Issues of the Urban & Rural Fringe

SANDY LAKE COMMUNITY RESEARCH GROUP

community partnership in action

DALHOUSIE University

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Executive Summary

This document involves the collection of the background information collected on the urban/rural fringe for the Sandy Lake Residents Association to aid in creating a comprehensive growth management plan for the area. This document complements the Community and Environmental report and together, it is hoped that these documents will aid the Sandy Lake Residents Association in their goal of developing a management strategy for the area.

This document has three objectives:

1) To review and document the pressures for growth in the urban/rural fringe locally and nationally, and to consider the key approaches being used to respond.
2) To examine demographic and economic trends in the urban/rural fringe of HRM.
3) To examine land use and transportation patterns on the urban/rural fringe of HRM.

Case studies from across Canada were examined as well as watershed management strategies from different communities that share some of the characteristics of the Sandy Lake Area. An analysis of local case studies was also undertaken to provide background to development around lakes

The demographic and economic study provided basic statistics for Census Tract 132, which was chosen as an example of the urban/rural fringe of HRM, and the City of Halifax for a fifty-year period. Data was collected on a variety of different topics including: population, occupation, education, income, dwelling types and migration. The data from these two areas were then compared to establish a picture of the community.

The Transportation analysis examined the pressures associated with increased growth in the urban/rural fringe. It focused on the study area determined by SLCRG, but also looked at the effects that development would have on HRM as a whole. The various transportation strategies of HRM such as the Go Plan (1997) and HRM's Interim Transportation Strategy (1999) were also analyzed, as were alternative strategies for transportation in the urban/rural fringe and within HRM.

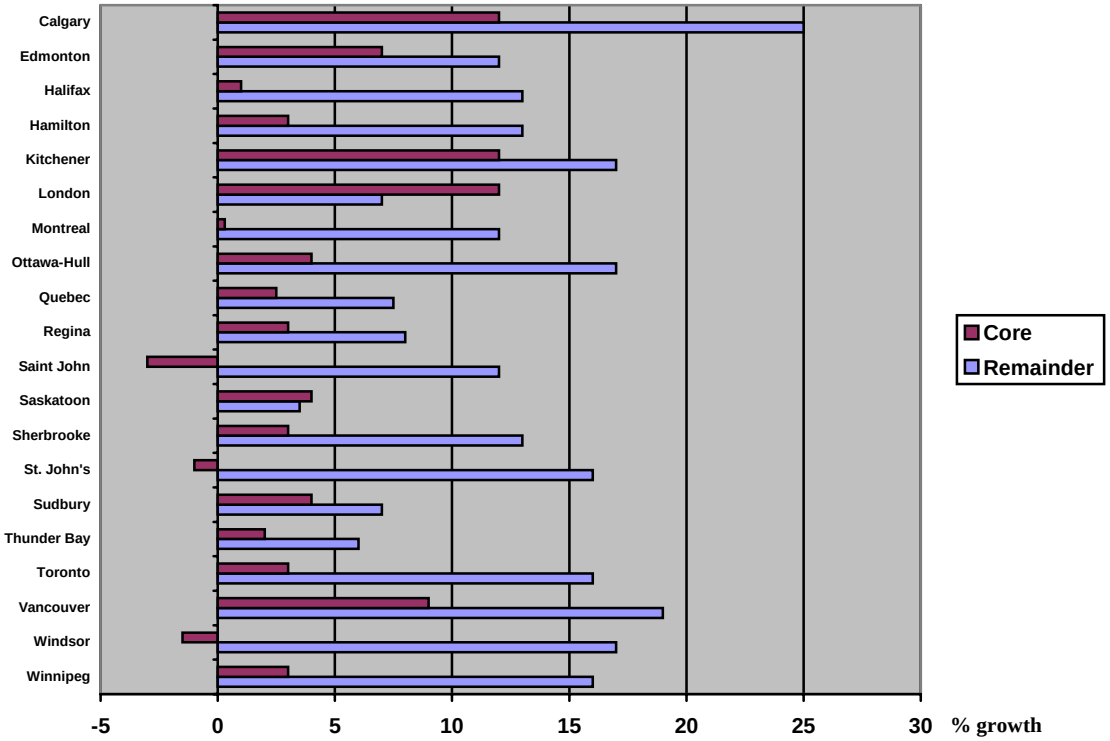
We hope that this document will provide the Sandy Lake Residents Association with a solid addition to their growing resource database and provide increased knowledge base for future proposals and presentations to other organizations.

1.0 Case Studies and Policy Implementation

1.1 Canada and its metropolitan population

Although Canada, with its 30 million inhabitants, has the lowest population density in the world (3 per square km), more than 85 per cent of the country's population live in or around urban areas. Canada has 25 Census Metropolitan Areas (CMAs) - defined by Statistics Canada as having a core population of at least 100 000 people including surrounding urban and rural areas that have a high degree of economic and social integration with the core. CMAs represent 61 percent of Canada's population (Federation of Canadian Municipalities, 1995). As the metropolitan areas inevitably grow, the population is spreading out from the inner cities into the surrounding areas. Figure 1.1 shows that the cores of most CMAs have witnessed a much lower population growth rate than the remainder of the cities.

Figure 1.1 Growth of the Canadian Metropolis 1986-1991 Percentage Change in Core City vs. Remainder of CMA



(Source: Canadian Urban Institute, 1993 – adapted from Statistics Canada Cat. No 93-303)

In fact, more Canadians move from urban to rural than from rural to urban areas. One third of Canada's rural population lives in what is classified as the rural fringe of metropolitan areas (Battilana, 1997). The outer zones of metropolitan landscapes are still characterized by traditional patterns of small towns, forests, streams and farms. But the spread of shopping malls, housing

subdivisions and office complexes is changing the rural and small town landscape. Canadians moving to the fringe are using up more land than urban dwellers by purchasing large residential lots and working in campus-style office and industrial parks.

1.2 Land Use Trends and Growth Pressures in Canada

Historically urban land use patterns in Canada reflect the belief that inexpensive energy resources are available for the long term and that land and water resources are limitless. Prior to 1981, a rising population could characterize the majority of Canada's core cities. Since 1981 there has been a trend of declining populations in core cities and rising populations in surrounding non-core areas (Federation of Canadian Municipalities, 1995). This low-density land-use pattern results from social, economic and political factors. Deeply rooted in Western land-use philosophy is the idea that nature is subordinate to people and can thus be transformed (Battilana, 1997). Consequently, the value of rural character is reduced to the number of lots a developer can squeeze out of the land.

What is the Urban/Rural Fringe?

The urban/rural fringe is the expansive space between the open countryside and the built-up cities and suburbs - space in which the landscape is growing and changing. This change and development results from population and economic growth pressures, which push out from the suburbs. Such quick development allows rural lands to draw vitality from inner cities. One writer has commented on this phenomenon, stating that the urban/rural fringe "is a land use battle ground, where developers, long-term landowners, quick-buck land speculators, politicians and realtors are matched against other long-term landowners, politicians, environmentalists and newcomers who want to keep their new communities attractive and fiscally manageable" (Daniels, 1999, page xiv). This area is not country and it is not city. It has been characterized as "a hybrid region no longer remote and yet with a lower density of population and development than a city or suburb" (Daniels, 1999, page 9). The same writer further describes this hybrid: "strips of urban and suburban fabric have extended into the countryside, creating a ragged settlement pattern; those patterns blur the distinction between rural, urban and suburban" (Daniels, 1999, page 11). There are, however, some distinctions. Unlike in suburbs, the urban-rural fringe has a lower density and more primitive planning of land-use. Furthermore, any new development is more noticeable in the fringe, and growth management challenges are greater than in suburbs.

Why are People Settling in the Urban/Rural Fringe?

The settlement pattern is a result of social, economic and political factors. These include lower property prices and taxes, desire for open space and a quality living environment. These elements have been categorized by Daniels as Push and Pull Factors:

Push Factors

These are considerations which have the effect of pressuring people to leave urban areas. Such factors include higher property taxes in core areas, reduced level of services in core areas, perception of increasing levels of urban crime and restrictive regulations.

Pull Factors

These are considerations which have the effect of attracting people to rural areas. Such factors include quality of life issues, differential tax and subsidy treatment, subsidization of suburban infrastructure and services by regional and provincial governments, federal and provincial subsidies on energy, continued emphasis on road building and cheaper land.

The following points describe various Pull Factors, noting advantages of fringe living over urban areas:

a) Cheaper land and more of it: Attractiveness of lower cost; greater space; possibility for greater access to nature

b) Road access: Provincial roads are often paved and maintained by the provincial government; therefore residents are not directly responsible for paying for such services as snow removal, road construction and maintenance. Conversely, road repairs in urban areas are covered by area tax rates or costs are 'hidden' in the lot price in new subdivisions. Therefore, a settlement pattern has been established along provincially maintained roads.

c) Reduced taxes: Rural areas often enjoy lower property taxes. Residents do not have to pay for services that exist in cities, which are covered by tax dollars. Extra costs are saved on hydrants, transit, sidewalks and street lighting. Prior to the creation of HRM, tax rates were set by each individual municipality; for instance, the residential Base Tax Rate for the city of Halifax was $1.4849/$100 of assessment in 96/97 while in the County of Halifax it was 0.895/$100 (Battilana, 1997).

d) Quality of life: Urban dwellers who have grown tired of the noise, pollution and crime commonly associated with urban areas, may have a perception that the country side has clean air, open space, and a slower pace of living. Notably, however, many rural areas experience higher crime rates than in more urbanized areas on a per capita basis (Battilana, 1997).

e) Limited degree of regulation People living in cities often express frustration with the many forms of regulation in city life, pertaining to any number of issues from noise to property maintenance. In rural areas, people feel free to live as they choose without fear of regulatory interference.

