shrub heath, especially sheep laurel, is common in the extensive barrens in this subregion. Other vegetation represented includes rhodora, low bush blueberry, larch, dogberry, mountain holly, and stunted balsam fir. Partridgeberry and black crowberry occur on inland hills and coastal headlands.



On the Avalon Peninsula, trees are seldom more than 40 feet high. More than half the area is barren or supports only scrub timber. Natural and human induced events including fire outbreaks, windthrow, insect infestations, and vegetation destruction by non-native mammal species (moose and red squirrels) have influenced the forest condition and productivity of much of the island and the Avalon forest ecosystem and have led over time to the development of an extensive heathland landscape in the Maritime Barrens. There are an estimated 80,000 hectares of once forested area on the Avalon Peninsula now occupied by heath (Government of Newfoundland and Labrador, 2006e). In addition to the Avalon Wilderness Reserve area just south of the Northeast Avalon Region, important forest stands are located along the coast south of St. John's.



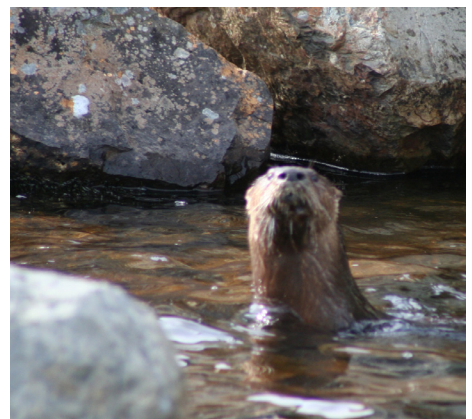
Northeast Barrens

A number of seabird colonies occur on offshore islands and headlands in this subregion. Four of these colonies (Gull, Great, Green, and Pee Pee Islands) make up the Witless Bay Ecological Reserve, located just off the community of Witless Bay. Together these islands host the second largest population of seabirds in eastern North America, including the continent's largest gathering of Atlantic puffin and the world's second largest colony of Leach's storm-petrel. The scattered forests in this subregion host land birds including the ruby-crowned kinglet, northern waterthrush, white-throated sparrow, hermit thrush, and fox sparrow. As in the Northeastern Barrens subregion, dark-eyed junco and pine grosbeak are year-round residents in forested habitats. Swamp sparrow and several species of shorebirds and waterfowl occur in wetland habitats. Moose, mink, snowshoe hare, and red fox live in the forest and shrub habitats, while beaver and muskrat occur in the vicinity of ponds and streams. Red squirrel, little brown bat, and a number of other rodent species are also represented in this subregion. This subregion is also within the distribution range of the Avalon Caribou herd, although only a small portion of its range is included in the southernmost part of the Northeast Avalon Region (Government of Newfoundland and Labrador, 2009k).



Southeast Barrens

The northernmost tip of the Avalon Forest ecoregion overlaps with the southernmost parts of the Northeast Avalon Region. This area is the most forested section of the region as the unique summer climate and sheltered location in the interior of the Avalon Peninsula promotes a distinctive pattern of forest growth. Balsam fir forests, mixed with yellow birch and white birch are common. The understory is dominated by wood ferns and some moss species. Other plant species include sphagnum moss, Canadian yew, and ericaceous shrubs (members of the heath family including blueberries). The threatened boreal felt lichen is found in this area, as well as other diverse lichen species. Birds that eat a largely seed diet, such as the pine grosbeak and white winged crossbill, are often found in the forests of this ecoregion. Insect eaters, such as the northern waterthrush, yellow-bellied flycatcher, and yellow-rumped warbler, are attracted to the area because of the abundance of food resources. Year-round residents in the area include boreal owl, boreal chickadee, and gray jay. Some waterfowl, such as the green-winged teal,



Otter



ring-necked duck, and the common goldeneye, breed along the edges of ponds. Mammals observed in the forest and shrub habitats of this ecoregion include moose, lynx, snowshoe hare, mink, red fox, beaver, otter, and muskrat (Government of Newfoundland and Labrador 2009b).

Some wildlife with geographical ranges that overlap with the Northeast Avalon Region are designated as vulnerable, threatened, or endangered and are protected by federal and/or provincial legislation. These include: barrows goldeneye (occurring along the coast in Conception Bay South); boreal felt lichen (occurring in old-growth balsam fir dominated stands); Eskimo curlew (possible ranges in the northwestern coast of the Northeast Avalon Region); harlequin duck and ivory gull (along the coastline); red crossbill (occurring in old-growth forests dominated by balsam fir); and short-eared owl that occur primarily in coastal areas and other open habitat (Government of Newfoundland and Labrador, 2009c; Environment Canada, 2009).

Within the region it will be important to identify and protect habitat of these species to ensure their continued survival. For example, Cape Saint Francis, Quidi Vidi Lake and Witless Bay Island are designated important Bird Areas by the IBA Program which is an international conservation initiative co-ordinated by BirdLife International, Bird Studies Canada and Nature Canada (formerly the Canadian Nature Federation). Cape Saint Francis is considered continentally significant due to its concentration of congregatory species. Quidi Vidi Lake is considered globally significant due to its concentration of congregatory species, and nationally significant due to its concentration of colonial waterbirds and seabirds. The Witless Bay Islands are considered globally significant due to the concentration of congregatory species as well as colonial waterbirds and seabirds. The importance of the islands has been recognized by their provincial designation as an ecological preserve.

6.2.3 Waterways and Wetlands

Within the Northeast Avalon, there are approximately 1,150km of waterways, 9,500ha of ponds and 8,000ha of identified wetlands. These water systems provide water for public drinking supplies, recreation, fish and wildlife habitat, and form a key part of the region's stormwater drainage system.

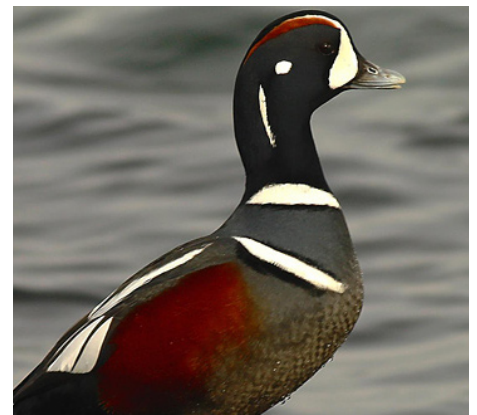
The region has a number of significant waterways, wetlands and barrachois areas that support wildlife and fish populations, including a small but lucrative eel fishery in a number of rivers in the region. Discussions with officials of the Department of Fisheries and Oceans indicates that rivers in the region support healthy populations of fish, particularly brown trout. There is significant potential within the region to restore the river systems to provide world-class recreational fishing opportunities not only for residents, but tourists as well. Part of this could involve re-establishment of Atlantic Salmon to complement the existing runs of Sea Run Brown Trout. Efforts



Boreal Felt Lichen (Frances Anderson, nature conservancy.ca)



Atlantic Puffins



Harlequin Duck (Eric Reuter, ducks.org)



at rehabilitation and protection of various rivers, streams, marshes and saltwater ponds in the region including the Rennies, Waterford, Manuels and Kelligrews rivers are underway yet challenges remain to ensure productive fish habitat is protected and where possible, enhanced where development occurs.

Historically, diversions of stream sand rives have occurred for water supply and hydroelectric development. More recently, watersheds in St. John's, Mount Pearl, Paradise, Conception Bay South, and Torbay are under increased pressure from the effects of urbanization; the Waterford, Rennies, and Virginia Rivers and their tributaries recognized as watersheds of particular concern (NAACAP 2006). Traditionally, rivers and streams have been used for stormwater management purposes with water from roads, parking lots and other hard surfaces directed to these waterways.

Management of stormwater runoff varies throughout the region. In many of the rural and suburban communities stormwater runoff remains largely consistent with natural surface flow and infiltration patterns, and impacts to waterways have not been of significant concern. In the urban core stormwater collection infrastructure directs the majority of surface flow to urban water systems. Figure 6.8 depicts the developed areas in the Northeast Avalon Region and the water bodies and waterways which flow through these areas.

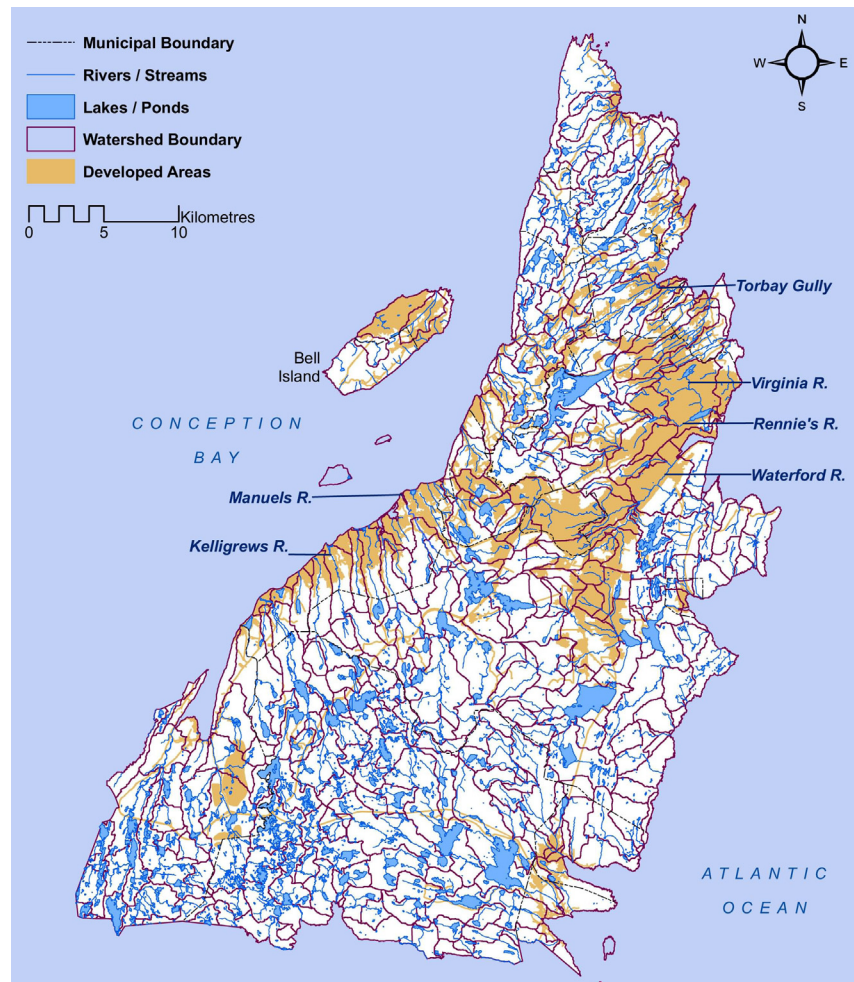


Figure 6.8: Waterways and Waterbodies (Data Source: Prepared using data from Department of Environment and Conservation & Landsat 7 Orthorectified Imagery)



Water systems in developed areas are at a heightened risk for issues, and the health and capacity of the following urban waterways have been under pressure from runoff contamination and increased flow due to urbanization:

- Waterford River
- Virginia River
- Rennies River
- Kelligrews River
- Manuels River
- Torbay Gully

The Waterford River is a significant runoff conduit through Paradise, Mount Pearl and the west end of St. John's, where it discharges into the St. John's Harbour. Along its course many stormwater sewers, ponds and streams flow into the Waterford, and the river basin is almost entirely in an urban area. The floodplain has been mapped, and development is restricted in this area. Development and pollutants have had consequences for the health of the river, but in more recent times improvements have been made. The municipalities in the Waterford River basin have worked together with the Province and community groups, including Friends and Lobbyists of the Waterford, to reduce stormwater flow and contamination along the length of the river (Dan Ficken, pers. comm., 2005).

Virginia River's main tributary begins in Pippy Park, and flows east to converge with the outflow from Virginia Lake, before passing through residential neighborhoods in east end St. John's to Quidi Vidi Lake. Tributaries to the river flow through residential and commercial areas and a golf course. In the past fish kills have occurred in segments of the river (Robert A. Buchanan, pers. comm., 1993).

The Rennies River flows from Big Pond, Middle Pond and Left Pond in Pippy Park, through Long Pond near Memorial University then through Central St. John's to Quidi Vidi Lake. Leary's Brook is a tributary to the Rennies River, directing stormwater through the O'Leary Industrial Park near Kenmount Road, along Prince Phillip Drive to Long Pond. The Rennies River has been impacted by development for many years. Eroded river banks, sedimentation, channelization and poor water quality have been issues in some areas along the length of the river. The Grand Concourse Authority and the Quidi Vidi/ Rennies River Development Foundation have been working to remediate the river and improve fish habitat (Robert A. Buchanan, pers. comm., 1993).

The municipality of Logy Bay has experienced flooding due to increased storm water runoff from the Stavanger Drive commercial area located in St. John's. Development in this area has reduced infiltration and increased the volume of water being discharged into area streams (Stick Pond Brook, Coakers River, Drukens River). The municipality reports bridge replacement, road flooding, sedimentation and overflowing ponds.

In Conception Bay South the Kelligrews River and the Manuels River direct much of the stormwater flow. A tributary of the Kelligrews River is known to have contamination issues, and some sedimentation has occurred as a result of new development. However, the overall impacts of urban development have not been severe and the community is generally positioned to protect existing healthy rivers.



In 2002, the Town of Torbay created a Habitat Management Plan that focused on identifying wetlands. The Torbay Environment and Trails Committee has been working in the Gully area of North Pond Brook to identify and reduce sources of pollution and bank erosion, monitor water quality, and provide public education and the Town has significant areas of protected wetland habitat (Town of Torbay, 2002).

Throughout the region ponds and lakes are also used for stormwater management. Like the waterways, those located within the urban core have experienced some issues, while those in less developed areas are relatively healthy. The area surrounding Virginia Lake has been entirely urbanized, primarily by residential development. The lake moderates the entire system and prevents downstream flooding, but ongoing siltation continues to threaten this valuable role. Stormwater contamination also threatens recreational use and fish habitat. Part of the same system, Quidi Vidi Lake is widely used for recreation, and has been monitored for many years (Robert A. Buchanan, pers. comm., 1993).

In 2007 the first blue-green algae blooms in Newfoundland occurred in Cochrane Pond, Paddy's Pond, Three Arm Pond and Three Island Pond in Paradise. These lakes are widely used for recreation and are surrounded by a range of land developments. The development of blue-green algae may have been influenced by increased concentrations of nutrients (phosphorus, nitrogen and iron) related to Tropical Storm Chantal. Land based activities, sewage effluent, storm water, and surface water run-off can also influence nutrient levels in the ponds (Department of Environment and Conservation, Water Resources Management Division, 2007 and 2008). Development is expected to continue in Paradise, and could increase water quality risks to these lakes, and other lakes that are part of the same system. Development around lakes and ponds is happening elsewhere in the region, including some ponds in Portugal Cove-St. Philip's, particularly Hogans Pond, Healeys Pond, Mitchells Pond North, Nearys Pond and Millers Pond.

In Conception Bay South water bodies are primarily salt water, located along the coastline, including Long Pond, Paddys Pond and Butlers Pond. Lawrence Pond is in a similar situation as the water bodies in Paradise and Portugal Cove-St. Philip's, and will also experience increased risk of water quality issues as development continues to occur.

Flooding is one of the most damaging potential issues associated with stormwater management. A number of flood plains have been mapped for rivers in the North East Avalon: Petty Harbour River, Waterford River, and localized sections of the Broad Cove River in St. Phillips and the Main River and its tributaries in Portugal Cove.

Numerous studies have been conducted by federal, provincial and municipal governments, researchers at Memorial University and by environmental groups, covering a range of hydrologic issues in the Northeast Avalon Region. A review of approximately 400 records was conducted by DFO, revealing a wealth of available information, in some cases including baseline data dating back several decades. However, the vast majority of this information relates to the aforementioned rivers in the urban core, where community groups and governments have been actively protecting and remediating the systems for many years with positive results (Department of Fisheries and Oceans Marine Environment and Habitat Management Division and the Northeast Avalon Atlantic Coastal Action Program, 2006).



Watershed management over the next 30 year planning period will be increasingly cross-jurisdictional in nature, and will necessitate data collection in rivers and lakes throughout the region, particularly in communities which are expected to continue developing rapidly and can expect changes to stormwater flow. Consistent stormwater policies and waterway classification in all municipalities, levels of government and community groups will be important for protecting healthy systems and remediating those which have been damaged. In addition to data collection and monitoring, public education regarding impacts on water systems has proven successful in the urban core, and will be important regionally.

In addition to government departments such as the federal Department of Fisheries and Oceans (DFO), and the provincial Department of Environment and Conservation, Water Resources Division, Surface Water Section that is charged with management of water resources, interest groups in the area such Friends and Lobbyists of the Waterford River, the Quidi Vidi Rennie's River Development Foundation, Salmon Association of Eastern Newfoundland, the Northeast Avalon Atlantic Coastal Action Program, the Manuels River Natural History Society, the Torbay Gullies Project, and the Virginia River Conservation Society demonstrate a strong interest in watershed management issues.

Communities have also started signing Municipal Wetlands Stewardship agreements with the provincial Department of Environment and Conservation. The Town of Torbay has signed this type to manage wetlands within its jurisdiction with the assistance of the Eastern Habitat Joint Venture. The City of St. John's has a similar agreement in place to protect Lundrigan's Marsh, a significant wetland in the city. As part of the agreement, municipalities incorporate a protected designation on the wetland areas into their municipal plans.

6.3 Regional Planning in the Context of Climate Change

Planning in the context of climate change necessitates proactively designing our landscape, infrastructure and vital community services with risk reduction in mind. This requires an understanding of gradual changes and extreme climate events that could impact our communities.

While mitigation, or reducing greenhouse gas emissions, is essential for slowing the rate and limiting the magnitude of climate change, change is already underway. Communities must plan for climate change and undertake adaptation actions. Adaptation goals can include:

- alleviating current impacts;
- reducing sensitivity and exposure to climate-related hazards; and
- increasing resiliency to climatic and non-climatic stressors (i.e. enhancing adaptive capacity).

6.3.1 Observed and Anticipated Impacts

While there have been a range of warming and cooling trends, on average Canada has warmed by more than 1.3°C since 1948. In Atlantic Canada, there has been an overall warming of 0.3°C between 1948 and 2005, with spring and autumn becoming warmer and winters becoming colder (Vasseur and Catto, 2008). Precipitation has also changed



throughout the country, increasing in Atlantic Canada by approximately 10% between 1948 and 1995. Furthermore, across the country an increased amount of precipitation is falling as rain instead of snow. Climate change projections in Newfoundland and Labrador are distinct from other Atlantic provinces because the province is also influenced by the North Atlantic Oscillation (NAO), “a cyclic variation in pressure regimes that influences northern North Atlantic environments and communities” (Vasseur and Catto, 2008). Positive NAO impacts can include below average temperatures, strong winds, wind stresses on the ocean surface, low sea-surface temperatures (especially in the winter), and extended durations of pack ice and brash ice. Negative NAO impacts can include opposite effects, such as warmer drier winters, and reduced snow cover in coastal areas. In Atlantic Canada climate change impacts have been observed on many physical and biological systems including:

- sea, lake and river ice cover – reduced extent and duration
- coastal erosion – enhanced as a result of decreased ice cover, sea-level rise, increased storminess and non-climatic factors
- plant phenology – events (such as leafing and flowering of plants) occurring earlier in the year (Lemmen, Warren, Lacroix, 2008)

In a nation-wide study on climate change and adaptation, the key findings for Atlantic Canada are:

- Climate change will result in more storm events, increasing storm intensity, risking sea level, higher storm surges, and more coastal erosion and flooding, affecting coastal communities and their infrastructure and industries.
- Water resources will come under increasing pressure as conditions shift and demands change in response to both climatic and non-climatic factors.
- Impacts on marine fisheries will extend beyond fish species to include numerous aspects of fishery operations, such as transportation, marketing, occupational health and safety, and community health and well-being.
- Although higher temperatures and longer growing seasons could benefit agriculture and forestry, associated increases in disturbances and moisture stress pose concerns.
- Vulnerability of Atlantic communities can be reduced through careful planning, especially in coastal regions and through adaptation focused on limiting exposure to sea-level rise. (Lemmen, Warren, Lacroix, 2008)

6.3.2 Sea-Level Rise and the Impact on the Coast

Sea level has risen in Atlantic Canada by 30cm over the last century and is expected to accelerate with climate change. Sea level rise will have more of an impact on Newfoundland than increased storm frequency or climate warming (Catto et al., 2003). The rise in relative sea level, i.e., the water level relative to fixed points on land, experienced by Atlantic Canada can be attributed to long-term global mean sea level rise since the end of the last ice age, regional land subsidence, and climate warming that will accelerate global sea level rise.

Climate change is “any change in climate over time, whether it is the product of natural factors, human activity or both” (Lemmen, Warren, Lacroix, 2008).

Mitigation of climate change is any “human intervention to reduce the sources or enhance the sinks of greenhouse gases” (Baede, 2007).

Adaptation to climate change “involves making adjustments in our decisions, activities and thinking because of observed or expected changes in climate, with the goals of moderating harm and taking advantage of new opportunities” (Lemmen, Warren, Lacroix, 2008).

Vulnerability to the impacts of climate change “is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity” (IPCC 2007).



Sea level rise, erosion and increased housing development put increasing pressure on the coastal environment. Sea level rise has both biophysical impacts and socio-economic impacts. The former include flooding, coastal instability, and changes to biophysical systems. The latter includes damage to property, infrastructure, and human safety risks.

Figure 6.9 illustrates the general sensitivity to sea-level rise on the Avalon Peninsula which relative to other parts of Atlantic Canada is given a low sensitivity ranking. This ranking is due to “generally high relief, resistant igneous and metamorphic bedrock, prevalence of rock cliffs, and microtidal conditions”⁵ (Catto et al., 2003). Because the sensitivity ranking was applied at a broad scale, however, certain local sensitivities may be concealed. Catto et al. (2003) point out that although the Northeast Avalon is overall a low sensitivity region, it includes both the “highly sensitive shoreline of Conception Bay South and the non-sensitive shoreline of Cape Spear” (See Figure 6.10 in the *Hazards Area section for a more detailed analysis of the sensitivity of the Conception Bay South coastline*).

6.3.3 Planning as an Adaptation Tool

Planning is an important part of a region and a community’s ability to adapt to climate change and plan ahead to reduce the risks of long term change, like gradual coastal erosion or a sudden impact like a severe storm event. Planning influences vital infrastructure (drinking water, power lines, roads), building design, lot setbacks, and the location of houses, institutions, shopping centres, and other important land uses. A community is considered vulnerable when it is exposed to significant climate change and cannot adapt to reduce the harm of negative impacts. For example, if a community is hit by a severe storm event and its hospital, water treatment plant, main roads, and police station are located in coastal locations that experience flooding and other damage, and there have been no adaptation actions or contingency planning, the community will face serious negative impacts on human health and safety, in addition to ecological harm and property damage.

The elderly, children, first nations, the poor, and people with health conditions are considered some of the most vulnerable to climate change. Planners need to consider vulnerable groups in their land use decisions to ensure that essential service providers are not located in an area of a community that may be particularly sensitive to impacts, such as flooding.

Urban and rural areas may be impacted by climate change differently and have varying capabilities for adaptation and response to climate change events. Urban areas with a service sector based economy are likely less

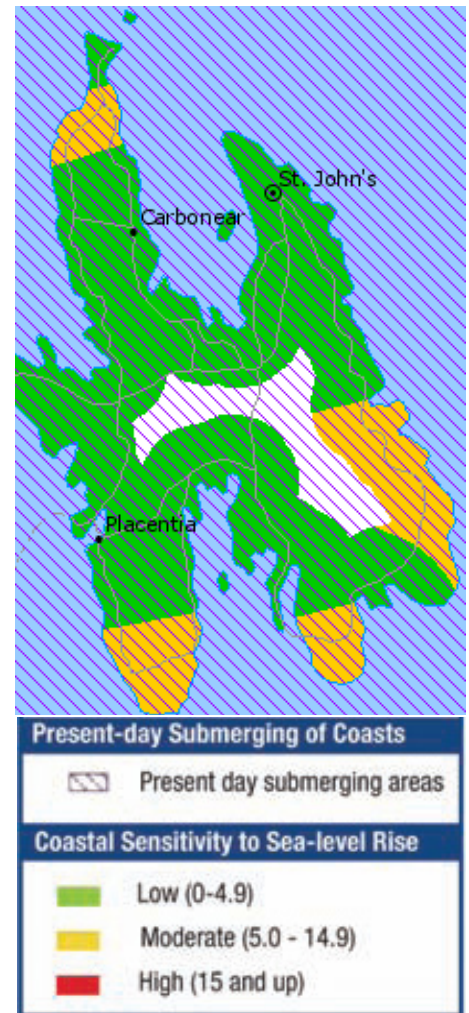


Figure 6.9: Coastal Sensitivity on the Avalon Peninsula (Natural Resources Canada, 2009, online)

⁵ The sensitivity indices Shaw et al. developed considers seven critical parameters: relief; rock and/or sediment type exposed along the shore; landform type (e.g. cliff, beach, salt marsh); tendency of sea-level change (amount of rise or fall per 100 years); shoreline displacement (laterally, expressed in m/a); tidal range; and mean annual maximum significant wave height (Catto et al. 2003).



sensitive to climate change than the primary resource sectors (agriculture, forestry, and fisheries) that support rural communities (Warren and Egginton 2008). Table 6.4 illustrates the different strengths and limitations that urban and rural areas generally have for adaptation to climate change, which affects vulnerability. Most of the Northeast Avalon Region is considered fairly urban with strong rural sectors, and both large and small communities along the coastline will need to be aware of their vulnerabilities and plan to ensure that they can adapt to climate change.

Urban Centres	Rural Communities
Strengths	Strengths
<ul style="list-style-type: none"> ➤ greater access to financial resources ➤ diversified economies ➤ greater access to services (e.g. health care, social services, education) ➤ higher education levels ➤ well-developed emergency response capacity ➤ highly developed institutions 	<ul style="list-style-type: none"> ➤ strong social capital ➤ strong social networks ➤ strong attachments to community ➤ strong traditional and local knowledge ➤ high rates of volunteerism
Limitations	Limitations
<ul style="list-style-type: none"> ➤ higher costs of living ➤ more air quality and heat stress issues ➤ lack of knowledge of climate change impacts and adaptation issues ➤ high dependence on critical, but aging infrastructure ➤ issues of overlapping jurisdictions that complicate decision-making processes 	<ul style="list-style-type: none"> ➤ limited economic resources ➤ less diversified economies ➤ higher reliance on natural resource sectors ➤ isolation from services and limited access ➤ lower proportion of population with technical training

Table 6.4: Strengths and Limitations Urban and Rural Centres Have For Adapting to Climate Change (Lemmen et al., 2008).

Planning for adaptation to climate change in coastal areas can involve a combination of planning retreat, accommodation and protection. Planned retreat may be the best option when coastal erosion is inevitable and it is best to abandon or relocate buildings, roads, power lines and other structures inland. Coastal land that is impacted by climate change can be accommodated for use through construction techniques that, for example, elevate buildings above flooding, or through zoning that, for example, would restrict coastal land uses to essential facilities like ports and wharves. Protecting the coast through “hard” measures such as seawalls, breakwaters, rip-rap, groynes, or “soft” measures such as vegetated dunes is another way to adapt to coastal erosion and protect the local ecosystem and development within the area. Municipalities will need to consider each of these responses and determine which are the most sustainable, cost-effective, and appropriate for their context in the long-term.

In the Climate Change Action Plan, the Government of Newfoundland and Labrador has committed to establishing an interdepartmental committee to develop a provincial land use policy and requiring that infrastructure projects receiving public funds meet a standard set of criteria with respect to climate change.



Three communities in the Northeast Avalon Region (St. John's, Mount Pearl, and Conception Bay South) have committed to reducing greenhouse gas emissions and acting on climate change by participating in the FCM Partners for Climate Protection program. Greenhouse gas emissions from personal vehicle use are related to where employment, education, residential and other land uses are located in relation to one another. People commuting throughout the Northeast Avalon Region for work and education, necessitates a regional approach to climate change.

6.4 Hazard Areas

Hazard areas within the Northeast Avalon region are currently being identified through research being carried out by the Geological Survey of Newfoundland and Labrador. These involve identifying the implications of sea level rise, monitoring existing coastal erosion and identifying areas susceptible to storm surges. A Hazard Map for the region is being prepared.

Discussions with staff of the department indicate that sea level rise in coastal areas could increase by as much as 100cm by 2090. Combined with storm surge events, areas as high as 2.5 metres above sea level could be impacted. Areas particularly susceptible to the impact of rising sea levels and storm surges are located along the low lying coastline along Conception Bay from Topsail Beach to Holyrood and are illustrated in Figure 6.10.

Four potential hazards were recognized for the Conception Bay South and Holyrood coastline:

- coastal flooding and storm surges;
- damage to coastal infrastructure by storms;
- coastal erosion; and
- damage to the ecology of coastal areas. (Paone et al. 2003)

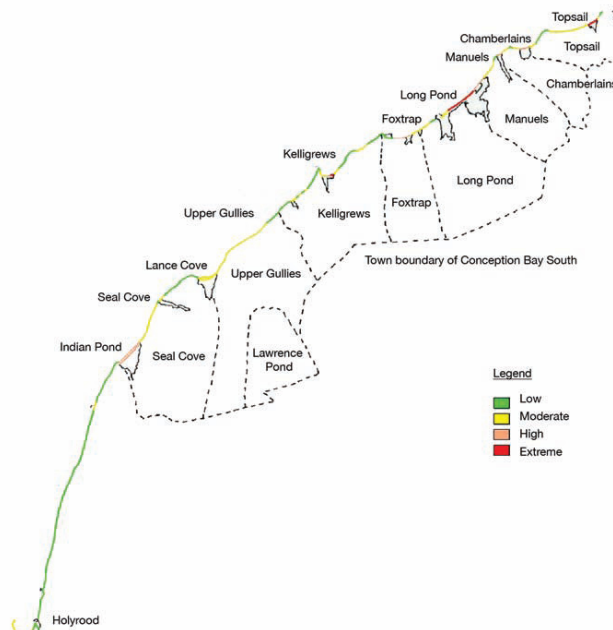


Figure 6.10: Coastal Sensitivity in Conception Bay South and Holyrood (Vasseur and Catto, 2008)



Since 80% of the developed areas of Conception Bay South and Holyrood are within 2km of the coast, the impacts of sea-level rise are expected to be substantial. Areas of Conception Bay coastline that include town services, businesses, residences, and infrastructure were determined to be “highly to extremely vulnerable to coastal flooding and erosion”. Planning measures, such as setbacks and zoning changes are recommended adaptation actions for Conception Bay South and Holyrood to reduce their vulnerability and increase their adaptive capacity. Care must be taken in the planning and implementation of responses to sea-level rise in this area which contains many areas of narrow coastal barachois where beaches shift. Eroding cliffs “feed” the beaches in a complex and poorly understood manner. The impact of measures to prevent erosion in one area (placement of armour stone for example) on nearby beaches is not well understood and inappropriate responses may have significant unexpected consequences (Vasseur and Catto, 2008).

The provincial government in conjunction with the federal government has formally identified and mapped areas in the province that are subject to flooding. In the Northeast Avalon, these areas are:

- Petty Harbour;
 - areas along the Waterford River in St. John’s and Mount Pearl;
 - Third Pond, Cochrane Pond Brook, Raymond Brook, Doyle’s Brook, and Dirty Bridge Brook in the Goulds; and
 - Murray’s Pond River/Main River, and Broad Cove River in Portugal Cove-St. Philip’s
- Mount Pearl updated flood mapping in the early 1990s, but most of these maps were prepared in the 1980s and are in need of updating to reflect current and predicted sea levels, existing land use and the availability of more accurate mapping and technology.

Some areas of the region also experience rockfalls or avalanches. While some of these occur along the coastline away from developed areas, communities such as Bauline have experienced rock falls from the steep hills surrounding the community. Rock falls have also occurred in Portugal Cove and Petty Harbour outside the limits of development and these areas will be identified on the Hazard Map being prepared by the Geological Survey group.