Challenges to the Fringe

There are a number of challenges faced by fringe development. There may be a concern that, in growing and developing, a fringe area might lose its semi-rural atmosphere. A second consideration is infrastructure requirements, often illustrated through sewage concerns. Generally, suburban development can become connected with or rely upon municipal sewer systems. However, developments in fringe areas are required to create their own systems. Therefore, they often use on-site septic systems This practice allows for scattered development where the soil is suitably permeable. It also creates serious concerns, particularly where septic systems are widely used. Because rural areas also use well systems, they face an increased risk of water contamination and other health hazards (Daniels, 1999).

Who Resides in the Fringe?

People come to the fringe looking for the best of both urban and rural realities. They want "peace and quiet" and the accompanying slower pace of life. They want to feel a connection with natural surroundings and access to large spaces. Some people move to or live in the fringe in order to *avoid* certain realities of community -- some with “enclave” mentalities even post “No trespassing” signs on places that are normally used by public (e.g. for hunting/fishing). They often want to avoid human contact, evade government regulations and higher taxation. The influx of people into the fringe often leads to conflict between newcomers and long-term residents, creating controversies over new development. For example, new fringe residents may expect public services comparable to those in inner cities and suburbs, but do not want to pay taxes to develop such services. Long-term residents in the fringe are often divided into two camps: those who resist growth, and those who see growth as an economic opportunity. For example, older landowners whose land provides retirement security hope to sell their property for a high price and thus may promote development. Others may view development as a threat to the rural idyll. (Daniels, 1999).

Land use Planning in the Fringe

It has only been in the past decades that planning has played a role in fringe communities (Daniels, 1999). Now that the concept is catching on, there appears to be a sense of urgency, a feeling that time is running out because changes are happening rapidly. It is important for these reasons that growth is managed.

1.3 Growth Management on the Fringe

Growth in the fringe needs to be managed. Uncontrolled growth in fringe areas is short sighted and creates long-term damage.

- Dispersed settlement patterns are an expensive way to accommodate needs of a growing population.
- Low-density housing consumes more acreage than necessary and increases energy demands.
- Residents and businesses are highly dependent on cars.
- Bussing children to school is expensive.
- New infrastructure increases the costs to taxpayers.
- Negative impact on environment (i.e. on-site septic systems often not properly maintained; separate buildings require more energy to heat).
- Fringe is drawing private and public capital away from inner cities.

The history of why and how suburbs arose can provide useful lessons so that planners can avoid making the same mistakes of the traditional suburban form. Furthermore, this history can assist in creating a vision for development in the urban/rural fringe. There is a much greater structural freedom in the fringe because fringe-dwellers still have the ability to select whether and what types of development can occur. This freedom, however, is quickly evaporating as growth pressures on the fringe are increasing rapidly. The most important step is to create a vision of how the community, county, or region should look and function. Commentators have warned that this vision must be realistic though, and not a reflect a "wish list for a perfect community" (Daniels, 1999).

There are a number of barriers to coordinated, long-term growth management in the fringe:

- Fragmented and overlapping governments, authorities and special districts (although not the case in HRM).
- Large size of fringe areas.
- Lack of community, county or regional vision.
- Lack of a sense of place and identity.
- Newcomers, social conflicts and rapid population growth.
- Spread of scattered new development.
- Too few planning resources.
- Outdated planning and zoning techniques.

The way to overcome these obstacles is by creating a thoughtful comprehensive plan. Such a plan needs to be based on public input and an understanding of the present condition of the community, as well as foresight about anticipated future trends are likely. All of these points will assist the community in taking appropriate action.

1.4 Municipal Growth Management Strategies

Urban Containment Boundaries

Many strategies may be used to manage growth. One employed by numerous municipalities involves the creation of urban containment boundaries. Urban containment boundaries essentially seek to control sprawl by restricting development in the fringe areas while encouraging infill development. By defining geographical limits to the extent of growth, municipalities hope to ensure "the efficient delivery of public facilities; the preservation of farms and forest land; the reduction of air, water and land pollution; and the cultivation of a quality of life by creating a distinctly urban ambience" (Gabrielson et al. 2001). Within the urban/rural fringe, urban containment boundaries are used to attempt to preserve the rural character of an area by preventing suburban growth.

Municipalities throughout North America have established these growth boundaries in order to ensure the preservation of forests and agriculture land around the city. As early as 1973, the State of Oregon recognised the need for legislation to control unchecked sprawl and passed the Land Use Act, which contains mandatory provisions for cities to designate urban growth boundaries. Although this policy may not have entirely curtailed development outside the boundaries, Oregon is considered by many as being successful in separating rural and urban uses (United States Department of Agriculture, 2001). Portland, Oregon is now recognised as being synonymous with "smart growth" management.

In Canada, the Regional District of Nanaimo (RDN), in British Columbia has established an urban containment policy in order to help manage the high rate of local development. Together with the City of Nanaimo, the City of Parksville and the Town of Qualicum Beach, the RDN has delineated boundaries around the urban areas. Outside of these boundaries community services will be provided only to address environmental or health problems but not to address growth (Fletcher and Thomas, 2001). Within the City of Nanaimo applications to move the boundary are accepted once every three years and are weighed against the criteria in the Urban Containment

and Fringe- Area Management Implementation Agreement developed by the municipalities and the regional district. In order for council to include a new area inside the containment boundary, the development of the area must meet documented community needs which cannot be met on other lands inside the Urban Containment Boundary; be serviced in a cost effective manner with reference to plans and capital programs for municipal and regional district provided services; not lead to adverse changes to the health and ongoing vitality of sensitive ecosystems; and not lead to adverse changes to the resource productivity of adjacent lands (Regional District of Nanaimo, 1997).

The Halifax Regional Municipality (HRM) has a similar service boundary in which municipal services are not extended beyond a certain point (Halifax Regional Municipality, 2002). Outside this service boundary however, growth is occurring in the form of large lot subdivisions in which services such as sewage and water are taken care of on site.

Large Lot Zoning and Cluster Development

Service boundaries may help to preserve the rural character of fringe areas by ensuring only large lot development occurs on the fringe; this policy does little to ensure the protection of green space and agriculture just outside the city. Large lot developments appears more rural than traditional subdivisions, yet consume large amounts of land that could otherwise be used for agriculture or forest. Despite this, regions such as Palm Beach County in Florida have established minimum lot sizes in rural and fringe areas in order to prevent the subdivision of land and the subsequent erosion of rural character (Palm Beach County, 1999). This policy can be effective if implemented in primary agriculture lands and the minimum acreage is large enough (ie: 10 acres) to prevent country estates. When large lot zoning is implemented in rural residential areas facing high development pressures, these policies can lead to development which “envelopes the open space and rural resources as ex- urbanites seek to wrap themselves in the country side atmosphere” (Battilana, 1997).

An alternative to large lot zoning is cluster development. This development technique involves clustering buildings in one area of the site while preserving the remainder of the site as open space. In Nova Scotia, clustering involves a development agreement where the municipality negotiates with the developer regarding where the dwellings will be positioned on the land. This process allows the developer to develop at a higher density than they might otherwise be permitted in exchange for the preservation of open space. Despite smaller lot sizes, site density

for a cluster development remains about the same as that of a traditional suburb due to the increase in public open space.

1.5 Watershed planning

While municipal policies may help to manage growth and preserve natural spaces, areas of environmental concern often do not conform to municipal boundaries. For example, while a municipality may implement wise growth and environmental policies downstream, if the municipality upstream does not implement similar policies, the downstream municipality will still feel the effects of environmental degradation. A watershed is defined as "the region draining into a river, river system, or body of water" (Colten, 1996, internet). As watershed planning replaces political boundaries with a natural boundary, it follows that watershed planning takes an ecological approach and considers the effect of development on both terrestrial and aquatic ecosystems when determining appropriate land use. Watershed planning recognises that since "the water that we drink and that is in our communities is an exact reflection of what is happening on every square acre of land in the entire watershed" (Colten, 1996, p.3) and as watersheds "influence numerous life cycles and physical processes" (Nottawassaga Valley Conservation Authority, 1996), land use planning and resource management must be based on watersheds.

The Laurel Creek Watershed Study (LCWS)

The City of Waterloo was among the first in Canada to recognise the need for ecological planning based on a watershed in 1991, together with the Regional Municipality of Waterloo, the Grand River Conservation Authority, the provincial Ministry of Natural Resources and the Ministry of the Environment and Energy, the region initiated the Laurel Creek Watershed Study (LCWS). The LCWS sought to minimize long term cost, reduce conflict and preserve environmentally significant areas by creating an ecosystem approach to long term planning and development in the area. By implementing this approach, the study broadly defined the location and type of growth that would be acceptable, and the environmental considerations that would be taken into account during development.

The study recommended a three-tiered system for land development, based on a detailed environmental inventory of the lands in the watershed. Under this system land would be categorized in one of three levels depending on its suitability for development. Level one areas are considered vital to ecosystem health and therefore must be protected. On level two lands, "the environmental form may be altered, but the ecological function is to be maintained" (Flaherty, 1995, 12). Thus, if a developer decides to build in the area he or she must prove that

their development is compatible with the ecological function of the site. Development is permitted on level three lands, but all activities are subject to policies designed to minimize the impact of human activities on the watershed ecosystem. Lands adjacent to level one and two areas are also considered in the LCWS. The study recommended that ecological buffers be required for proposed development adjacent to these lands. This buffer width would be variable, determined by type of activity and the neighbouring ecological resources.

The study recommends establishing a watershed committee with a continuing mandate to ensure compliance with the goals of the management plan. These watershed goals can be enforced through zoning, subdivision approvals or development agreements. In addition to this, the LCWS also encourages the creation and maintenance of ecological linkages between natural features. The study also recommends more detailed sub-watershed studies be carried out during the preparation of new district plans.

The Nottawasga Valley Watershed Management Plan

Another watershed management plan developed in Ontario is the Nottawasga Valley Watershed Management Plan (NVWMP), developed by the Nottawasga Valley Conservation Authority. The NVWMP contains a list of thirty recommended actions and a list of the key players that would be involved in each action. The recommendations that pertain most to Sandy Lake include:

- Establishing a land stewardship program
- Identifying and delineating the boundaries of significant ravine, valley, river and stream corridors
- Identifying and re-evaluating natural corridors
- Establishing local land trusts
- Determining the extent of woodland conservation, reforestation and restoration measures that may be required
- Identifying significant wildlife habitat areas that need to be protected
- Developing methods to reduce water contamination
- Developing 100 year erosion limits
- Developing a sub watershed plan.

In addition to this, the plan recommends the preparation of a shoreline management plan, which includes, flooding and erosion conditions, the recreation potential of the shore area, and an environmental survey (NVCA, 1996).

The City of Dartmouth Lakes Study

In 1974 the City of Dartmouth commissioned a Lakes Study, which came up with numerous recommendations for development near the Dartmouth Lakes. These included a seventy-five foot setback from important brook and marsh areas for all building, provisions to acquire land around lakes for recreational purposes, and a bylaw forcing developers to clearly delineate existing brooks. The Lakes Study also considered the natural conditions of sites and created a slope and sedimentation index to determine the suitability of a site for development. The slope index consists of five categories of slopes and rates suitability for development.

Slope Percentage	**Suitability for development**
0- 3%	Unbuildable: swamps, marshy areas and flood plains
3- 8%	Ideal building conditions: minor restriction
8- 16%	Good building conditions: moderate restrictions
16- 25%	Limited building conditions: major restrictions
25%	Unbuildable: excessively steep

Dartmouth Lakes Study Slope Matrix (Community Planning Association of Canada, 1985, 24)

The sedimentation index combines slope, soil, and vegetation to determine areas suitable for development. The recommendations contained in the Lakes Study led the City of Dartmouth in 1978 to establish policies E-1 and E-2 which sought to protect waterfront ecosystems. Policy E-1 states, “it shall be the intention of city council to provide funds through the capital budget to acquire lands for the purpose of lake protection and the provision of recreational land adjacent to the lakes” (Community Planning Association of Canada, 1985, 22). This policy is supported by policy E-2 which states “it shall be the intention of city council to investigate environmentally sensitive areas, physically unique areas and major drainage systems identifying the areas to be protected and zone them “C” conservation” (ibid, 22)

A comprehensive watershed study should involve the protection of environmentally sensitive areas, which are unsuitable for any kind of development. An environmentally sensitive area (ESA) “contains features such as headwaters, unusual plants, wildlife or landforms, breeding or over-wintering animal habitats, rare or endangered species or combinations of habitats and landforms which could be valuable for scientific research or conservation education” (ibid). As the protection of these areas is critical for any good watershed plan, criteria must be established for determining which areas shall be considered ESAs.

The City of Calgary

The City of Calgary determines which areas are best suited for preservation based on physical, hydrological, biological and functional criteria. Based on the city's physical criteria, areas with slopes greater than 15% should be dedicated as environmental reserves, unless the site can pass a slope stability test. The Calgary Municipal Plan also requires a sixty-foot setback from any escarpment with more than a 15% slope for any new or redevelopment plan. The hydrological criteria necessitate a minimum twenty-foot setback from the shore of any body of water. Under the biological and functional criteria an area of land merits consideration as an ESA if it is: used for recreational purposes by local residents, or if the area contains rare or endangered species, common species that have become rare due to development, a high diversity of plant life or provides an important wildlife habitat (Calgary Planning Department and the City of Calgary Parks and Recreation Department, 1979).

The Sackville River Thesis

Rhea Mahar established a set of criteria for determining environmentally sensitive areas within the Sackville River Watershed based on the criteria established for the Region of Halton in Ontario. The criteria for the Region of Halton and the Sackville River Watershed are as follows:

Halton Region	Sackville River Watershed
Primary Criteria 1) Areas that exhibit relatively high native plant and/or animal species richness in the context of the Halton region 2) Areas that provide links among two or more natural systems 3) Areas that contain a relatively high number of native plant communities 4) Areas that contain large expanses of native plant communities 5) Areas that contain remnant plant communities that are rare within the Halton region. 6) Areas that contain plant and/or animal species that are rare provincially or nationally 7) Areas that contain representative earth science features and/or processes typical of those which were instrumental in creating Halton's landscape 8) Areas that are determined to contribute significantly to local and/or regional groundwater recharge 9) Areas that are determined to contribute significantly to local and/or regional to ground water discharge areas 10) Areas that contribute significantly to	Criteria **1) The area exhibits relatively high plant and/or animal richness[1]** **2) The area provides links between two or more adjacent natural systems** 3) The area provides habitat for rare or endangered species that are endangered nationally or provincially 4) The area is large (in regional context) and supports a core population or a significant number of one or more species which require an extensive range 5) The area is a critical habitat of limited range providing a breeding, shelter or feeding site for native species **6) The area serves a scientific or educational purpose** **7) The area serves an important social function in that it is accessible for people living in or near the watershed** 8) **The area contains unique or representative earth features** Constraint Criteria **9) The area is a Hazard Land. This includes the following:**

[1] Bold writing indicates criteria met by Sandy Lake as determined by Rhea Mahar, 1994.

groundwater quality 11) Areas that contribute to maintaining surface water quality Secondary Criteria 12) Areas that contain regionally rare plants 13) Areas that contain high quality assemblages of native plant and/or animal species 14) Areas that are recognised as highly aesthetic themselves or that provide designated viewpoints 15) The location of the area, combined with its natural features, makes it suitable for scientific research and conservation education.	a) **Slopes greater than 25%** b) Halifax Formation slate zones c) Floodplains

Criteria for the designation of an ESA Halton, Ont. and Sackville River, NS (Mahar, 1994)

Sandy Lake is part of the Sackville River Watershed, thus it is appropriate to consider the region based on the above criteria. According to Mahar, Sandy Lake should be designated as an ESA as it fits six of the above criteria. The importance of Sandy Lake for recreation areas and as an ecological preserve was recognised in 1971 when it was recommended as a provincial park (Mahar, 1994). However, the province never acted on this recommendation. Marsh Lake (located just north of Sandy Lake) is of considerable ecological importance primarily due to its American Black Duck population and the cranberry bogs in the area. Some of this area can be preserved under the Nova Scotia Conservation Easement Act (1992). This Act contains restrictions in the easement agreement, signed by the owner and either the province or a designated organisation, such as the Nature Conservancy (ibid).

1.6 Lakeside Development

In order to understand more localized urban/rural fringe pressures, several examples of lakeside development around the Halifax Regional Municipality were examined. From this exercise, it is possible to evaluate the successes and failures of local lakefront development, and draw lessons from these case studies to use while imagining future development of Sandy Lake. In turn, these observations will give a practical basis for determining procedures and policies regarding potential development; which types of development should be discouraged, which types should be encouraged, and appropriate densities.

In essence, this exercise brings practicality to the previous Case Studies and literature review. Whereas the previous work focused on macroscopic trends and pressures within the urban/rural fringe, and on best management practices for lakeside and watershed development, this section concentrates on real ways in which lakeside development has taken place within Halifax Region.