6.5 Desirability Analysis

The desirability analysis illustrates the relative desirability of land within the study area for various uses according to certain criteria such as soils, slope, vegetation, proximity to or setback from highways, certain land uses and other influencing factors. For example, residential development is generally more desirable on dry soil, close to schools, yet further away from industrial land uses and power lines. Desirability does not mean that it is technically or economically feasible or infeasible to develop specific land parcels. This analysis is not prescriptive; this information will be used to inform decision making in the following phases of the regional planning process.



6.5.1 Residential Desirability

Table 6.5 outlines the criteria used to formulate the residential desirability map.

	Best	Middle	Worst
Soils	Dry Soil	Imperfect	Wet and Wet Organic
Slope	0-8%	8-20%	>20%
Vegetation	Mature	Immature	Other
Aspect	South, southwest	Southeast, west	Other
School Access	within 1.6 km.	1.6 to 5 km.	>5 km.
Setback from Highway	> 250 m.	n/a	< 250 m.
Setback from Industrial Uses	> 500 m.	n/a	< 500 m.
Setback from Power Line	> 150 m.	50-150 m.	< 50 m.

Table 6.5: Residential Desirability Criteria

Residential development can easily be built on slopes up to 20%. Preferred aspects are southeast, southwest, south, and west. Generally, areas with mature vegetation are more desirable to purchasers, although it may be desirable for the Municipality to encourage redevelopment on cut-over or disturbed areas as a means of preserving less-disturbed areas and controlling erosion. Sites located closer to schools (more especially in the urban context) are often more desirable. Locations away from high tension power lines are preferred due to health concerns.

Unsurprisingly, the desirability analysis map (Figure 6.11) shows that the most desirable lands correspond quite closely to the existing development pattern in the area. There are smaller areas of desirable land located adjacent to some existing development areas although there are challenges along the coast from Pouch Cove to Portugal Cove and from Petty Harbour to Bay Bulls. The area south of Holyrood and a strip inland from the coast in the area exhibit lower desirability.

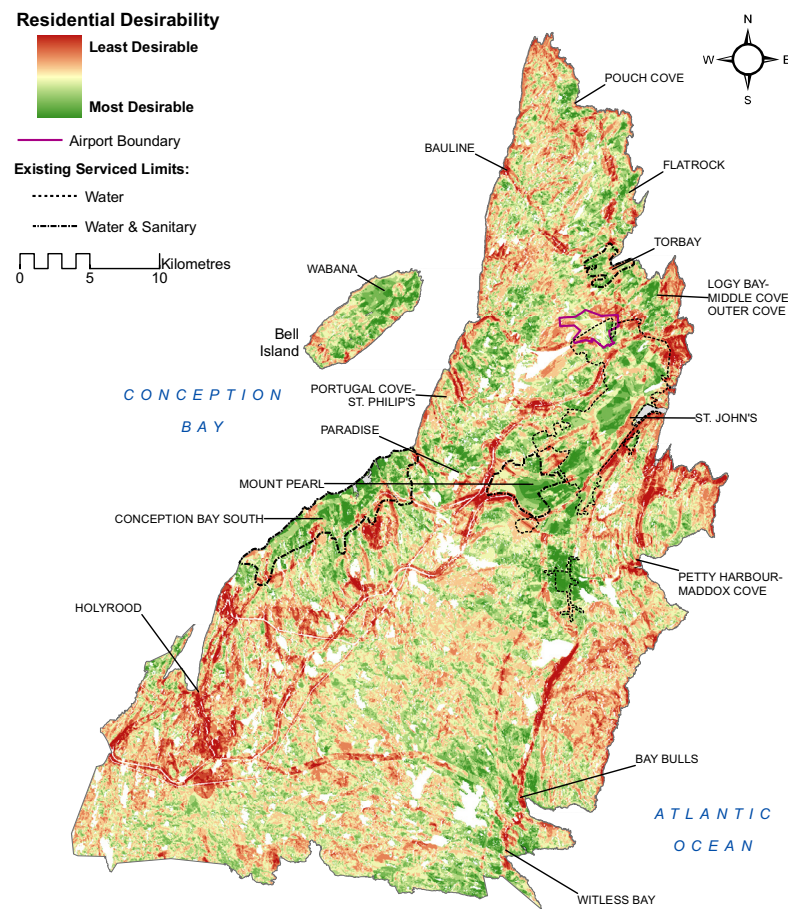


Figure 6.11: Residential Desirability (Data Source: Prepared using data from Department of Environment and Conservation)



6.5.2 Regional Commercial Desirability

Table 6.6 outlines the criteria used to formulate the regional commercial desirability map.

	Best	Middle	Worst
Soils	Dry Soil	Imperfect	Wet and Wet Organic
Slope	0-5%	5-15%	> 15%
Vegetation	Disturbed/Scrubby	Immature	Mature
Distance to Major Road	Within 50 m.	50 - 200 m.	> 200 m
Setback from Power Line	> 150 m.	50-150 m.	< 50 m.

Table 6.6: Commercial Desirability Criteria

Generally, such development is more easily built on land with less than a 15% slope and locations close to major transportation routes are preferred. From a municipal point of view, disturbed sites are preferred as such developments can offer opportunities for brownfield redevelopment.

Figure 6.12 illustrates the most desirable regional commercial lands in the area relative to other lands. In general, there are two strips of less desirable land running along the eastern and western sides of the peninsula. On the Conception Bay South side, this strip is located inland from the shore leaving a strip of more desirable land next to the coast. There are also highly desirable areas for regional commercial development in and around the Goulds as well as the Middle Cove area.

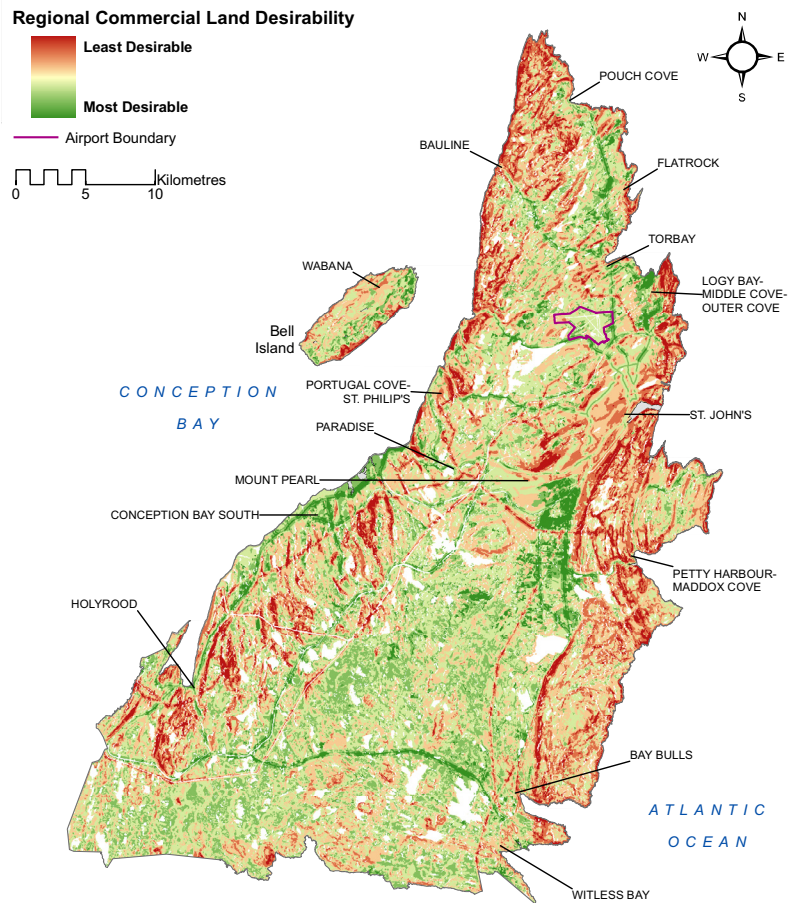


Figure 6.12: Regional Commercial Desirability (Data Source: Prepared using data from Department of Environment and Conservation)



6.5.3 Industrial Desirability

Table 6.7 outlines the criteria used to formulate the industrial desirability map.

	Best	Middle	Worst
Soils	Dry Soil	Imperfect	Wet and Wet Organic
Slope	0-5%	5-15%	> 15%
Vegetation	Disturbed/Scrubby	Immature	Mature
Distance to Major Road	Within 400 m	n/a	> 400 m

Table 6.7: Industrial Desirability Criteria

Industrial development is more easily undertaken on land with slopes less than 15%. Generally, areas that are open or with scrubby or immature vegetation are more easily developed as the land is more or less clear. Industries also generally prefer to be located close to major transportation routes and to have access to central sewer and water services.

As per Figure 6.13, the most desirable lands for this type of development occur along the major highways. Intersections of the major highways are considered especially good locations for this type of development. Flatter areas in the Goulds, Conception Bay South and Middle Cove received higher rankings along with areas east and south of the airport.

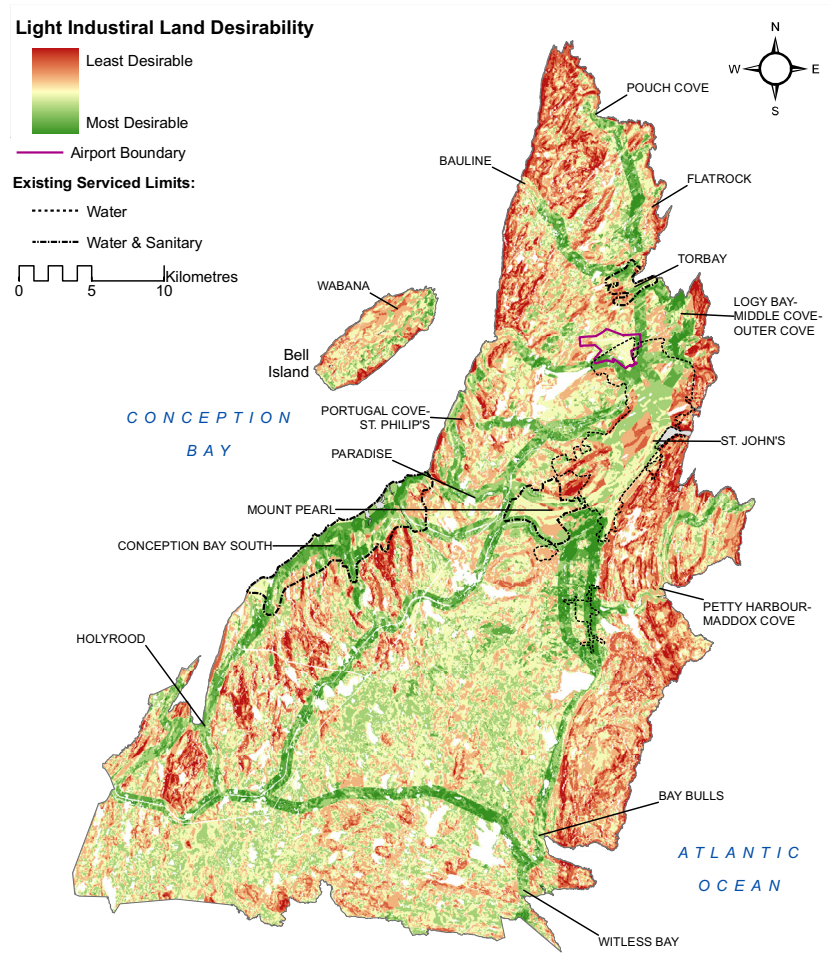


Figure 6.13: Industrial Desirability (Data Source: Prepared using data from Department of Environment and Conservation)



6.5.4 Team/Sporting Fields Recreation Desirability

As per Table 6.8, lands desirable for team / sporting use generally require flatter slopes and well draining soils.

	Best	Middle	Worst
Soils	Dry Soil	Imperfect	Wet and Wet Organic
Slope	0-3%	3-5%	>5%
Vegetation	Disturbed/Scrubby	Immature	Mature
Distance to Major Road	Within 250 m	n/a	> 250 m
Setback from Power Line	> 150 m.	50-150 m.	< 50 m.

Table 6.8: Team/Sporting Fields Recreation Desirability Criteria

Locations away from high tension power lines are preferred due to health concerns. For ease of access, locations near to major transportation routes are also more desirable. For ease of construction, areas that have already been disturbed are more easily built upon.

As shown in Figure 6.14, the areas that are most desirable for team / sporting fields area located in the Goulds, Conception Bay South closer to the coast, towards Middle Cove and east and south of the airport. There is also a small strip from Flat Rock to Pouch Cove along Highway 20. While conditions make the area long Route 13 from Witless bay to the Trans Canada Highway more desirable, the area is fairly remote.

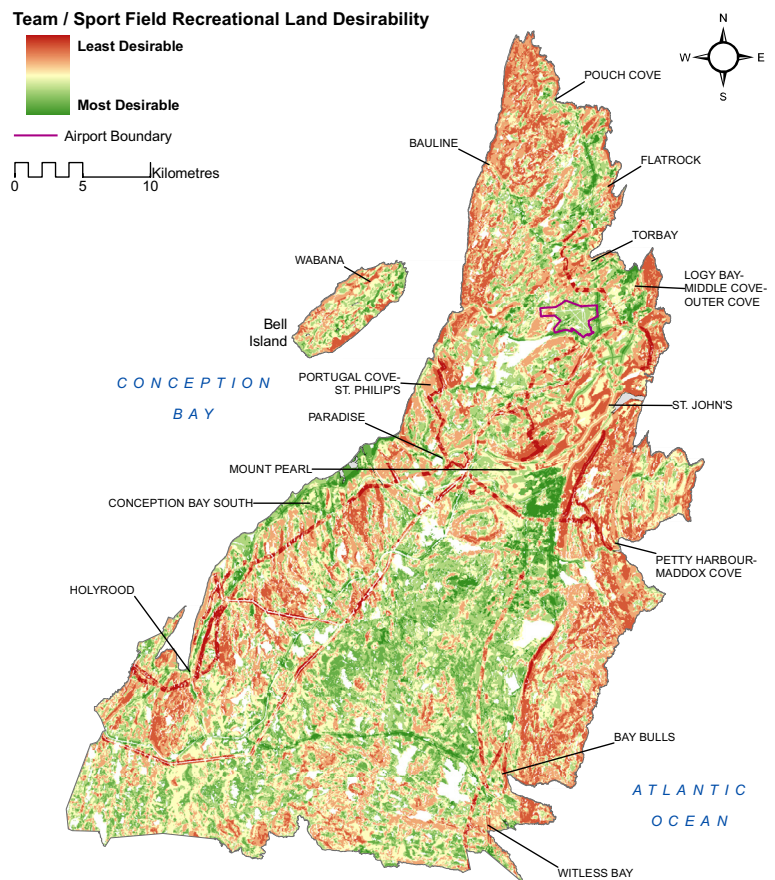


Figure 6.14: Team/Sporting Fields Recreation Desirability (Data Source: Prepared using data from Department of Environment and Conservation)



6.5.5 Outdoor/Adventure Recreation Desirability

Table 6.9 outlines the criteria used to formulate the outdoor/adventure recreation desirability map.

	Best	Middle	Worst
Soils	Dry Soil	Imperfect	Wet and Wet Organic
Vegetation	Mature	Immature	Disturbed/Scrubby
Relationship to Water	Within 50 m.	50 - 100 m	> 100 m
Distance to Major Road	> 500 m	200-500 m	> 200 m
Setback from Power Line	> 150 m.	50-150 m.	< 50 m.
Existing Park	Within an existing park area	n/a	outside the park

Table 6.9: Outdoor/Adventure Recreation Desirability

In many ways the criteria for outdoor/adventure recreation is the opposite to that for team / sporting fields. Slopes are not an issue and often more steeply sloped areas with great views are more desirable. Undisturbed vegetation is preferred. Setbacks from roads and power lines are important considerations as people try to experience the natural character of an area.

Based on these criteria, Figure 6.15 shows that much of the coastline (incidentally where the East Coast Trail is generally located) demonstrates high desirability for outdoor / adventure use. Interior areas away from major roads also have a higher desirability.

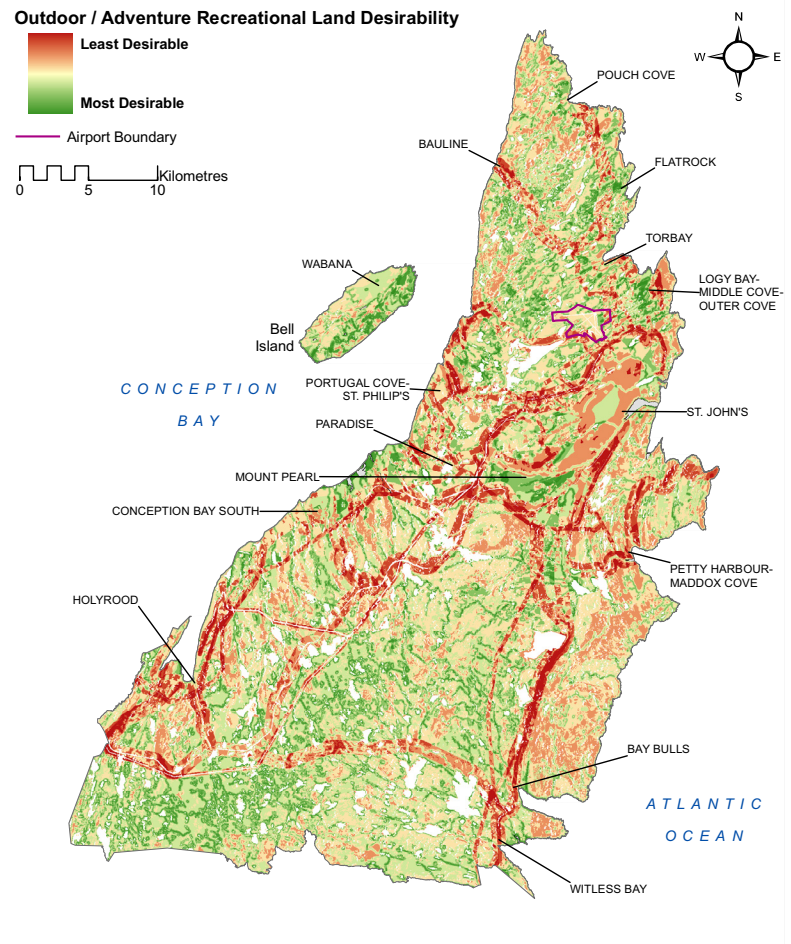


Figure 6.15: Outdoor/Adventure Recreation Desirability (Data Source: Prepared using data from Department of Environment and Conservation)



6.6 Key Issues and Opportunities for Land Availability

Within the Northeast Avalon, the amount of land zoned and planned for residential uses exceeds the amount of land that will be needed over the next 25 years. There is not enough land set aside in appropriate locations for regional commercial and industrial uses.

Topography and Soils - Steep slopes and poor soil depth and quality can limit areas suitable for development. For example, the steeply sloped areas in Petty Harbour - Maddox Cove and Bauline along with the exposed bedrock areas of the barrens make these areas less easily developed than the flatter areas with good quality soil and depth found in the Goulds. The land quality of the Goulds also makes the area desirable for agriculture and the balancing of competing uses in areas of good soils and lower slopes will be a challenge for the plan.

Climate, Vegetation and Wildlife - It will be important to identify and protect areas important to vulnerable, threatened, and endangered species. While this is somewhat easier for more remote areas and protected areas that also support tourism activities, it will be more difficult to protect the ecological characteristics of areas under development pressure.

Waterways and Wetlands - Increasing urbanization is making changes to the water quality and flow characteristics of a number of rivers in the region. As most rivers cross municipal boundaries, cross jurisdictional management for stormwater quantity and quality management will become more important.

Climate Change and Hazard Areas - As climate change occurs and urban development increases, the type and extent of hazards to public health and safety are changing. Certain areas along the Conception Bay South and Holyrood coastlines are more sensitive to sea level rise, and the subsequent hazards of erosion, flooding, harming of ecosystems and damage to property and community infrastructure.

In the Northeast Avalon Regional Plan consideration will need to be given to how land use planning for future growth can be used as a tool to reduce travel between land uses and therefore reduce greenhouse gas emissions and mitigate climate change. The Plan will also consider the ways and means through which urban development and community infrastructure can be protected from the impacts of climate change including sea-level rise, storm surges and coastal erosion.

Desirability Analysis - The desirability analysis provides general information that can be used to best locate future land uses. This information will be used in the following phases of the regional planning process.



7 Public Engagement

7.1 Overview of Public Engagement in the Northeast Avalon Regional Planning Process

The Northeast Avalon Regional Plan public engagement program is designed to facilitate a range of consultation opportunities. A communications plan is in place to get the word out about the planning process and receive input from the public. Phase 1 “What are the Issues?” of the public engagement program is nearly complete (Figure 7.1). Phase 1 included a series of public meetings, Newsletter 1, an online issues survey, interviews with municipal staff and councils, referral letters from government departments and several presentations to and meetings with community groups and other key players in the region. The communications component of Phase 1 included printed advertisements in the Telegram, press releases, a project website (www.nearplan.ca), announcements through websites and email lists from community networks and regional organizations.

Engaging the public throughout the Northeast Avalon Regional Planning process is a priority. Phase 2 “What is your vision?” will commence in Fall 2009. Appendix 2 provides an overview and additional information about each of the five key phases in the public engagement process.

The main public engagement processes and results to date are summarized in the following sections. The feedback received from the public in Phase 1 has informed the understanding of the issues presented in this report.

7.2 Public Meetings

A series of public meetings was held during the week of May 25, 2009 at three different locations throughout the region. These sessions were an opportunity for the public to learn about what the Regional Plan is, how development in the region has been guided in the past, and what the historic issues have been. Secondly, these sessions provided opportunities for the public to talk about the issues that are of concern that need to be taken into account in the development of a new Northeast Avalon Regional Plan.

The first meeting was held in Witless Bay on May 26, 2009 from 7:00 to 9:00 at the Kinsmen Club. Approximately 40 people were in attendance, the

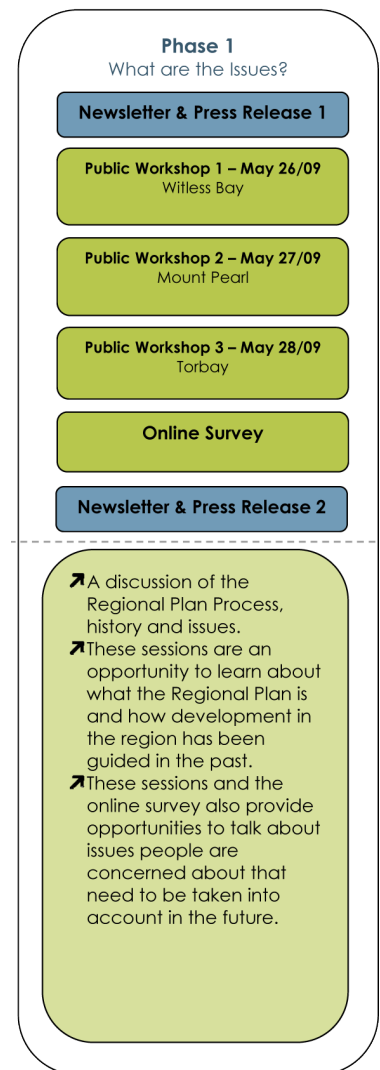


Figure 7.1: Phase 1 Public Engagement - What are the Issues?



majority of whom reside in Witless Bay, Bay Bulls and the surrounding area. The Mount Pearl public meeting was held on May 27, 2009 from 7:00 to 9:00 at the Reid Centre. Approximately 20 people were in attendance, including staff and councillors from municipalities in the region, representatives from the East Coast Trails Association, developers, and some residents. Many attendees had existing interest in planning and land use in the Northeast Avalon Region.

The Torbay public meeting was held May 28, 2009 from 7:00 to 9:00 at the Kinsmen Club. Approximately 60 people were in attendance. People with a wide range of backgrounds and interests were present, including residents and councillors from most of the more northern municipalities, and representatives from community organizations.

At the public meetings a series of display boards was set up so that attendees could have an up-close look at maps, graphs, tables and other important information. Every meeting was conducted in two main parts. A brief presentation was given by the consultant outlining the history of growth and planning in the region and some key statistical/ demographic information. The later half of the meeting was spent in small group work, facilitated by the consultant team. Participants worked to answer a series of questions, and then each group shared their ideas and concerns with the larger group. The major themes that emerged during these sessions are summarized in the sections below.



Public Meeting in Witless Bay



Public Meeting in Torbay

7.2.1 Communications

The public meetings were advertised for two Saturdays in The Telegram and in The Shoreline the week preceding the meetings. Public service announcements were requested from VOCM radio, and the CBC radio publicized the meetings and provided information about the regional planning process. Notice was also provided on the local television network channel 9 and on the Northeast Avalon Regional Plan website, established as a communications tool for the regional planning process.

7.2.2 Key Issues Raised at the Public Meetings

A number of common themes emerged from the public meetings. While local issues were discussed at each of the three meetings, the values, issues and concerns expressed that were of a regional nature, were surprisingly similar.

Development and Community Character

Several attendees from outlying communities expressed an appreciation for the rural character and the natural environment of the region, and an understanding of what St. John's has to offer in terms of certain services and facilities. The general sense among meeting attendees was that they like to be

Northeast Avalon Regional Plan

A new plan for the Northeast Avalon region is being prepared by the Department of Municipal Affairs in partnership with fifteen municipalities. The **NorthEast Avalon Regional (NEAR) Plan** will be a provincial policy document that will provide a vision for the future and set out land use planning goals and objectives for the region.

The first in a series of **Public Consultations** to be held over the next year are about to begin. Come out and discuss the issues facing the Northeast Avalon Region at these upcoming public forums:

Witless Bay 7:00-9:00pm	Tuesday May 26 Kinsmen Community Centre Southern Shore Highway
Mount Pearl 7:00-9:00pm	Wednesday May 27 Soccer Hut Arena Road off Smallwood Drive
Torbay 7:00-9:00pm	Thursday May 28 Kinsmen Community Centre 8 Kinsman Place, Bauline Line

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Ad for public meetings in The Telegram



far enough from St. John's to maintain a sense of autonomy, make decisions locally, and enjoy quiet, private lots. On the other hand, they enjoy living close enough to access the cultural amenities, employment opportunities and goods and services of the City.

In line with the desire to preserve the rural character of the outlying communities, many residents advocated for large lot, unserviced development. On the other hand, many residents expressed the desire for mixed use, higher density developments that could reduce car dependence.

At the Mount Pearl meeting, the issue of development above the 190m contour elevation was raised as a concern because it could significantly alter the character of the region, which currently has hilltops free of any development.

Housing

Concerns about the affordability of housing and the availability of housing options, particularly for seniors, was raised as an issue that needs to be addressed regionally.

Protection of the Environment and Resources

Many residents felt strongly that the natural environment including open spaces, wilderness areas, watersheds, ponds, lakes and streams should be protected. Meeting attendees mentioned the reduction of waste and improvements to the disposal of wastewater, storm water and solid waste as ways to better protect the environment. Water conservation and drinking water safety were also issues related to the environment and human health raised by attendees.

Residents discussed the potential to designate additional large regional parks through the Northeast Avalon Region Planning process.

Attendees were also concerned about the protection of Agricultural land from encroaching development, and ensuring the sustainability of local food production and supply.

Transportation

Transportation was a major topic of discussion at all three meetings. There was considerable debate over the implications of new roads and highways, and how they can influence development and economic growth. Some attendees emphasized that industrial growth that could provide employment and tax revenues is dependent on the presence of roads that can handle trucking. Traffic congestion on the Torbay Road and Bay Bulls Road prompted some in attendance to want new and expanded roadways. Limited parking options in downtown St. John's was also brought up as an issue that needs to be addressed at a regional level, since many people are driving in from other municipalities. In addition to the discussions about expanded capacity for vehicles in the region, many attendees want the regional plan to consider public and alternative transportation in outlying areas, including bus and park-and-ride services.



Coast

Protection and public accessibility to the coastline was important to most of the meeting attendees. Coastal areas are valued for a variety of reasons, including:

- cultural heritage and maintaining the strong connection residents of the region have with the ocean;
- for recreational opportunities, both for residents and tourists;
- scenic views; and
- for environmental habitat.

An important component of the coastline of the region is the East Coast Trail (ECT). The ECT Association and members of the public who use and appreciate the trail had a strong presence at the public meetings. One attendee described the trail as the tie that binds all of the communities in the region together. Several people emphasized the need to protect the trail from encroaching development and establish a protective buffer around the trail.

Cultural Heritage

Cultural heritage was clearly valued by residents, both as a component of community identity and as a driver of tourism. Some residents expressed concerns about development that compromises traditional settlements in terms of design, scale and access to the coast. Heritage sites and historic buildings were identified as important community assets that many attendees would like to see designated, restored and promoted.

Moving forward

Meeting attendees expressed the desire for the Northeast Avalon Regional Plan to proceed in an integrated manner that would take into account the future needs and desires of the entire region. There was an acknowledgement that the region is growing and that each community will experience increased growth; however, residents want the aspects they value about their communities be protected while growth occurs. A regional plan that provides an overarching policy framework for all communities was seen as a positive step moving forward.

7.3 Referral Responses

The Department of Municipal Affairs provided letter notice of the Northeast Avalon Regional Plan process to 52 departments and agencies in early March 2009. The purpose of the letter was to initiate contact with key stakeholders in the region, and identify provincial or regional plans, initiatives and interests relevant to the Regional Plan. Each agency or department was asked to provide any maps or information that could be incorporated into the Regional Plan, and identify a contact person.

Eighteen responses were received. Mapping data and relevant reports or plans were most frequently received, and a number of meetings and phone conversations were held as follow-up. A few responses stated that the regional plan is not expected to affect the operations of their department or organization. Comments from various departments and agencies are provided throughout the relevant sections of this report, and input will be ongoing throughout the development of the plan. Written submissions were also made by the City of St. John's, the Town of Pouch Cove, the East Coast Trails Association, and the Torbay Environment and Trails Committee.



7.4 Municipal Interviews

All fifteen municipalities in the region were consulted between April 9th and July 29th, 2009. The purpose was to address what each community saw as the opportunities and challenges for their municipality and the region over the next twenty years. This section contains a brief summary of these discussions.

7.4.1 The Current and Future Regional Plan

Municipalities in the region have differing views on how the Regional Planning process should be used to guide development. Smaller municipalities generally regard regional planning as restrictive, preventing them from pursuing their own growth agendas. However, they also view the Regional Plan as an opportunity to strengthen their own municipal planning by providing them with policies to support decision-making on such issues as shoreline development. The City of St. John's contends that the existing Regional Plan is not strong enough to guide development and that, "its role in shaping local municipal plans has been at best minimal ... its policies too broad". It would like to see more specific policies and a strengthened framework for implementation and administration that would see continued involvement of the region's municipalities.

7.4.2 Future Development

Communities in the Northeast Avalon Region have a strong sense of identity. They expressed a desire to retain those characteristics of their communities that are important to their identity – their historic buildings, town centres and natural environment – while continuing to grow and expand. Bay Bulls, for example, envisions 100 – 200% growth over the next 20 years and Torbay sees expansion continuing, peaking at around 20,000 residents (currently 7,000).

In terms of consolidation versus the further spread of growth, towns such as Paradise are proceeding with large scale subdivisions, using the trunk infrastructure that has been installed in recent years. Paradise wishes to be recognized in the new Northeast Avalon Region Plan for what it has become – an expansion centre for the regional urban core. They emphasize that they have done the planning and made the infrastructure investments needed to accommodate major growth. The City of St. John's agrees that the urban portion of Paradise should be included in the region's urban core.

The region's rural towns such as Bay Bulls, Witless Bay and Petty Harbour-Maddox Cove, indicate plans for future expansion on the periphery of their towns, with little change in parts of the original community. Towns such as Flatrock and Logy Bay-Middle Cove-Outer Cove indicated that they intend to continue with growth based on large lot, unserviced development. In its submission, the City of St. John's questions the advisability of unserviced development in the region based on soil conditions that are not conducive to long term viability of on-site septic systems.



Most towns in the region are concerned about having an adequate tax base. For those whose tax base is primarily residential, there is a growing desire to encourage commercial and industrial development. In particular:

- Bay Bulls proposed that its offshore service base be recognized as a regional facility in the new Northeast Avalon Regional Plan. They also see an industrial/commercial park as part of their future although no site has been identified
- Torbay plans to develop an industrial/business park with access onto Torbay Road
- Portugal Cove-St. Philip's is actively looking to identify a site for industrial use as part of its Municipal Plan review.
- Paradise has identified additional land for industrial development in the Bremigen's Pond area.
- Conception Bay South has recently zoned a large area of land for commercial and industrial use at Legion Road.