It is instructive to differentiate between objective and subjective judgments of lakeside development. Often it is the case that interest groups focus on 'technical' matters instead of social issues that are really of most concern to the residents. For example, a group might launch a campaign to maintain water quality within a watershed if they are generally opposed to change within their community. This is done in order to establish objective criteria and give scientific legitimacy to issues that are otherwise very subjective. However, it remains futile to attempt to assign objective criteria to problems that are at their root, subjective. In other words, water quality is always an important consideration, yet how high a quality of water must be maintained depends solely on the purpose that water serves.

For example, the quality of water within a lake that is a source of drinking water (with only very limited treatment available) for a local population must be maintained at the highest possible standard. On the other hand, if the lake hosts a popular swimming area, the quality of its water does not need to be maintained at as high of a standard, albeit a standard that remains safe for humans to swim in.

For this reason, it was decided to observe lakeside development from a subjective viewpoint. Thus, the lakes considered are neither exceptionally good nor bad examples of lakeside development. Water quality and other technical parameters were not compared to arbitrary standards. Rather, observations and conclusions are drawn from subjective criteria such as public accessibility and overall environmental integrity. The lakes selected for study were:

- Bayer's Lake, Halifax
- Chocolate Lake, Halifax
- Lake Banook, Dartmouth
- Mic Mac Lake, Dartmouth
- Paper Mill Lake, Bedford
- Sandy Lake, Bedford

The six lakes represent a wide variety of development histories. The observed development took place between the mid 19th Century (in the case of Lake Banook) and the 2000s (in the case of Sandy Lake).

Sandy Lake was observed in order to give a comparative indication of what types of development currently exist, and what opportunities for development might be appropriate in the future.

Bayer's Lake

Bayer's Lake is located on the west side of Halifax (Figure 1.2). It was developed recently, as part of the Bayer's Lake Business Park.

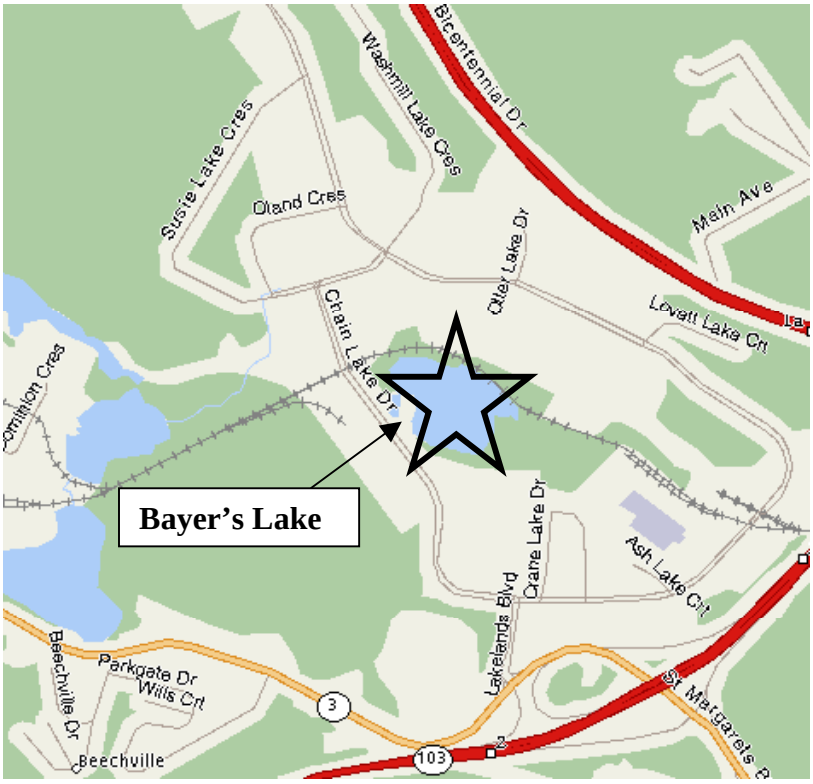


Figure 1.2: Location of Bayer's Lake

(Source: Mapquest, 2002)

One of the smallest lakes considered in this exercise, Bayer's Lake is a good example of the results of setback legislation and policies. In fact, there is a very wide buffer zone of natural vegetation surrounding the lake (Figure 1.4), separating it from adjacent industrial and large-scale commercial development.

Figure 1.3: View looking over Bayer's Lake

(Source: Logan, 2002)

Figure 1.4: Buffer Zone surrounding Bayer's Lake

(Source: Logan, 2002)

No doubt, this buffer zone is at least nominally effective in filtering runoff from the many nearby parking areas and industrial developments. However, another result of the buffer zone technique is that the lake is totally ignored in the design of the development. In other words, it seems as though the lake, along with its unique ecosystem, is more of an inconvenience than an asset to the area. Large scale commercial and industrial developments sprawl out from the water's edge (Figure 1.5), trucks and trains whiz by carrying products in various stages of production, and consumers drive their cars by the lake they don't even know exists.

Figure 1.5: Development around Bayer's Lake

(Source: Logan, 2002)

Does this type of lakeside development respect and honour the unique aquatic ecosystem and amenity that makes Bayer's Lake and all other lakes important? Specific features of the limnological and riparian environments are maintained, but there is no doubt that the overall ecosystem is adversely affected by vast expanses of pavement and large numbers of vehicles. Furthermore, the large-scale industrial/commercial atmosphere and large buffer zone makes it difficult – if not impossible – for anyone to enjoy the amenity of the lake.

Figure 1.6: Parking lot abutting buffer zone around Bayer's Lake

(Source: Logan, 2002)

Chocolate Lake

Chocolate Lake is located near the Armdale Rotary on Halifax's West side (Figure 1.7). The lakeside development is mostly residential, but also features a municipal park and a hotel.

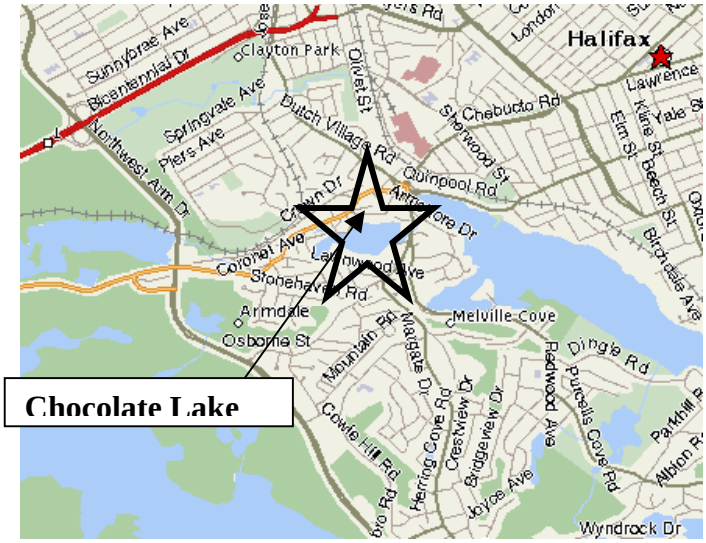


Figure 1.7: Location of Chocolate Lake (Source: Mapquest, 2002)

This lake creates a strange paradox, in the sense that it is well hidden from major roads that surround it (much like Bayer's Lake) and yet it is well known and used, providing many amenities for local residents. Its close proximity to commercial development and busy roads (figure 1.9) provides good access to the municipal park that dominates the Southern shore.

The park features public toilets, a beach (with lifeguard stands) and a playground for children. According to residents of Halifax, the park at Chocolate Lake is very well used and appreciated; the opportunity to swim is its most important feature.

Figure 1.8: View of Chocolate Lake (Source: Logan, 2002)

Figure 1.9: Adjacent arterial road and commercial development

(Source: Logan, 2002)

Figure 1.10: Public beach at Chocolate Lake

(Source: Logan, 2002)

Figure 1.10 shows the public beach at Chocolate Lake, as well as residential development on the Northern shore. The residential development is mostly comprised of large, single family homes. These homes create a barrier that effectively blocks public access to the lakefront. In addition, private ownership of lakefront makes it possible for homeowners to alter the shoreline in front of their homes. Figure 1.11 shows a seawall that has been constructed on the South shore of Chocolate Lake to mitigate erosion for the purpose of maintaining the land in front of a private dwelling.

Figure 1.11: Private shoreline protection

(Source: Logan, 2002)

Alteration of shoreline is a concern as it affects both aquatic habitat and visual amenity. In extreme cases, shoreline alteration can have severe implications - private owners may imply control over potential enjoyment of the lake by large or obtrusive construction projects. It is

important to remember that no shoreline alteration is allowed without the permission of local municipal authorities. In some cases, permission may also be required from provincial and/or federal authorities.

Figure 1.12: Roadway along the Northern Shore of Chocolate Lake

(Source: Logan, 2002)

Figure 1.12 shows a roadway that runs along the Northern shore of Chocolate Lake. This road, Ferndale Drive, is a public municipal road, and therefore provides access to the waterfront. However, the atmosphere created is not one that augments the riparian environment: it is rather desolate and unwelcoming.

Figure 1.13: Howard Johnson Hotel

(Source: Logan, 2002)

One last significant shoreline feature of Chocolate Lake is shown in Figures 1.13, 1.14 and 1.15. The Halifax Howard Johnson Hotel is built directly on the shoreline of the lake. On one hand, the hotel significantly deters public access to the lake (as shown in Figures 1.14 and 1.15), on the other hand, hotel guests are able to enjoy the lake. The observer is left to assume that such a development would be more appropriate if the buildings were set further back from the water's edge.

Figure 1.14: Garbage dumpsters on the lakeside at the Halifax Howard Johnson Hotel

(Source: Logan, 2002)

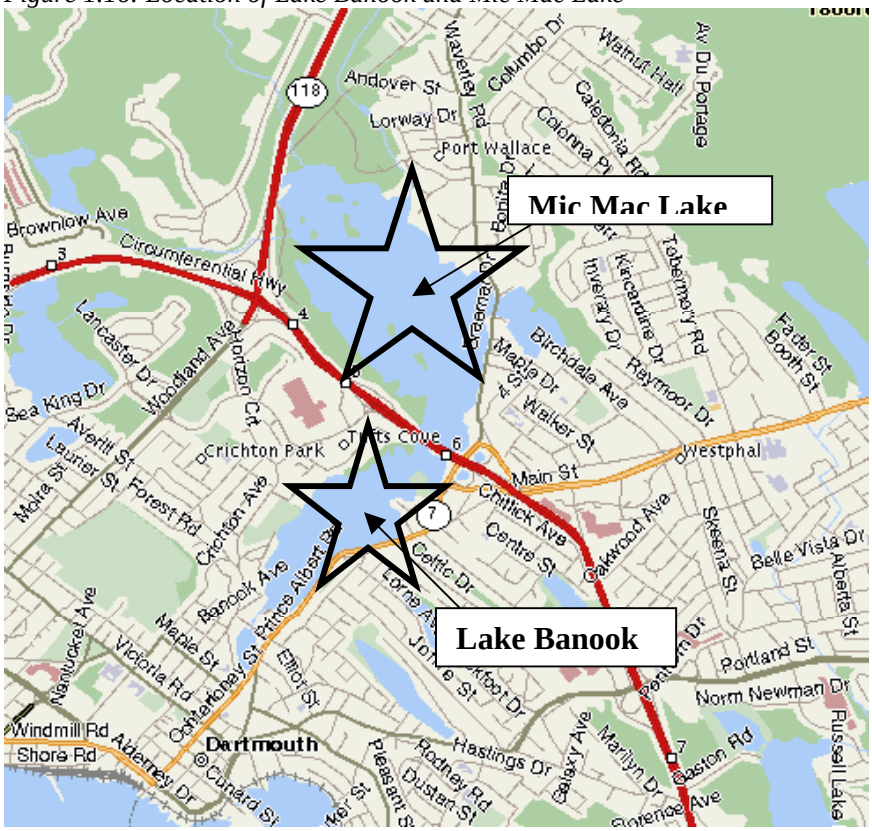
Figure 1.15: View of Chocolate Lake from the landward side of the hotel

(Source: Logan, 2002)

Lake Banook

Lake Banook is located in central Dartmouth (Figure 1.16) and has been integrated to the urban fabric of the city since the mid 19th Century. At that time, the Mic Mac Athletic Club was established on the shores of the lake and regattas were common.

Figure 1.16: Location of Lake Banook and Mic Mac Lake



(Source: Mapquest, 2002)

The lake features diverse development including: a community park (with swimming beach), private residences, high-rise apartments and commercial areas. Provincial highway 111 forms the Northern boundary of the lake, and Prince Albert Road (highway 7) runs along its Eastern side.

Figure 1.17: View overlooking Lake Banook showing residential development on the Western Shore

(Source: Logan, 2002)

Figure 1.18: Residential development on Lake Banook

(Source: Logan, 2002)

Residential development around the lake takes many forms. Figures 1.17 and 1.18 show single unit detached homes. The owners of these units also own the shoreline, a characteristic shared by residential development on Chocolate Lake. Figure 1.19 shows high-rise residential development that is separated from the water's edge by public open space. This open space acts as an effective buffer between the development and the lake, and also provides public access to the shore. At the same time, residents of the apartment building are able to enjoy views of the lake, and generally enjoy the benefits of living on its edge. Multi-unit medium-rise development is shown in Figure 1.20. These units are separated from the lake by Prince Albert Road and the residents are able to enjoy the amenities of the lake without privately owning the access to it.

Figure 1.19:High-rise development overlooking Lake Banook

(Source: Logan, 2002)

Figure 1.20: Multi unit residential overlooking the Lake

(Source: Logan, 2002)

The roads that bound Lake Banook are shown in Figure 1.21 (Prince Albert Road on the right-hand side, and Highway 111 in the background). It is clear from Figure 1.21 that the shoreline of the lake has been severely altered in order to maintain the road structure. Furthermore, the Northern shoreline has been reconfigured to accommodate Highway 111. Apart from the environmental impact of such busy roads in close proximity to the lake (including toxic run-off), the presence also compromises the atmosphere around the lake. The noise pollution generated by the vehicular traffic makes the lakefront an unwelcoming place.

Figure 1.21: Prince Albert Road and Hwy111

(Source: Logan, 2002)

Towards the south end of Lake Banook, a public promenade separates Prince Albert Street and the shoreline (Figures 1.22 and 1.23). This facility provides public access to the waterfront, and also creates a small buffer zone between the road and the water's edge. However, the promenade is devoid of services, including parking, toilets and places to purchase refreshments. In comparison with other waterfront promenades (for example, the Halifax Harbour walk) the promenade along Lake Banook could be improved.

The Kiwanis Park near the Northern end of the lake features a public beach for swimming and a wide open field (Figures 1.24 and 1.25). Safety is a concern, as the Kiwanis Park is directly adjacent to Prince Albert Road (Figure 1.21); this is unsafe because the park attracts many people, primarily young children.

Figure 1.22: Public Promenade along eastern shore of Lake Banook

Figure 1.23 Public trail at MicmacPardo on Lake Banook (Source: Logan, 2002)

Figure 1.24: Former beach at Kiwanis Park on Lake Banook (Source: Logan, 2002)

(Source: Logan, 2002)

Figure 1.25: Open space of Kiwanis Park

(Source: Logan, 2002)

Mic Mac Lake

As shown in Figure 1.16, Mic Mac Lake is located to the North of Lake Banook on the Northern edge of the urban area of Dartmouth. The lake's Southern and Western shores are natural areas with multi-use trails. The remainder of the lake has been developed in a seemingly unplanned way, and features uses ranging from park space to industrial.

Figure 1.26: View across Mic Mac Lake to the natural open space of the western shore

(Source: Logan, 2002)

Figure 1.27 shows a small stretch of open park space that appears along the Eastern shore of the lake. The area is almost identical to the public space along the shores of Lake Banook. Directly adjacent to the park space is an industrial development, shown in Figure 1.28. The park, being so close to industrial developments and a busy roadway, gives an eerie sense of alienation. These types of incompatible uses are indicative of the development all along the Eastern shore of Mic Mac Lake.

Figure 1.27: Open space along the shore of Mic Mac Lake

´Source: Logan, 2002)

Figure 1.28: Industrial Development adjacent to residential development

(Source: Logan, 2002)

Figure 1.29 also shows non-compatible land uses along the shoreline. This is an example of industrial or heavy commercial development encroaching on private residential units. The residential units are adjacent to the water's edge, as shown in Figures 1.30 and 1.31. As with other lakeside residential development, public access is cut off, and shoreline alteration is common.

Figure 1.29: Industrial development adjacent to open space

(Source: Logan, 2002)

Figure 1.30: Private residential units cut off public access

(Source: Logan, 2002)

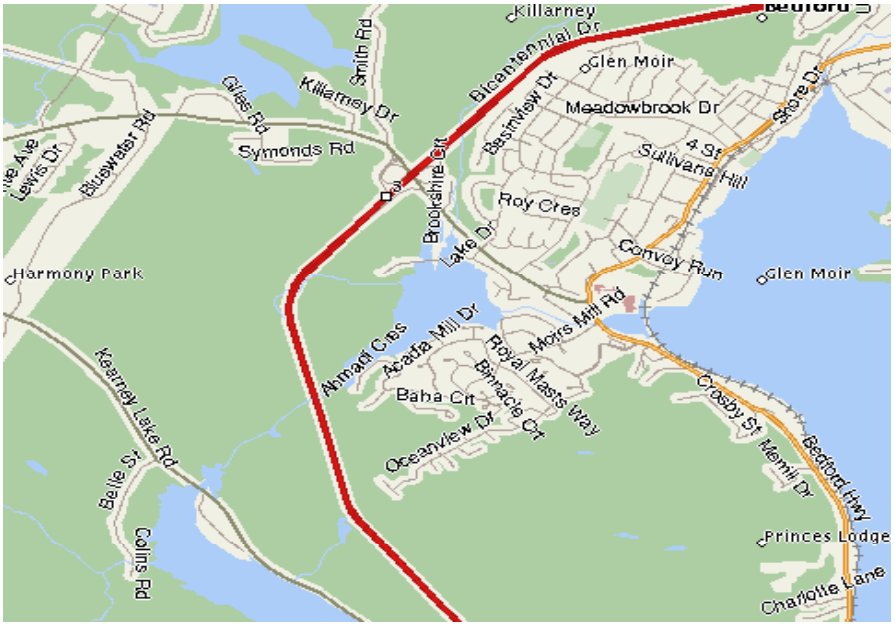
Figure 1.31: Shoreline alteration along east side of Mic Mac Lake

(Source: Logan, 2002)

Paper Mill Lake

Paper Mill Lake is located in Bedford, and has the closest proximity to Sandy Lake (Figure 1.32). The lake is man-made – the dammed effluent was originally used to operate a paper mill downstream.