The City of St. John's would like the Regional Plan to ensure that new industrial/ commercial areas can satisfy criteria around compatible land use, municipal servicing and access to the regional road network.

7.4.3 Open Space and Recreation

As communities in the region have grown, so too has the desire for new recreational facilities. Towns, including Paradise, Bay Bulls, Pouch Cove and Holyrood referenced the need for new or expanded recreational facilities. Holyrood indicated the need for a multi-use lifestyle centre, including youth programming and an adult outdoor activity park.

Municipalities of the region recognize and support the East Coast Trail and several indicated they would like to see strong policies in the Regional Plan to protect the Trail right of way. However, setting an adequate buffer width along the trail is proving difficult and "a hard sell" in Bay Bulls, Torbay and Portugal Cove-St. Philip's.

There was a general consensus that inter-connection of local trails with the East Coast Trail, T'Railway and Grand Concourse to form a regional network of pedestrian walking/hiking trails, bicycle trails and open spaces.

7.4.4 Regional Affiliation

Communities at the edges of the Northeast Avalon Region have developed strong ties to adjoining communities outside the region. Bay Bulls, Witless Bay and to some degree Petty Harbour-Maddox Cove, have strong affiliations with the Southern Shore in terms of their Celtic tradition and tourism development objectives. In the case of Bay Bulls and Witless Bay, they have economic development and joint service agreements with communities to the south. However, they recognize the advantage of being part of the Northeast Avalon region but are seeking a more recognition at the regional level.

The Town of Holyrood has ties to communities outside the Northeast Avalon, serving smaller communities to the west and, for schooling at least, south to the Mount Carmel area. There is



a recognition of the advantages of being part of the Northeast Avalon Region. For example, they expect additional growth pressures as the Conception Bay South Bypass Road pushes out towards their community.

7.4.5 Regional Collaboration

While municipalities of the region are busy managing their own affairs, many mentioned the importance of regional cooperation. Those noted include:

- St. John’s Regional Fire Department (serving St. John’s, Mount Pearl, Paradise, Petty Harbour-Maddox Cove and region).
- Regional Water Services Committee.
- Greater Avalon Regional Waste Management Committee.
- Northeast Avalon Atlantic Coastal Action Program (ACAP).
- Bay Bulls, Witless Bay and four other communities outside the Northeast Avalon to the south share Recreation and Fire Protection Commissions.
- Fire protection – Holyrood, CBS and Paradise are in discussing the possibility of sharing services.
- Paradise and Mount Pearl share animal control.
- Pouch Cove, Flatrock and Bauline are jointly purchasing a new garbage truck.
- Torbay provides/shares the following services with surrounding towns:
 - Animal control with the Towns of Flatrock and Logy Bay-Middle Cove-Outer Cove
 - Ice control materials to Town of Flatrock
 - Fire protection to Town of Flatrock
 - The Jack Byrne Arena is a regional facility shared and funded by the Towns of Torbay, Logy Bay-Middle Cove-Outer Cove, Pouch Cove and Flatrock

A number of communities expressed a need for more collaboration with provincial agencies to:

- Carry out flood-plain mapping.
- Plan improvements to the Bell Island Ferry Terminal site in Portugal Cove
- Monitor quarry operations for compliance with environmental protection and rehabilitation
- Management and maintenance of provincial highways.
- Policy for management and allocation of Crown Land

7.4.6 Regional Transportation

While it is recognized that there is a high level of commuting into employment centres in St. John’s and Mount Pearl from communities outside the urban core, most communities are also experiencing a growing level of local employment opportunities. This is particularly so in Paradise where new industrial development has created new employment. No major issues were identified with respect to the regional road network in terms of traffic congestion but the following additional needs were identified:

- Bay Bulls and Witless Bay – propose that the Gould’s By-Pass be extended to their towns and that the Witless Bay Line be upgraded to accommodate truck traffic serving the offshore service base in Bay Bulls.
- Holyrood – proposes that plans to extend the Conception Bay South By-Pass be continued beyond Seal Cove to serve their town. They also propose that the existing road be widened, as the current two lanes with its narrow shoulders are considered dangerous.



- Torbay By-Pass –all communities affected by the by-pass, from Torbay to Portugal Cove-St. Philip’s, see significant positive impacts from the road and welcome its construction.
- Portugal Cove-St. Philip’s – proposes that Portugal Cove Road be realigned in the Windsor Lake area to alleviate water quality and safety concerns.
- Paradise – has need for a second major access into the Town and for improvements to the existing access (the interchange of Topsail Road and the TCH). Topsail Road widening is being undertaken by the Town over the next 2 -3 years. The town is also currently having a traffic study prepared. A new link from the north end of Paradise into Portugal Cove-St. Philip’s, connecting to Thorburn Road, will also be assessed in the traffic study to assess demand.

Concerns over increasing congestion on the regional road network were commented on by all municipalities. Mount Pearl notes that there has been a considerable increase in traffic between the Robert E. Howlett Memorial Drive to Kenmount Road as a result of the incompleteness of the Team Gushue (East/West Arterial) Highway. The City of Mount Pearl would like this highway to be completed to take regional traffic off the municipal road system of Mount Pearl. The City of St. John’s, who has prepared its own traffic model has called for a Regional Transportation Plan including a traffic model that would calculate the impact of new growth in the region on the regional road network .

7.4.7 Public Transit

Interest in public transit was evident in discussions with the region’s municipalities, and a number spoke to a need for a regional transit system. The Town of Paradise considers that the availability of a regional transit system would help it and other communities achieve greater housing diversity (e.g., with low income and seniors housing) if public transit was available to communities outside the urban core. The City of St. John’s has suggested that the regional plan advocate for expansion of Metrobus to communities outside St. John’s, including express bus routes to downtown St. John’s and other nodes of high employment/post secondary educational institutions.

7.4.8 The Environment

Municipalities in the region are moving environmental issues up on their priority list, from examining and implementing energy conservation in municipal operations, consideration of wind energy, waste reduction and recycling and protection of water ways and wetlands. Preserving coastline and reserving public access to it was stated as a priority by all towns. In unserviced areas, communities such as Portugal Cove-St. Philip’s are considering conservation subdivisions to promote more clustering of housing, and others are interested in identifying new technologies to ensure that onsite septic systems are sustainable over the long term.

Other issues that were identified included the need for inter-municipal consideration of stormwater management, identification and remediation of old landfills and waste disposal sites (including Red Cliff radar site), and rehabilitation of old quarry sites. The City of St. John’s recommends that the Regional Plan introduce standardized environmental policies for the identification of flood plains and environmental buffers.



7.4.9 Infrastructure

Water Supply

Watershed management is a concern throughout the region. The City of St. John's would like to see the Regional Plan give high priority to the preservation and protection of all existing and future water supply watersheds, including the Thomas Pond watershed.

Other towns worry about management of land and resource use within water supply watersheds indicating that there is uncertainty about where watershed boundaries are. Portugal Cove-St. Philip's called for a collaborative process with the City of St. John's for management of the portion of the Windsor Lake watershed within the Portugal Cove-St. Philip's boundary.

A number of towns would like to connect to the Regional Water Supply. Holyrood, Torbay and Portugal Cove-St. Philip's emphasized the need either to connect into the regional water system or develop alternative supplies. Torbay is considering South Pond and Great Pond as potential new water supplies. Bay Bulls and Petty Harbour-Maddox Cove indicated their desire to be able to connect to a regional system in future if necessary.

The need for a water conservation agenda in the Region is underlined by the near water shortage during the summer of 2009. A recommendation made in Paradise was for a regional water conservation strategy that would include commercial and industrial as well as residential users.

Sewage Disposal

Municipalities in the region are concerned about the environmental impacts of untreated sewage. Conception Bay South, Portugal Cove-St. Phillips, Paradise and the cities of St. John's and Mount Pearl have all invested in sewage treatment plans. For other communities such as Torbay and Pouch Cove, the concerns are similar but the costs of constructing sewage treatment plants is a concern. In particular, Torbay has determined that the cost to construct a plant to treat their growing community will be \$2.5 M.

In its submission, the City of St. John's indicates that it would like the Regional Plan to require a higher and standardized level of waste-water and stormwater treatment by all towns throughout the region.

Development above 190 Metres

The City of St. John's has proposed an amendment to the Regional Plan that would permit development of land above the 190 m contour elevation. The policy would affect the City of Mount Pearl and Paradise who also have lands that are above 190m. While both municipalities are reviewing the implications of this and generally support the change in policy, the City of Mount Pearl expressed concern about whether allowing development in these areas would be an efficient use of infrastructure and they recommend that further cost benefit analysis be undertaken.



Agriculture

The profile of the agriculture industry in the region has been raised in recent years with as consumers seek more locally grown produce. Among the region’s municipalities there is a recognition that preserving and expanding the agriculture sector should be given priority. St. John’s suggested that the Northeast Avalon Regional Plan should mandate the protection of viable agricultural land and support efforts to grow and strengthen the local farming industry in the region.

A recent review of the St. John’s Agriculture Development Area (Government of Newfoundland and Labrador, 2008g) has recommended that the Department of Natural Resources investigate the feasibility of including lands of agricultural importance in Bay Bulls and the Witless Bay Line area into the St. John’s Urban Region Agriculture Development Area. It also recommended the removal of a significant area from the Agriculture Zone in Portugal Cove. Bay Bulls is not in favour of farmland expansion in their community and asserts that such expansion is causing flooding as lands are cleared. Portugal Cove-St. Philip’s is considering preserving for agriculture some of the land proposed by the Agriculture Review Commission to be removed from the Agricultural Development Area within the town.

7.5 Online Issues Survey

Phase 1 of the Public Engagement strategy “What are the issues?” included an online survey. The survey was available online, from a link on the project website from June 2, to July 24, 2009. The online survey questionnaire is included as Appendix 3. The purpose of the survey was to get a sense of what the “top of mind” regional issues are. The results from the survey have been used to inform the Issues and Analysis Report, and will continue to inform further phases of the regional planning process and final plan.

7.5.1 Development and Testing

The survey was developed and tested by the consultant team initially, then given to colleagues of the consultant team who live in the area, but are not involved in the project as a first round of testing. The survey was then tested by the project technical team, comprised of municipal staff, as a second round of testing. The test responses are not included in the final data set. The survey was developed using online software that ensured the security and privacy of the data. The software also ensured that multiple questionnaires were not submitted by the same person.¹

¹The online software was provided by surveymonkey.com. To prevent multiple questionnaires being completed by the same person, the online software registered IP addresses and if someone who had already completed the survey tried to access it again they were redirected to the project website. This restriction on the responses was recommended by the online survey provider for this type of broadly distributed online survey.



7.5.2 Communications

The goal was to have as many people as possible access the survey. The survey was announced and advertised in several ways including:

- announcements about the survey made at the three NEAR “What are the issues?” public meetings at the end of May;
- a link was circulated to by email to several networks and organizations in the region and to participants at the public meetings;
- a link was circulated to all employees of Confederation Building;
- a link was posted on several websites;
- an ad announcing the survey was placed in The Telegram on June 20th;
- an announcement was placed on The Scope online bulletin board;
- an announcement was placed on Channel 9;
- a PSA was submitted to CBC; and
- every municipality in the Northeast Avalon was contacted about putting a link to the survey on their website.

 <p>Northeast Avalon Regional Plan</p>	<p>Fill out the ONLINE SURVEY! Let us know what’s important to you and enter the draw for \$100!</p> <p>for online survey & more information visit: www.nearplan.ca</p>  
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Ad for survey in The Telegram

7.5.3 Questionnaire Content and Response Analysis

The questionnaire began with a few questions asking respondents to identify some characteristics about themselves, including where they live and where they commute to for work, school, etc. These questions were followed by a series of questions asking respondents to rank, in order of importance, the top three issues to be addressed in the regional plan. The final questions in the survey were about developing a vision for the future. The answers to the vision-related questions provide a useful and informed starting point for the public visioning sessions in Fall 2009.

Because the questions asked respondents which issues are most important to them and ask for a ranking, we get two levels of information. We are able to determine what the overall most important issues are for each topic area, as well as which issues received the greatest share of 1st place ranks.

The survey data was also downloaded, further sorted and graphed in Excel. The “other” responses were grouped according to similarity and are included in Appendix 4. Open-ended questions were also grouped according to similarity of response, the results of which are discussed in the following sections.



7.5.4 Survey Respondent Characteristics

A total of 1,363 people accessed and answered questions in the survey. There were 1,137 fully completed questionnaires (i.e. the respondent answered all questions and hit the “done” button on the last page), which means that 83.4% of respondents who started the survey completed it in entirety. For time constraints or other reasons, respondents could exit the survey at any time and the questions they did answer were registered and included in the analysis. 1,137 fully completed questionnaires yields a confidence interval of +/- 2.9 percentage points at a 95% confidence level².

The majority of respondents (88.7%) indicated that they live in the Northeast Avalon Region. St. John’s residents represented the largest group of respondents (49%), followed by residents from Torbay (12%), Conception Bay South (8%), Paradise (7%), Mount Pearl (7%), and Portugal Cove-St. Philips (5%) (Figure 7.2)³. The majority of respondents (79%) have lived in the region for more than 10 years, with the largest group of respondents falling into the between 21 and 50 years category.

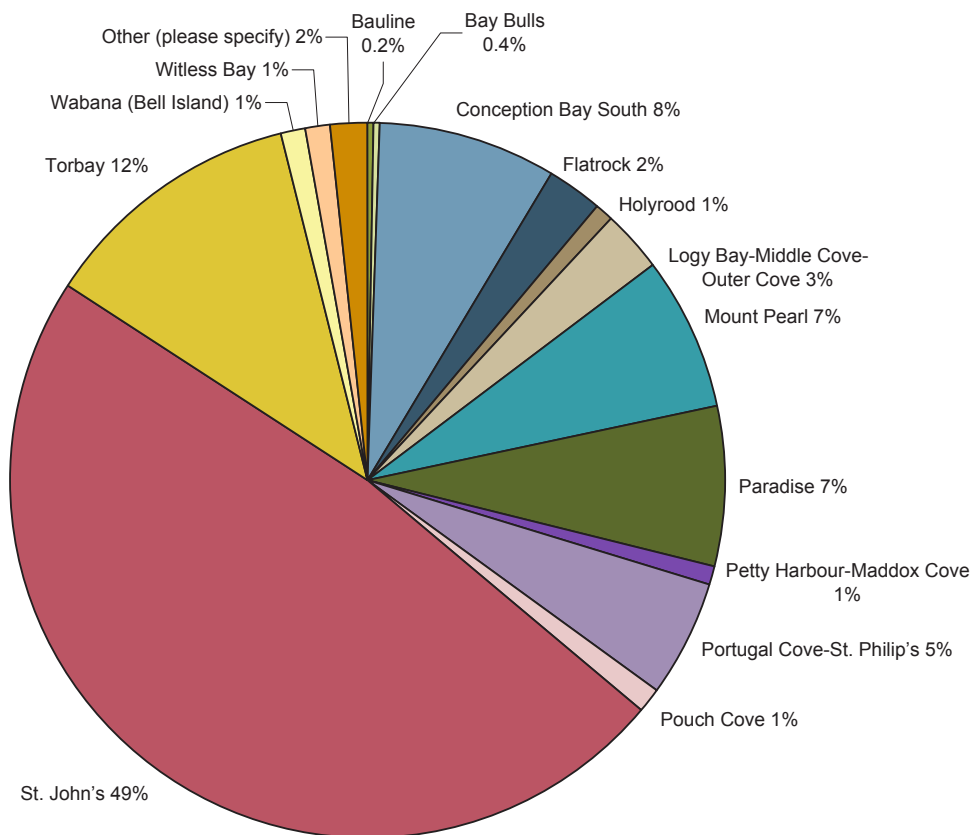


Figure 7.2: Where survey respondents live

² Based on the Northeast Avalon Region population 15 years and older (155,935)

³ A map was included in the questionnaire to show the Northeast Avalon Region and municipal boundaries referred to in the questions about whether or not they live in the region, and where within it they live (See Appendix 3 for the questionnaire).