Figure 1.32:Location of Paper Mill Lake



(Source: Mapquest, 2002)

Paper Mill Lake is the best example of lakeside development of any of the six lakes considered in this study, because it offers a pleasant balance between conservation, amenity and responsible development. The shoreline of the Northern part of the lake is dedicated to natural open space, and has an extensive network of hiking trails (Figure 1.33). Signs of wildlife can also be observed in this area (Figure 1.34). The dam and effluent stream is located at the Southeastern corner of the lake, which is also accessible by trail (Figure 1.35). A small park with children's playground is located next to the dam (Figure 1.36).

Figure 1.33: Hiking Trail

(Source: Logan, 2002)

Figure 1.34 Sign of beaver around Paper Mill Lake

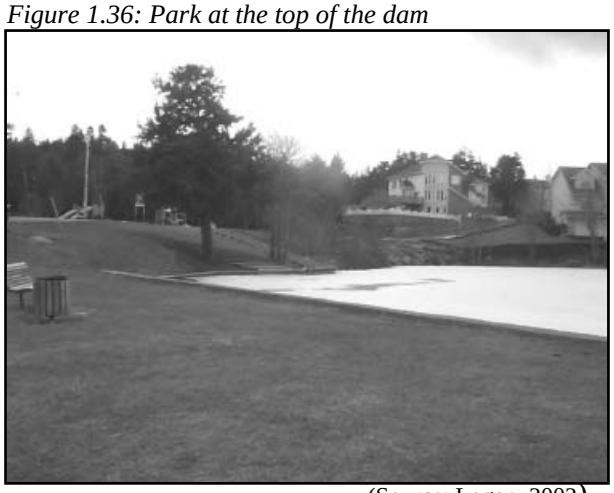
(Source: Logan, 2002)

All development around Paper Mill Lake is in the form of single residential units (Figure 35). This development also extends down the outlet stream (Figure 36). Most of the residences are set far back from the water's edge, and have not altered the shoreline. Except in the case of the parkland, it appears that most of the natural vegetation has remained.

Figure 1.35: Trail leading to the dam

(Source: Logan, 2002)

Figure 1.36: Park at the top of the dam



(Source: Logan, 2002)

Figure 1.37: Residential Development along the stream

(Source: Logan, 2002)

Figure 1.38: Public swimming area at the Lake

(Source: Logan, 2002)

At the North-eastern corner of the lake, there is another public park. This area is safe for swimming, and is equipped with a lifeguard station. This is one of the only opportunities for swimming in Bedford, and is very popular during the summer months.

Figure 1.39: View from public park across lake to residential development

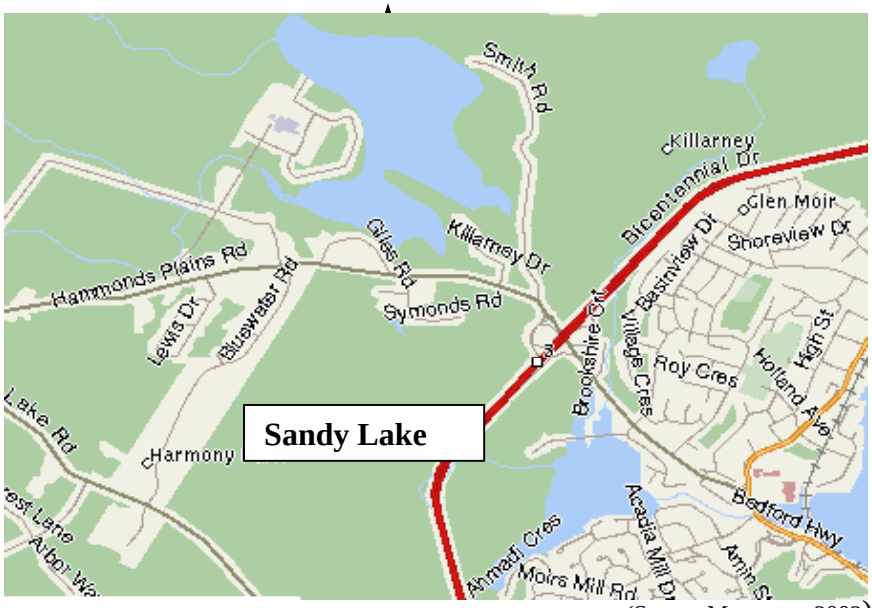
(Source: Logan, 2002)

Many people make use of Paper Mill Lake; by swimming in its waters, hiking along its perimeter and enjoying in the playground at its shores. Even during early March (when the site visit was made) young people were gathered in the park. The lake is not isolated from development, but rather is in the midst of a residential neighbourhood, which adds to its accessibility and popularity.

Sandy Lake

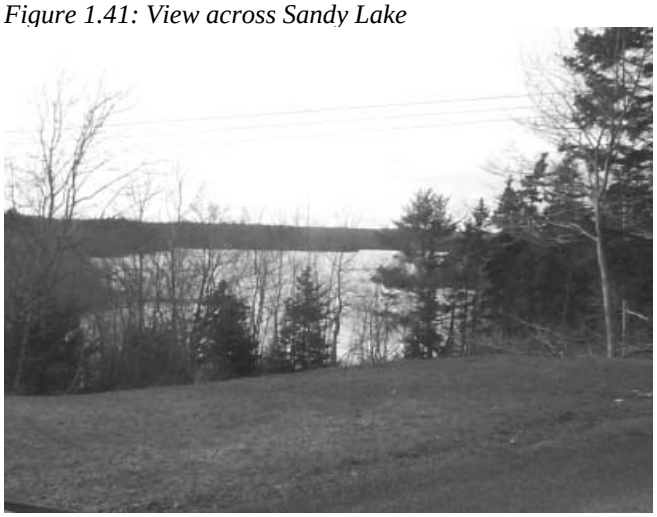
Sandy Lake lies close to Paper Mill Lake. It is included in this exercise for comparison with other lakes in the area, and for the purpose of imagining what aspects of future development would be beneficial to the lake itself, the community around the lake, and the larger community of Halifax Region.

Figure 1.40:Location of Sandy Lake



(Source:Mapquest, 2002)

Figure 1.41: View across Sandy Lake



(Source: Logan, 2002)

Currently, development around Sandy Lake is extremely varied, and includes natural open space, single-unit residential, and industrial uses. The lake itself is difficult to see from the road (Hammond's Plains) and difficult to access. Private residences line Smith Road (Figure 1.42) and cast a exclusive atmosphere on the area, effectively blocking access to the lake. Furthermore, to get to the lake from the North side it is necessary to pass through security at the Farmer's Dairy before approaching the lake on a private road marked with "No Trespassing" signs (Figure 1.43).

Figure 1.42:Homes along Smith Road

(Source: Logan, 2002)

Figure 1.43: No Trespassing at Sandy Lake

(Source: Logan, 2002)

Presently, Sandy Lake is at risk of an onslaught of different forms of development which could be incompatible with each other, similar to development around Mic Mac Lake. Farmer's Dairy has been in operation for several years, and other industrial developments are spilling over from the Atlantic Acres Business Park into the area adjacent to Sandy Lake (Figure 1.44). Without a clear understanding about how development may best meet the needs of the community in the future, the area will be subject to unanticipated changes.

Figure 1.44: Industrial Development around Sandy Lake

(Source: Logan, 2002)

1.7 Conclusions

Water quality and other environmental criteria alone cannot determine what type of lakeside development meets the needs of a community. These factors tend to ignore social pressures and community needs. For this reason, it is instructive to observe other examples of lakeside development in order to better understand what future development at Sandy Lake might be like.

Lessons can be learned from observing these examples of lakeside development, including:

- All lakes feature important ecosystems, which should not only be protected, but respected through development.
- A lake's usefulness is determined by several factors, including environmental quality, accessibility, atmosphere, safety and available facilities.
- Development where private ownership includes the riparian zone often leads to problems with shoreline alteration and public access.
- Industrial development does not generally make use of amenities of the aquatic environment.
- Public places such as parks and swimming areas are a good use of lakeside environment, as long as they are welcoming and safe, and in concert with ecological factors.
- In order to create a welcoming atmosphere, all lakeside development must be compatible with the limnological and riparian environment.
- Residential development can be an effective use of lakeside amenity if it does not adversely affect the riparian ecosystem, and there is sufficient public access to the water's edge.

In the case of Sandy Lake, it is up to the stakeholders in the area to determine the best use of the surrounding area using these observations in the context of the information presented in this report. A clear idea about what the lake should be like in the future is paramount if it is to meet the needs of the community in future generations.

2.0 Demographic and Economic Evaluation

2.1 Introduction

Demographic analysis is an important part of any community study. The following data represents the disparities found when comparing a large city to the area on its fringe. In this study, the city in question is Halifax, and the area for comparison is Census Tract 132, which is an area near Sandy Lake. The data for this census tract is not available prior to 1976, so much of this analysis is limited to the last quarter century. In the years prior to 1976, the information for the Census Tract was published under the broader category of Halifax County. For the sake of continuity and clarity, only data for Census Tract 132 was used, since the trends in this area are unique compared to those of the urban fringe as a whole. The last year in which comprehensive census data was available is 1996. There is some limited information from the 2001 census available through the Internet on the Statistics Canada website, but it did not cover the variables being analysed in the depth required. The information collected and analyzed includes population growth and change, migration, dwelling types, housing quality, building permits, education levels, and average income. These factors allowed for an examination of the effects of demographic change on the Sandy Lake area. Looking at dwelling types and building permits can enable a better prediction of the type of growth most likely to occur in the region.

2.2 Population

Please note that the graphical representation of the population distribution is slightly skewed. This is due to the inconsistent manner in which the population data was collected by Statistics Canada for the census. In Appendix 1 the raw data is displayed in tables and we can see that in some years, data was collected for five year cohorts, while in other years the cohorts were in ten year intervals. Other times, the intervals were mixed. To cope with this difficulty, some of the cohorts have been divided in two in order to maintain a consistent interval of five-year cohort groups. One must also note that the last cohort in each graph is open, meaning that often a bulge will occur at the top of the pyramid. Please keep this information in mind when examining the population pyramids that follow.

In any analysis of a community it is beneficial to have a good knowledge of the way the population is distributed by gender and age so that other aspects of the community can be understood. In 1956 (see Figure 2.1), the population was entering the Baby Boom, where the proportion of young children was significantly larger than the teenage and young adult population

who would have been born during The Great Depression and World War II. These two catastrophic events from 1930-1945 acted as deterrents to high fertility rates.

A decade later in 1966 (see Figure 2.2), the population did not change significantly except for the continuation of high birth rates emphasising the increased presence of the Baby Boomers. The trend begins to change in the snapshot of the population in 1976 (see Figure 2.3), with a sudden increase in numbers for all cohort groups. Much of this increase is due to a migration from rural to urban centres within the province. The large bulge of adults aged 25-34 represent the Baby Boom cohort. When this data is compared to that of the Census Tract (see Figure 2.4) the general trend is the same, although there are slightly fewer people of university age living in the urban/rural fringe. This trend suggests a migration to the city from the fringe for job and school opportunities.

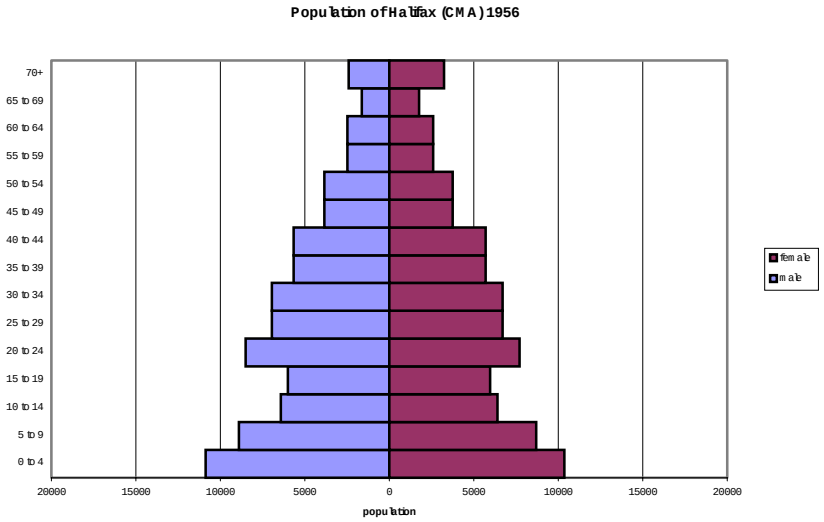


Figure 2.1. Population distribution by age & sex for Halifax CMA, 1956 (Source: Statistics Canada, Census of Canada, 1956)

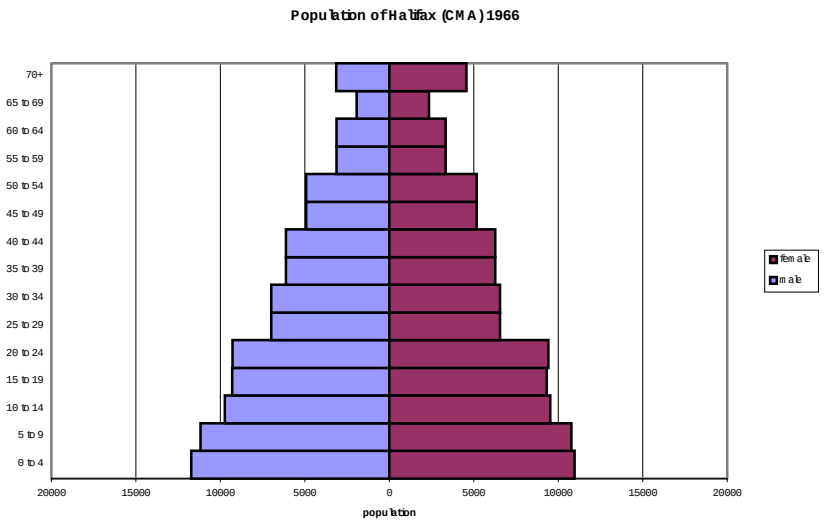


Figure 2.2. Population distribution by age & sex for Halifax CMA, 1966 (Source: Statistics Canada, Census of Canada, 1966)

Interestingly, the number of both male and female seniors is quite even in the Census Tract, whereas women outnumber men in the older age cohorts for the city of Halifax. Such numbers suggest that family units of seniors continue to live in the outskirts of the city, but women who are widowed tend to move into the city where services are more accessible. This trend of elderly women migrating to urban centres continues through the rest of the data, reflecting the longer life expectancy women hold over men. Moving through time once more, the continued aging of the Baby Boomers is apparent in 1986 (see Figure 2.5), as is the increase of their presence in the city. There are many reasons that young adults continue to migrate to the urban core. Halifax has become a place for young professionals in all fields because of the large university presence and the reputation of being the economic capital of the Maritimes. In addition, Halifax has a significant military presence, consisting mainly of young adults. All of these contribute to larger populations of younger cohorts in Halifax.

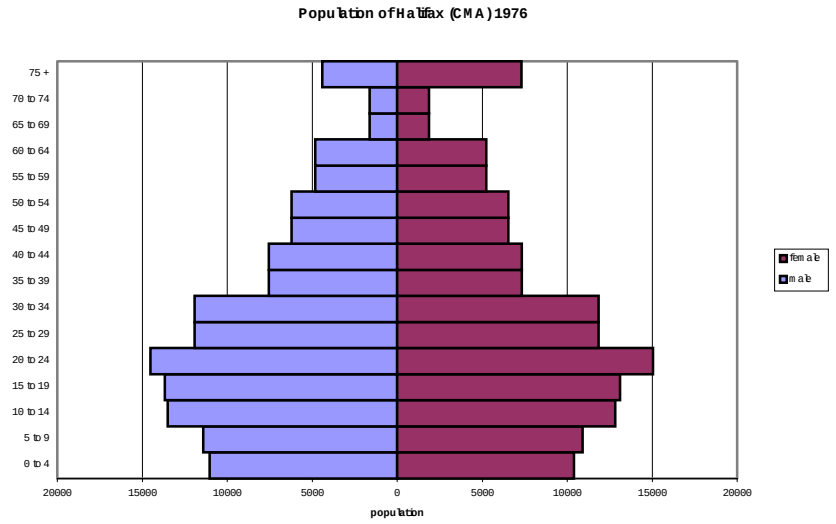


Figure 2.3. Population distribution by age & sex for Halifax CMA, 1976 (Source: Statistics Canada, Census of Canada, 1976)

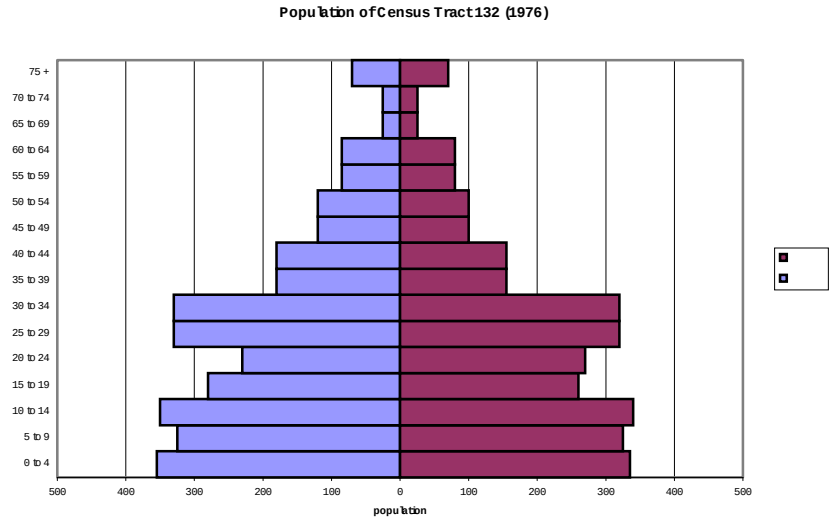


Figure 2.4. Population distribution by age & sex for Census Tract 132, 1976 (Source: Statistics Canada, Census of Canada, 1976)

In Census Tract 132 (see Figure 2.6), the same trends mentioned before are represented. Suburban living is more popular in the Halifax region by 1986, and the population in this area is swelling with people who want to get away from city dwelling.