Respondents were asked whether or not they worked or went to school in the community in which they live. The majority of respondents (50.4%) answered yes, while 35.4% indicated that they commute outside of their community for work or school (Figure 7.3). Retirees made up 10.8% of respondents, 1.3% indicated that they were unemployed, and 2.1% selected “other” and specified answers including: self employed (5); stay-at-home-mom (4); work in a number of locations (4); work outside the country (3); and on maternity leave (2).

Respondents who answered that they commute were directed to an additional question asking where they drive to for work, while those who do not commute were skipped ahead to the next question. Not surprisingly, the greatest percentage of respondents commute to St. John’s for work (82%) (Figure 7.4), followed by Mount Pearl (9.6%), followed by Mount Pearl (9.6%) as a commuting destination. Respondents who selected “other” specified answers including: work out of the province/country (7); and work offshore (3).

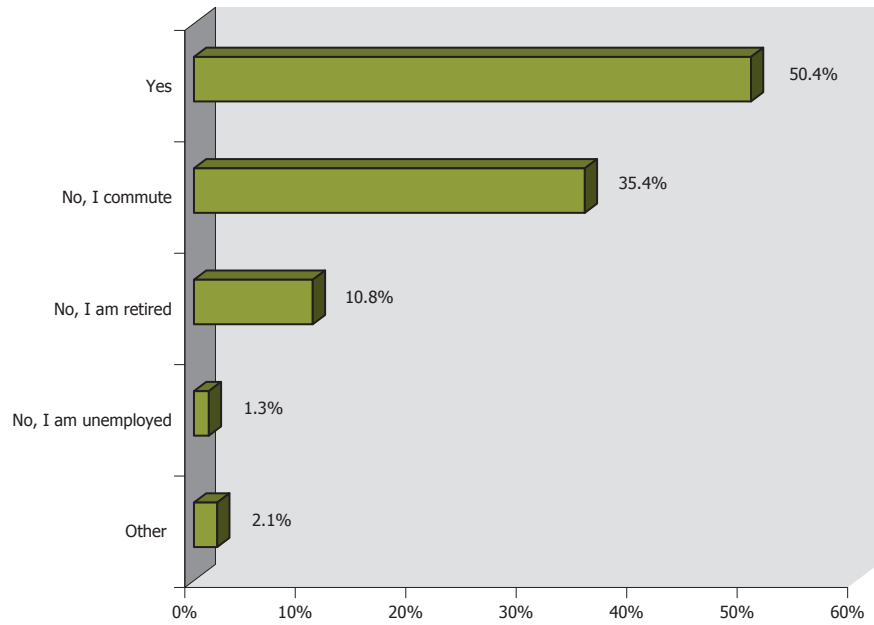


Figure 7.3: Do you commute? (n=1,170)

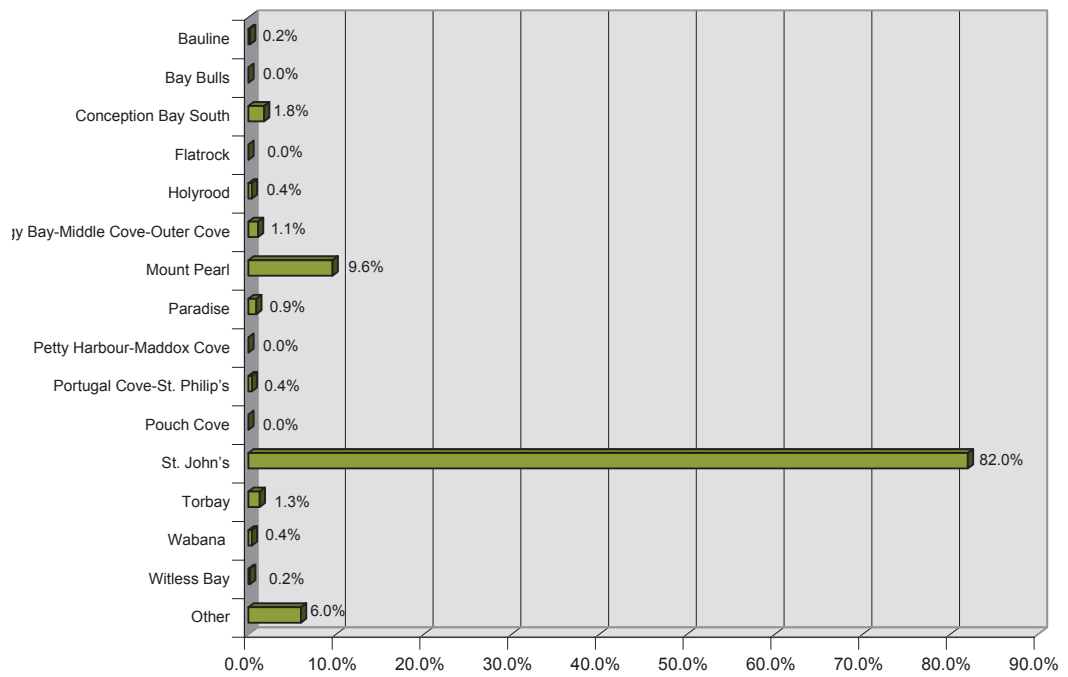


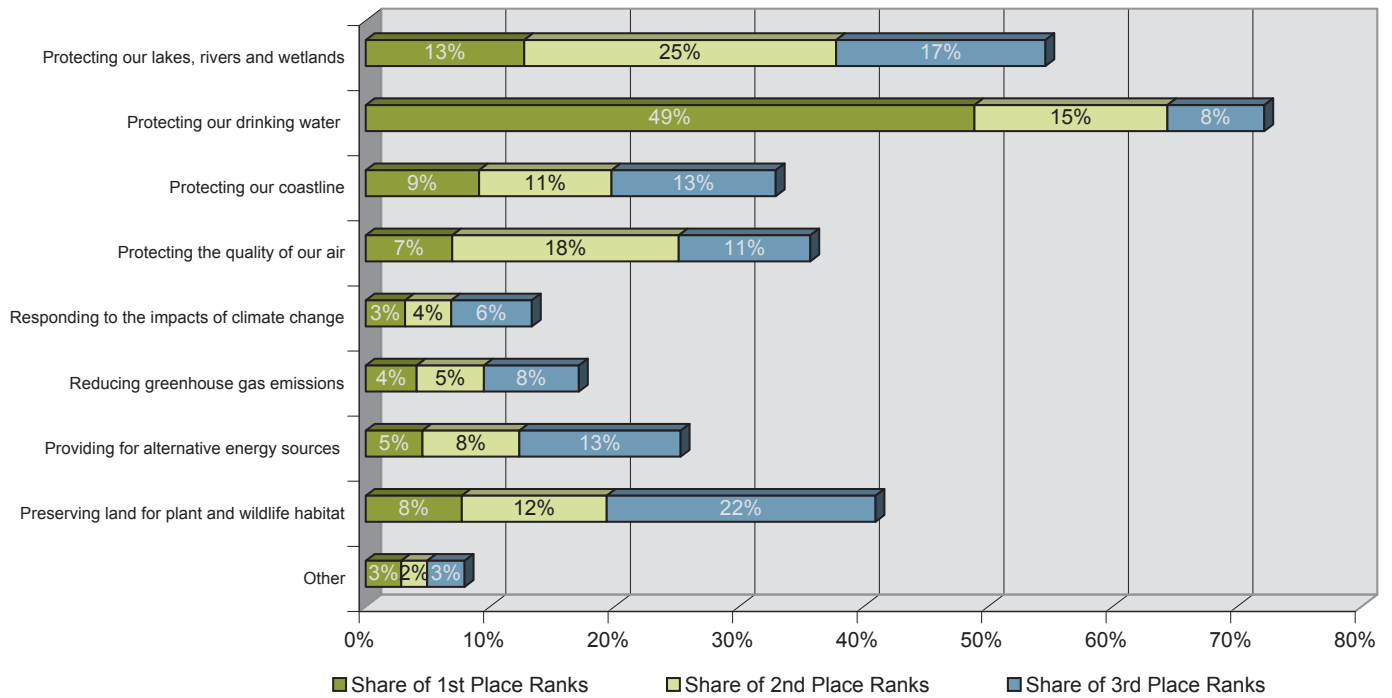
Figure 7.4: Where do you travel to for work or school? (n=450)



7.5.5 Natural Environment Issues

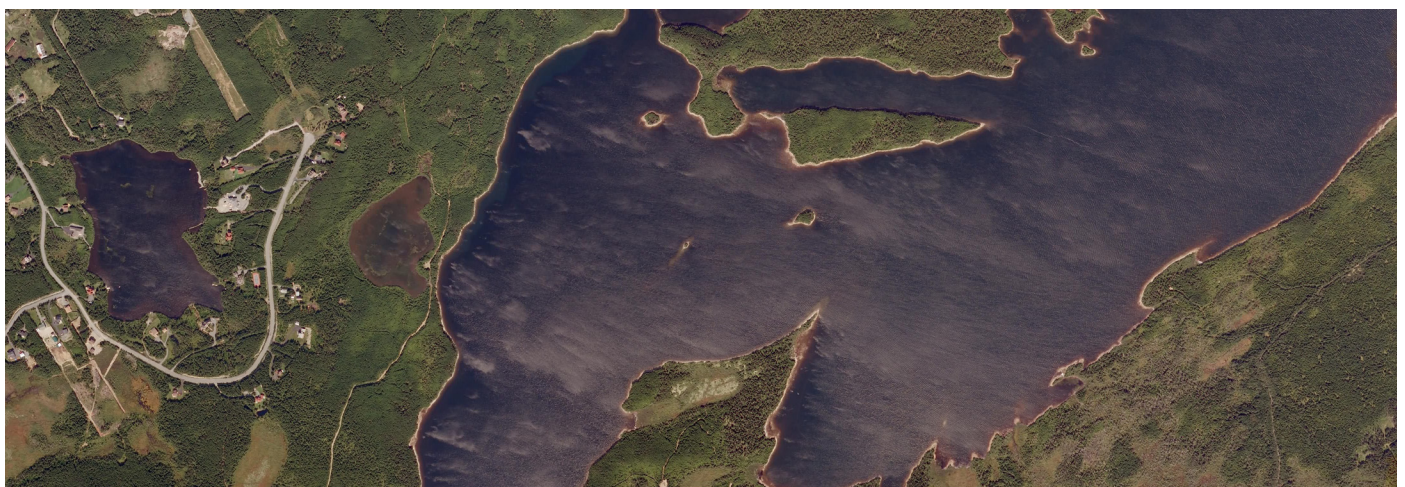
The top three most important natural environment issues to address in the regional plan selected by survey respondents are (Figure 7.5):

- 1st Protecting our drinking water
 - 72% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (49%)
- 2nd Protecting our lakes, rivers and wetlands
 - 55% of respondents selected this as one of their top three issues.
- 3rd Preserving land for plant and wildlife habitat
 - 41% of respondents selected this as one of their top three issues.



n=1,297

Figure 7.5: Natural Environment Issues



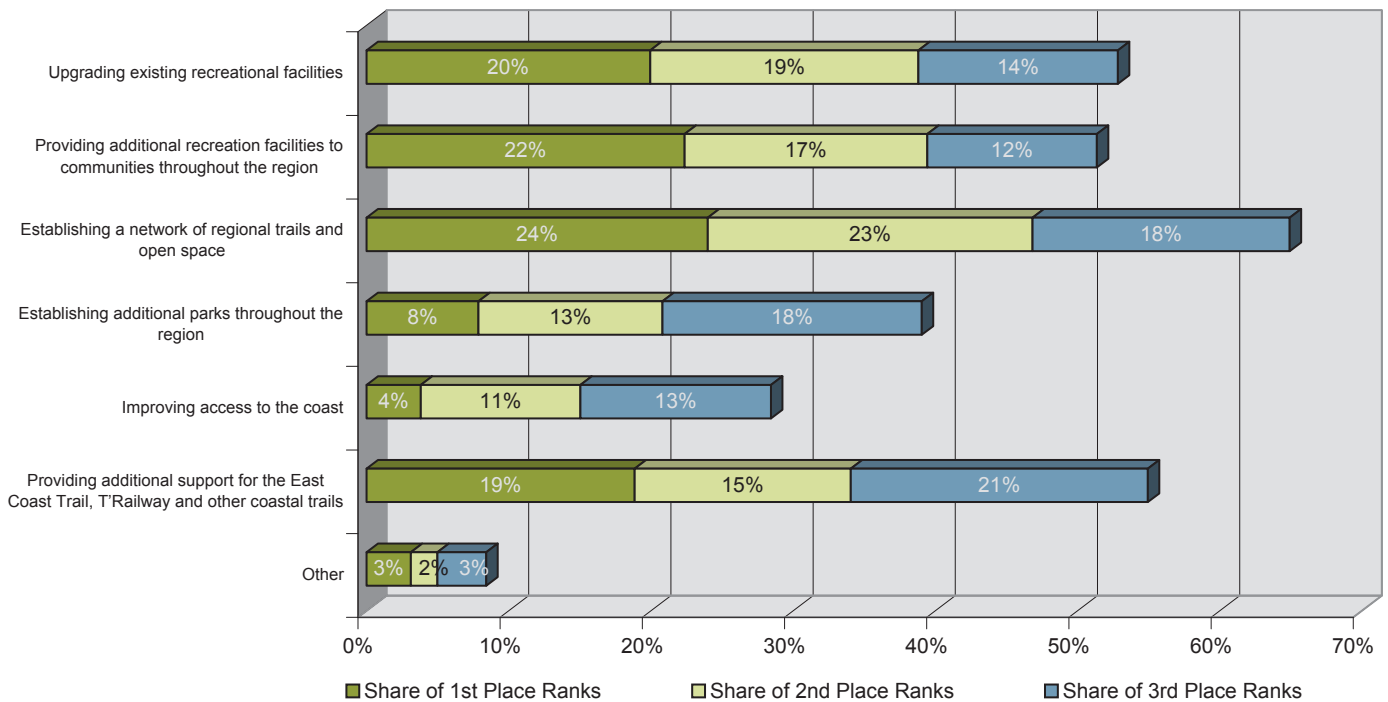
Windsor Lake Water Supply



7.5.6 Recreation Issues

The top three most important recreation issues to address in the regional plan selected by survey respondents are (Figure 7.6):

- 1st Establishing a network of regional trails and open space
 - 65% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (24%)
- 2nd Providing additional support for the East Coast Trail, T’Railway and other coastal trails
 - 55% of respondents selected this as one of their top three issues.
- 3rd Upgrading existing recreational facilities
 - 53% of respondents selected this as one of their top three issues.



n=1,283

Figure 7.6: Recreation Issues



Bannerman Park



7.5.7 Quality of Life Issues

The top three most important quality of life issues to address in the regional plan selected by survey respondents are (Figure 7.7):

- 1st Improving walkability within the region
 - 62% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (28%)
- 2nd Ensuring that new development does not create an additional tax burden for existing taxpayers and
- 2nd Preserving and promoting each community’s sense of place/character
 - Tied for second most chosen response: 47% of respondents selected each of these choices as one of their top three issues. Ensuring new development does not create an additional tax burden for existing taxpayers had slightly larger share of the 1st place ranks.
- 3rd Improving accessibility for people with mobility challenges (for example: buildings, sidewalks and transit)
 - 41% of respondents selected this as one of their top three issues.

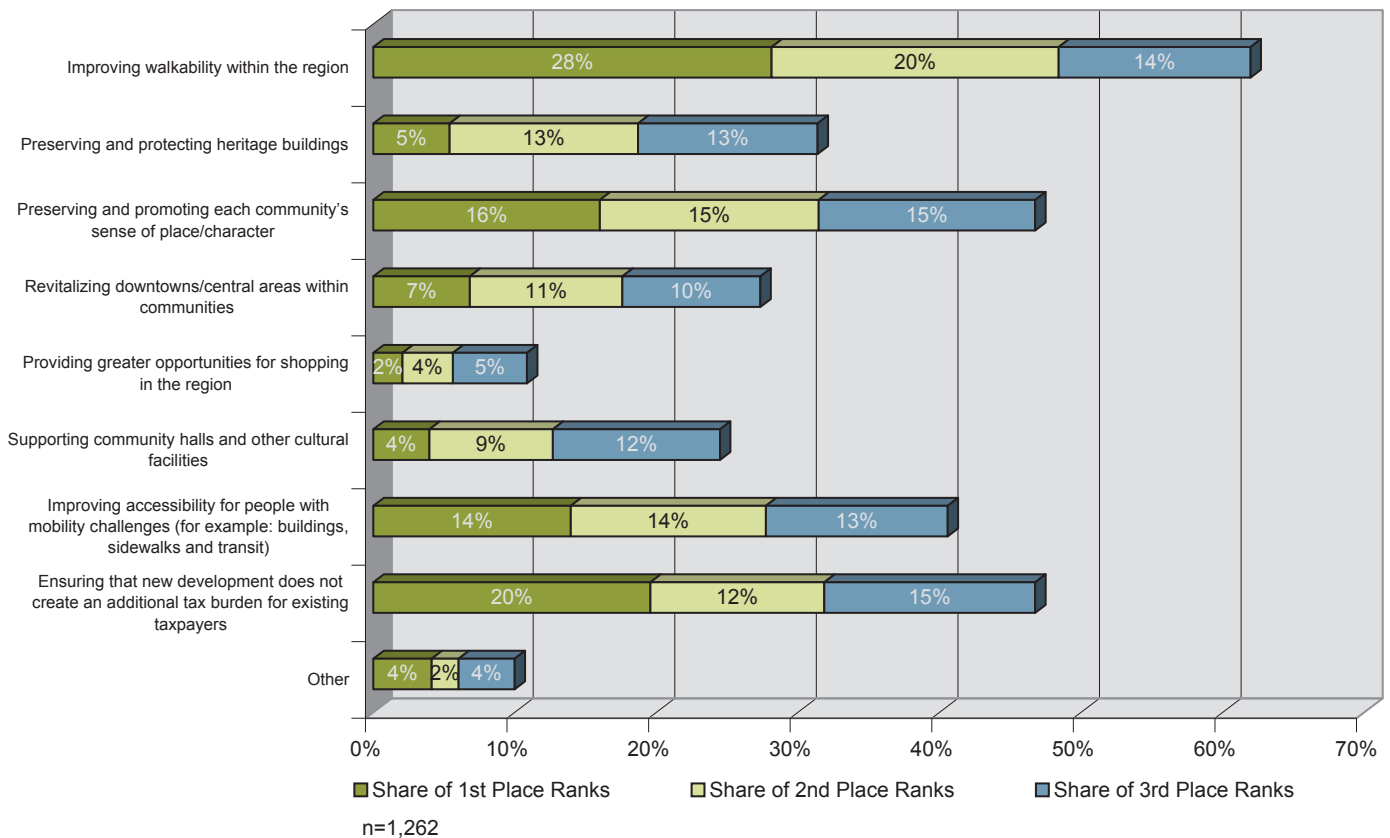


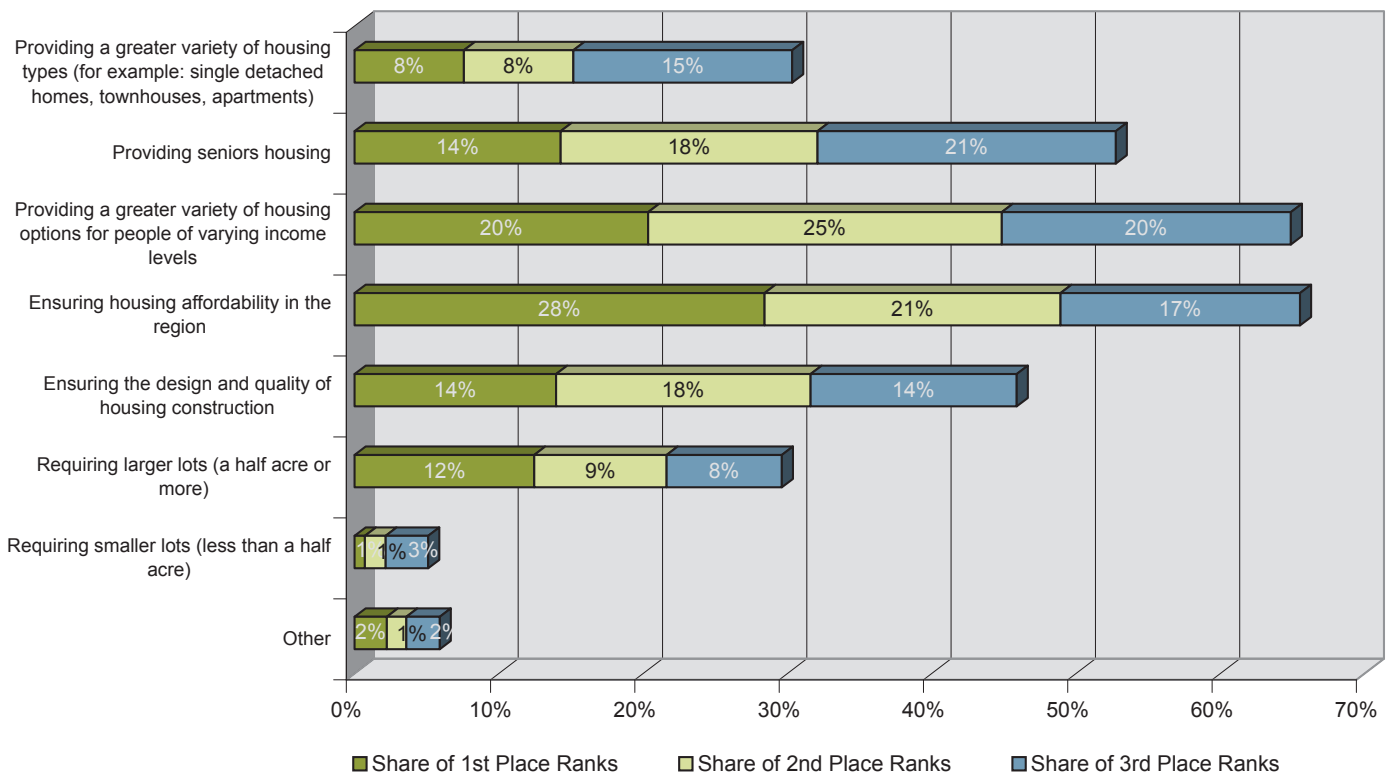
Figure 7.7: Quality of Life Issues



7.5.8 Housing Issues

The top three most important housing issues to address in the regional plan selected by survey respondents are (Figure 7.8):

- 1st Ensuring housing affordability in the region
 - 66% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (28%)
- 2nd Providing a greater variety of housing options for people of varying income levels
 - 65% of respondents selected this as one of their top three issues.
- 3rd Providing seniors housing
 - 53% of respondents selected this as one of their top three issues.



n=1,253
Figure 7.8: Housing Issues



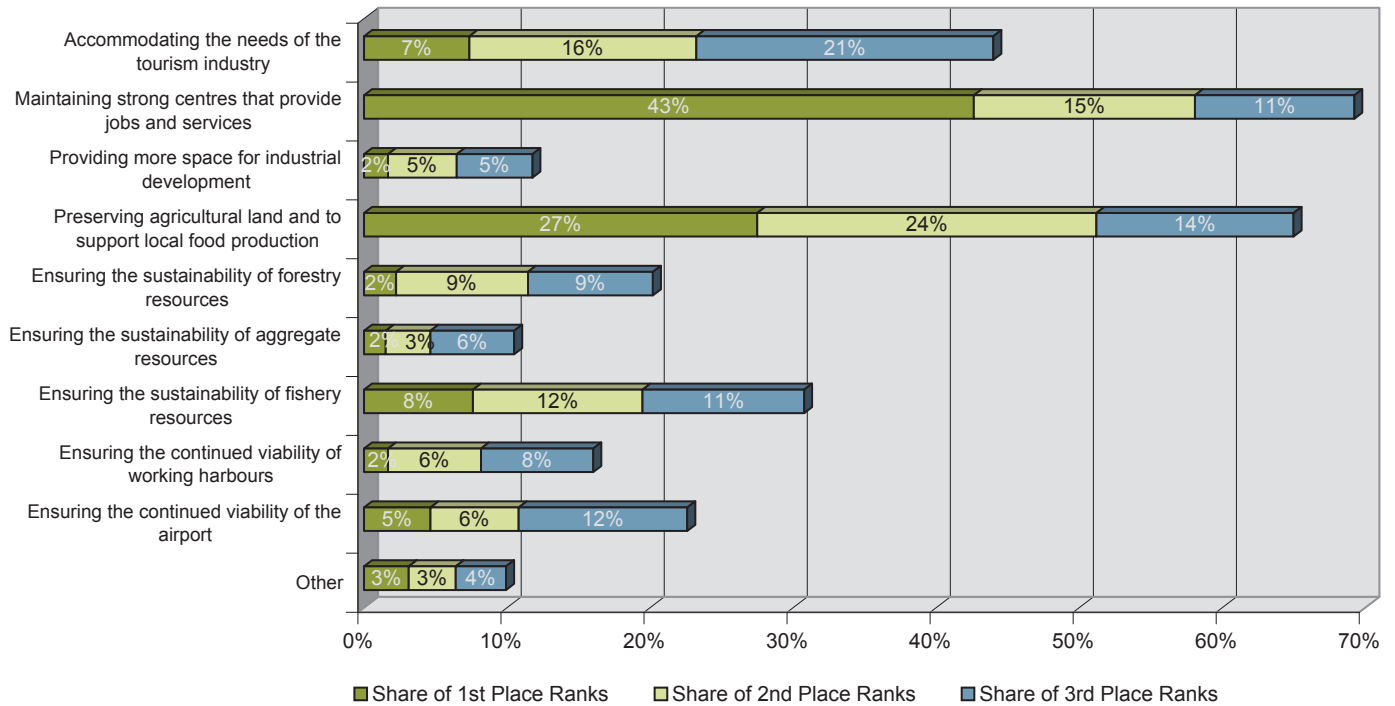
Housing



7.5.9 Economic Issues

The top three most important economic issues to address in the regional plan selected by survey respondents are (Figure 7.9):

- 1st Maintaining strong centres that provide jobs and services
 - 69% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (43%)
- 2nd Preserving agricultural land and to support local food production
 - 65% of respondents selected this as one of their top three issues.
- 3rd Accommodating the needs of the tourism industry
 - 44% of respondents selected this as one of their top three issues.



n=1,248

Figure 7.9: Economic Issues



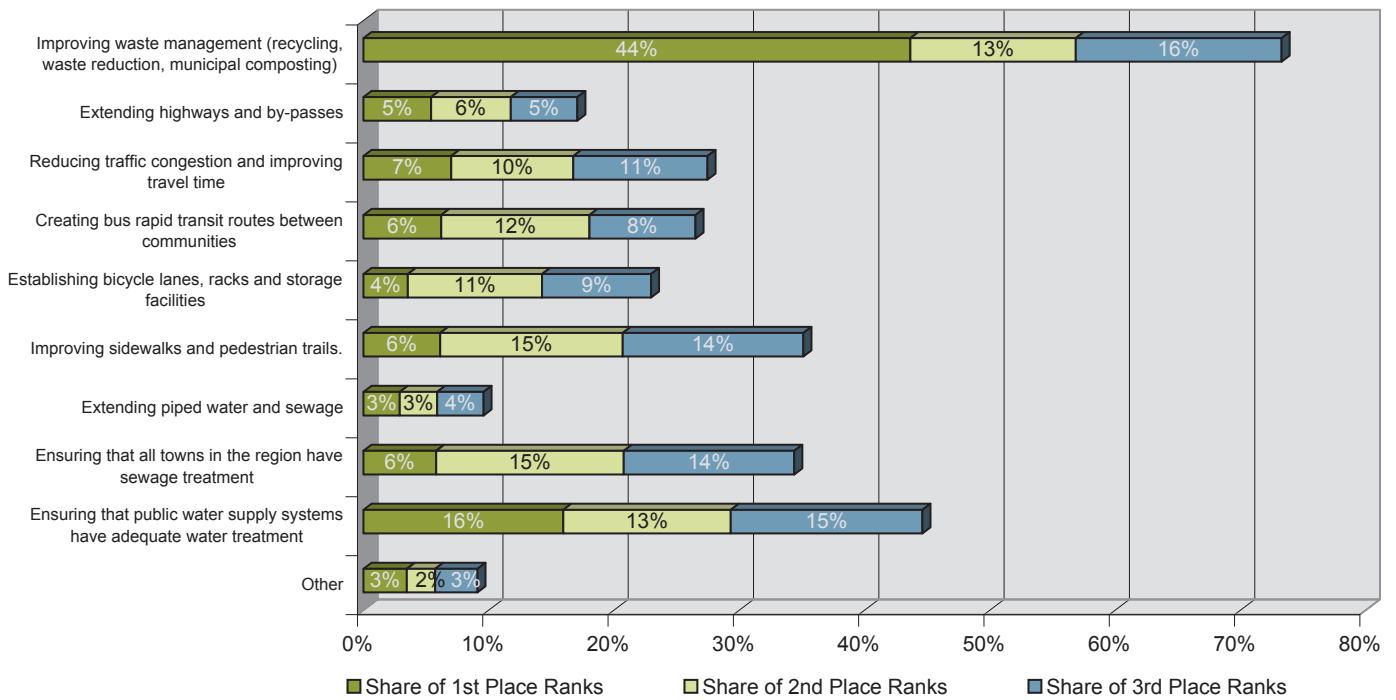
Business Park



7.5.10 Infrastructure Issues

The top three most important infrastructure issues to address in the regional plan selected by survey respondents are (Figure 7.10):

- 1st Improving waste management (recycling, waste reduction, municipal composting)
 - 73% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (44%)
- 2nd Ensuring that public water supply systems have adequate water treatment
 - 45% of respondents selected this as one of their top three issues.
- 3rd Improving sidewalks and pedestrian trails.
 - 35% of respondents selected this as one of their top three issues.



n=1,242

Figure 7.10: Infrastructure Issues



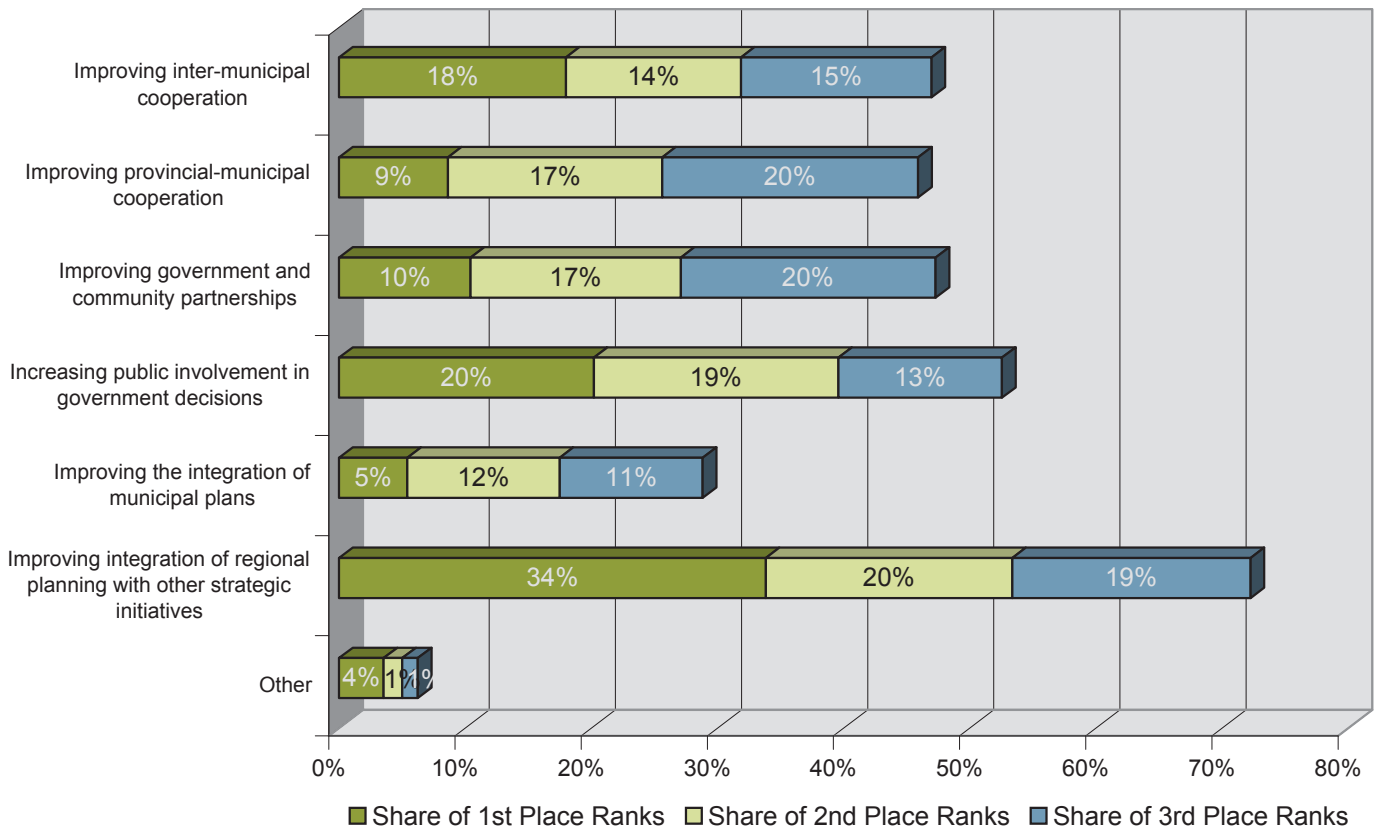
Road Infrastructure



7.5.11 Governance Issues

The top three most important governance issues to address in the regional plan selected by survey respondents are (Figure 7.11):

- 1st Improving integration of regional planning with other strategic initiatives related to health, education, housing, environment, etc.
 - 72% of respondents selected this as one of their top three issues.
 - This also received the most 1st place rankings (34%)
- 2nd Increasing public involvement in government decisions
 - 53% of respondents selected this as one of their top three issues.
- 3rd Improving government and community partnerships and
- 3rd Improving inter-municipal cooperation
 - Tied for third most chosen response: 47% of respondents selected each of these choices as one of their top three issues.



n=1,218
Figure 7.11: Governance Issues





7.5.12 Most Important Issue

Survey respondents were asked “What ONE issue in the Northeast Avalon Region concerns you MOST? Please state one issue and briefly describe it.” Responses highlighted a range of issues, mainly reiterating the issues respondents ranked in previous questions. The issues that came across most strongly were:

- transportation (improving traffic, safety, public & active transportation options)
- the form and impact of future development
- protection of the natural environment
- solid waste management (particularly implementing recycling and composting programs)
- water and waste water management (especially drinking water protection)
- state of the economy/future job opportunities
- housing (particularly affordability)
- recreation and trails (especially the East Coast Trail)
- coastline (protection and access)
- cooperation between municipalities in the region
- food security and local agriculture
- municipal services
- heritage and community character
- taxes

7.5.13 Vision for the Future

Survey respondents were asked to choose which keywords they would include in a vision statement for the future of the Northeast Avalon Region. Figure 7.12 shows that healthy environment was the most popular choice (chosen by 67% of respondents), followed by safe community (62%), and healthy and active society (58%). 6% of respondents offered additional suggestions for keywords listed below:

- | | | |
|--|---|--|
| ➤ a good place for all residents to live | ➤ cultural creativity | ➤ quality education |
| ➤ accessible | ➤ diverse | ➤ quality public services |
| ➤ accessible coastal areas | ➤ efficient | ➤ respectful |
| ➤ accountable government | ➤ entrepreneurial spirit | ➤ responsible |
| ➤ affordable | ➤ friendly | ➤ safe |
| ➤ age-friendly | ➤ generous | ➤ self-reliant |
| ➤ alternative energy | ➤ good neighbours | ➤ sense of community |
| ➤ ample child care | ➤ good place to grow old! | ➤ smart growth |
| ➤ balance | ➤ growing | ➤ strong community connections |
| ➤ beautiful | ➤ integrated | ➤ sustainable x10 |
| ➤ caring | ➤ knowledge-based economy | ➤ thriving |
| ➤ caring councils | ➤ local foods and agriculture | ➤ tidy |
| ➤ car-unfriendly | ➤ mindful of its history | ➤ unique |
| ➤ committed to reducing waste | ➤ mixed neighbourhoods | ➤ walker’s paradise |
| ➤ communities that collaborate | ➤ new urbanism | ➤ well being |
| ➤ concerned | ➤ open | ➤ well run municipal and regional services |
| ➤ cooperation | ➤ progressive | ➤ working together |
| ➤ cooperative communities | ➤ protection of environment and resources | |
| ➤ country living | | |

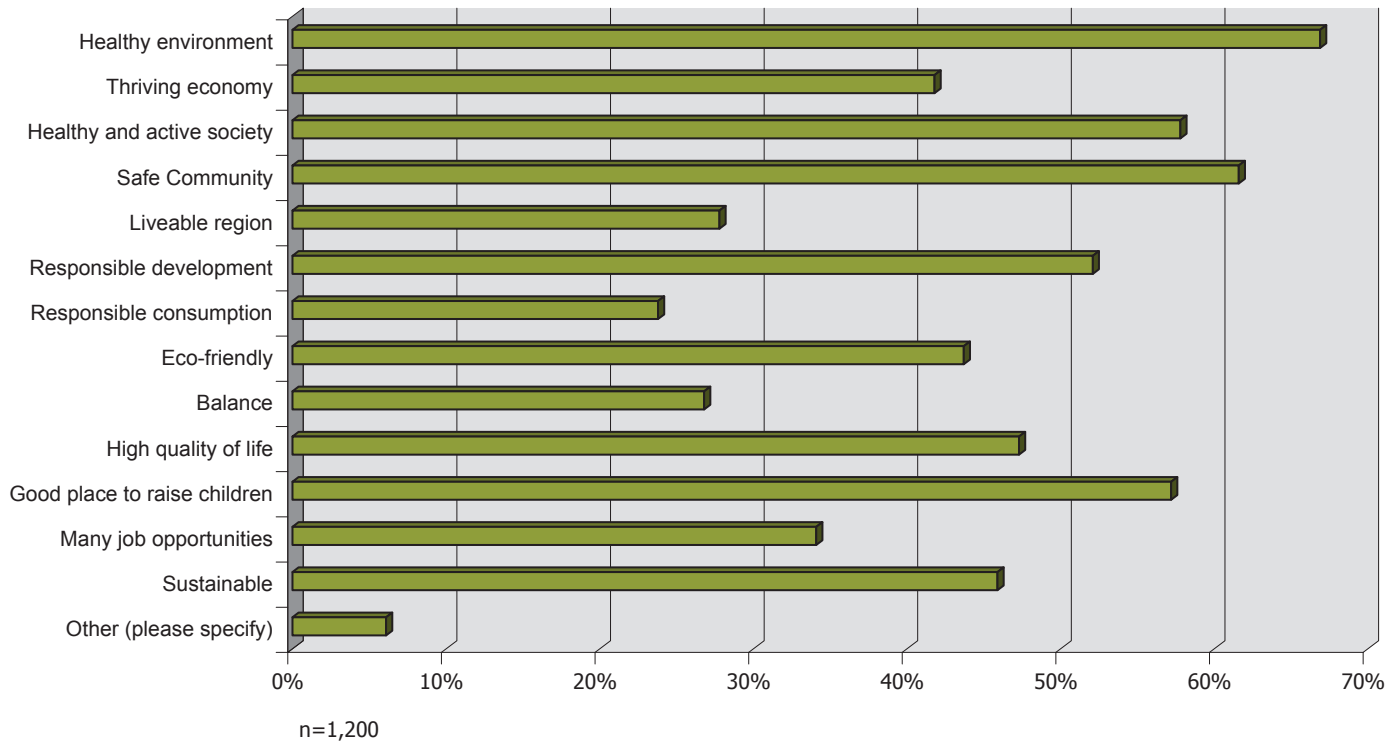


Figure 7.12: Vision Statement Keywords

Survey respondents were asked how they would complete the statement “In 20 years the Northeast Avalon Region will be ...”. There were 796 responses to this question. Following is a selection of these interesting and thoughtful visions for the future.

1. *a shining example of how visionary planning and regional cooperation can lead to the emergence of a landscape where all residents can thrive in harmony with their environment, and the land, in turn, can sustain them.*
2. *a green thriving region rich in culture and history, and accessible to visitors and residents by air or car, where they can breathe the fresh air, drink the water, and walk the coast line and trail systems with a sense of security and belonging.*
3. *a strong vibrant area of the Province, in which governments and citizens work together to ensure the sustainability of their communities and the natural environment, and provide avenues for the social and economic inclusion of all members of the community.*
4. *an area where our children or grandchildren can still enjoy troutng in our rivers or walking through our woods. Where developments are sustainable and environment and citizens concerns are given major consideration.*
5. *our children’s paradise on the Rock!*



6. *a strong, vibrant community with quality infrastructure, strong community links, sustainable resources, easily accessible community programs and responsible government.*
7. *... a well-integrated, dynamic, and beautiful place to live, with many strong pockets of commercial activity, exciting opportunities for recreation and cultural activity for all who live in the region (accessible to all), and is a place that has not forgotten its environmental and historical roots -- it has been developed with respect for and celebration of its incredibly beautiful landscape.*
8. *A region rich with people and native plant and animal life living together in good health. A place where children are well supported in their schools and where community infrastructure is well planned overall to meet the community's long term needs both in terms of basic health and cultural well being. Cooperation between communities will be well developed to avoid waste of public money. Development will be holistic in design keeping in mind low impact ways of travelling, sustainable local development of resources, the integration of artistic expression in everyday life and full participation of members of the community.*
9. *a thriving region based on innovation, fully connected to the global economy, which provides a high standard of living to its residents, where decisions are made in an inclusive, equitable and transparent manner, and where there exists a healthy balance between citizens, businesses and non-profit organizations.*
10. *the hub of Newfoundland whereby our young people will be able to find good jobs and be a productive part of society. No longer will we have to go away to find work to achieve our goals and dreams. Our community will be a safe environment to raise our children and people will strive to keep our industries alive and our province will be the place to be.*
11. *a food secure, self-sufficient, sustainable and caring community that is regarded as the best region to live in the country. It is a proactive place where local citizens have banned the use of plastic shopping bags, increased the amount of shared space and the overall happiness and genuine well-being of residents.*
12. *....a desirable place to live with the natural beauty of the Newfoundland coastline right in your backyard.*
13. *a thriving, vibrant, and health-supportive region for its residents, demonstrating a commitment to sustainable and responsible development while preserving the unique historical and cultural importance of its communities.*
14. *..one of the best places in Canada to raise children in a safe and healthy environment. A place that offers a high quality of life with sustainable economic development. A model for development and planning for all of Newfoundland and Labrador. This is my dream!*
15. *Be a place I can consume high quality, nutritious local food. I will be able to take a bus from community to community. I will be able to walk to work in the winter because the sidewalks will be cleared. I will live in a "green"/energy efficient home. My home will have municipal waste reduction - composting, recycling. I will be proud to live in a healthy community with many physical activity and recreation opportunities year round (i.e., also in the winter) and that is environmentally, socially, and economically sustainable.*



7.6 Key Issues: Public Engagement Phase 1

As evident in the above sections, a wide range of important issues were raised by residents and municipalities in the region.

Natural Environment - Protection of the natural environment is clearly a priority issue for many residents and their municipal governments. This includes protection of watersheds, coastlines, rivers, wetlands and forested hilltops, as well as management of solid wastes through recycling, waste reduction and composting. Strengthening environmental protection policies in the Regional Plan could address this regional interest.

Trails and Recreation – There is a strong interest in creating a regional system of trails and open spaces in the Northeast Avalon Region such as the East Coast Trail. Establishing an integrated network of trails and recreation facilities, protecting current resources and designating new areas for parks and trails were all highlighted as ways to strengthen the current situation through the regional planning process.

Transportation – There is growing recognition that increased development in the region is having an effect on the regional road network and as a result, a regional approach to transportation planning is needed. Interest in alternatives such as public transit as part of a regional transportation approach are seen as options that should be considered.

Protection of Agriculture Lands – Interest in securing local food supplies through protection of agricultural lands and farms is now broadly recognized. Regional Plan policy to support the continued stability of the agriculture industry will be needed.

Quality of Life and Community Living – Strong sense of community identity exists throughout the region. Balancing the preservation of unique local heritage, culture and landscape features while accommodating new growth is a challenge that the Northeast Avalon Region Plan will have to address.

Patterns and form of Housing and Development – Citizens are concerned about the form and pattern of development in their communities and opinions differ greatly about what constitutes appropriate development. Municipalities desire more and more growth to provide tax revenues to enable the delivery of services. The regional plan will need to set out a balanced approach to development that considers the regional impact of development, servicing costs, and changes in demand.



Housing affordability – the cost of housing in the region is a concern for many people. As the population ages, both the cost and more particularly, the availability of housing options to meet changing needs are things that need to be considered and addressed through the regional plan.

Economy – The management of regional land use to ensure long term economic growth and stable supply of jobs and services is recognized by municipalities and citizens as important to the sustainability of the region. This means that adequate allocation of land for commercial and industrial land uses, and the protection of assets that support economic development like natural resource lands, built and natural heritage features are all important considerations for the regional plan

Governance – strengthening inter-governmental cooperation and integration of decision-making to address regional issues such as watershed management, environmental protection, transportation and recreation, among others, is recognized as important to the future of the Northeast Avalon Region.



8 Moving Forward

Throughout the process of preparing this report, information and data have been assembled from a wide variety of sources, including from digital databases managed by provincial, municipal and other agencies, reports, internet web sites, correspondence and personal communications. There was a wide variation in the availability of information its consistency and level of detail. However, what became clear is that since the work done to prepare the first Regional Plan in the early 1970s, there has been very little research or monitoring of growth and development – on a regional basis - in the Northeast Avalon. As a result, the information collected and analyzed in this report is far from complete. From the various threads of investigation, consultation and review, it is clear that the new Regional Plan for the Northeast Avalon, will likely be very different from the Regional Plan of 1976. The main conclusions of the research that will guide future discussions and decisions leading to the preparation of a new Regional Plan include:

- In the short to medium term, housing demand will continue to be for single family dwelling units. In the absence of planning policies which seek to direct housing growth, demographic and market forces will ensure that major shifts in the current pattern of housing demand will likely not occur until late in the 2020s.
- The oil and gas industry that was anticipated in the 1976 Regional Plan has now come to fruition, and in many respects has exceeded expectations. The industry is expected to continue to be the mainstay of the provincial and regional economy for the foreseeable future. However, given the region's excellent short-term economic prospects and the many long term opportunities that are available, a re-evaluation of the availability of land for employment uses in the region is required, particularly with respect to land for regional serving business parks, for lay down, assembly and marshalling of heavy equipment, for regional serving retail uses, and for office space in the urban core. Determining the appropriate location of this land will be a challenge based on the specific needs of the industrial development including access to regional transportation systems, port facilities, and appropriately serviced land with suitable topography.
- From a regional water and sewer servicing perspective, while sufficient capacity exists within the existing regional systems to accommodate expected future development, communities not connected to the regional systems are struggling, having to invest heavily in infrastructure to accommodate new development. Similar situations exist with respect to other services such as recreation and roads. Some smaller communities have



chosen not to invest in water and sewer servicing, with development continuing on an un-serviced basis. Given the growth forecasts presented in this report and the region's own experience in recent years suggests that such development may prove to be difficult to sustain in a number of communities.

- The regional road network planned for in the 1970s is now essentially complete and provides good access to goods, services and employment. The challenge for the future will not necessarily be the need for new major regional roads, but to ensure that the existing network is able to continue to function efficiently and that land use decisions will not contribute to its deterioration. In this regard alternative modes of transportation, including public transit, that make efficient use of existing infrastructure, should be encouraged through the Regional Plan.

Regional plans are products of the times in which they are developed. In many ways, the 1976 Regional Plan was about the location and installation of infrastructure to support development in the region, and it largely succeeded in its purpose. Development in the Northeast Avalon Region has now reached a level where some of the characteristics that make it a very attractive place to live are under threat. People are concerned about the preservation of open spaces, the protection of rivers, wetlands, forests and coastlines, the maintenance of the character of their communities, and the opportunity to receive some of the benefits of the new economic growth that is occurring in the region.

This new plan should address environmental issues, where “environment” is broadly considered to include not only natural conditions, but also community character, the equitable distribution of social capital, aesthetics, and the preservation of opportunities for future generations.



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