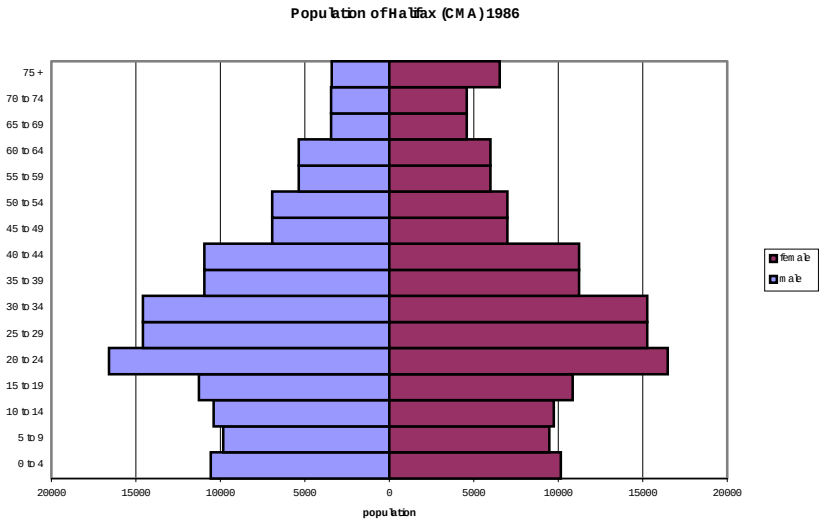


Figure 2.5. Population distribution by age & sex for Halifax CMA, 1986 (Source: Statistics Canada, Census of Canada, 1986)

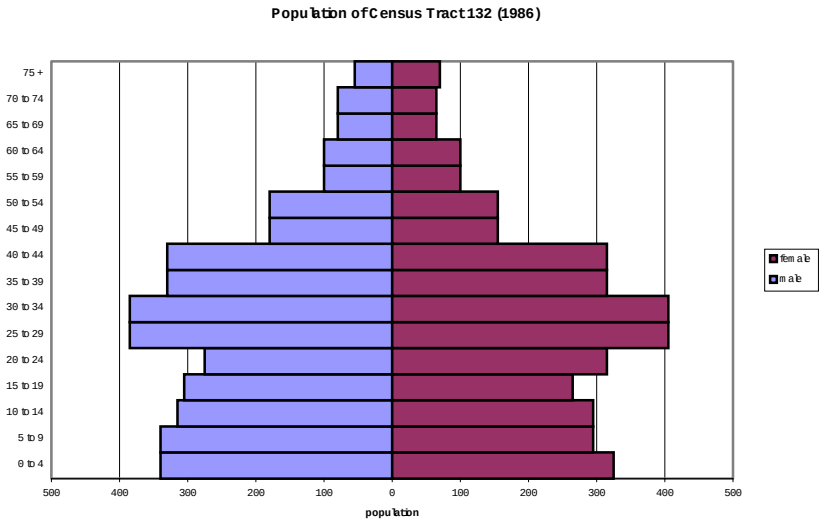
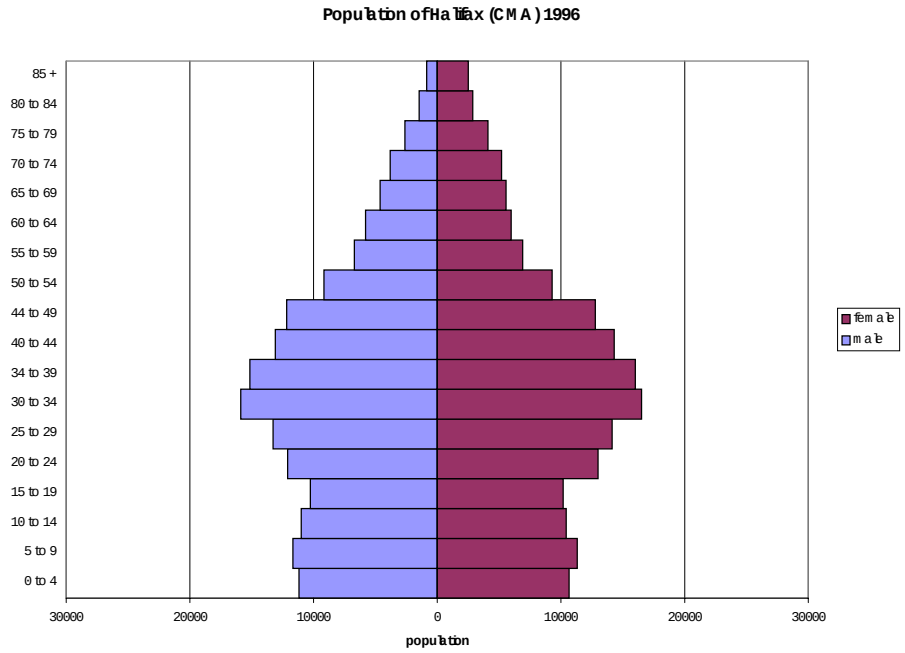


Figure 2.6. Population distribution by age & sex for Census Tract 132, 1986 (Source: Statistics Canada, Census of Canada, 1986)

By 1996 (see Figures 2.7 and 2.8), a more dramatic shift has occurred. On the graphs, the data looks slightly skewed since the cohorts are broken down further into 5-year age groups. Thus, while at first it looks as though the population has shrunk, it has actually grown a great deal. The City of Halifax has increased in population again due in part to the boom in technology and oil industries. The urban /rural fringe has exploded over the past ten years, with the population of some cohorts more than doubling. The rapid expansion of suburban development is likely the main contributor to this increase. Another drastic change is represented in the proportional drop

in college/university-aged cohorts. Again, this reflects the choice of young people to move to an urban environment for work or school, which offers more options for leisure time. From the pattern in Census Tract 132, it also appears that families are most likely to choose living outside of the city, since most of the growth that has occurred is in the age groups of 30-44 and children up to age 14, representing families. The reason for the large number of families probably relates to the fact that Census Tract 132 is a newly developing area. One of the problems associated with population expansion in this area is the fact that the residents here are outside the service boundary, and are also far from schools, hospitals, and other institutional uses. In general, families moving to the fringe will experience a lack of facilities and services.

Figure 2.7. Population distribution by age & sex for Halifax CMA, 1996 (Source: Statistics Canada, Census of Canada, 1996)



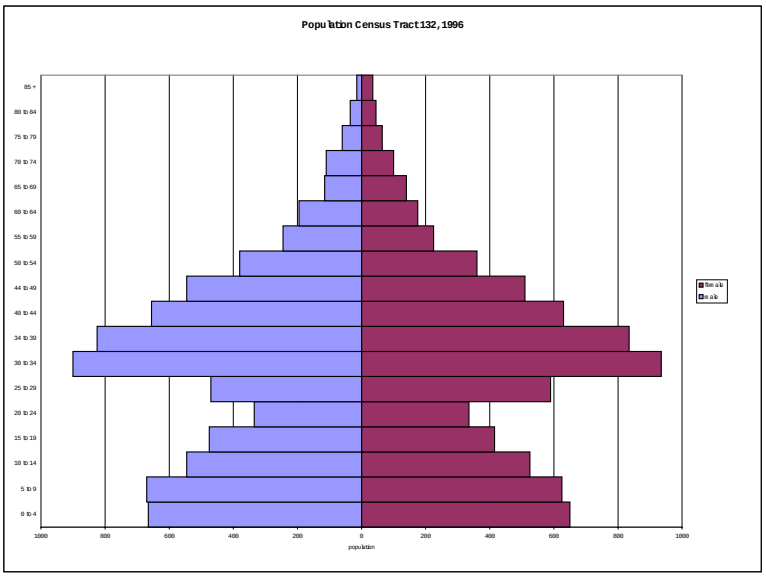


Figure 2.8. Population distribution by age & sex for Census Tract 132, 1996 (Source: Statistics Canada, Census of Canada, 1996)

2.3 Migration

Some of the population changes can be further explored by looking at migration. For the purposes of this report, a migrant is anyone who has changed residence within the last five years prior to the date of the census. Three types of migrants were examined: external migrants internal migrants and non-migrants. An external migrant is someone who has moved to the study area from outside of Canada. Halifax has welcomed only a very small number of new Canadians into its population (see Figure 2.9).

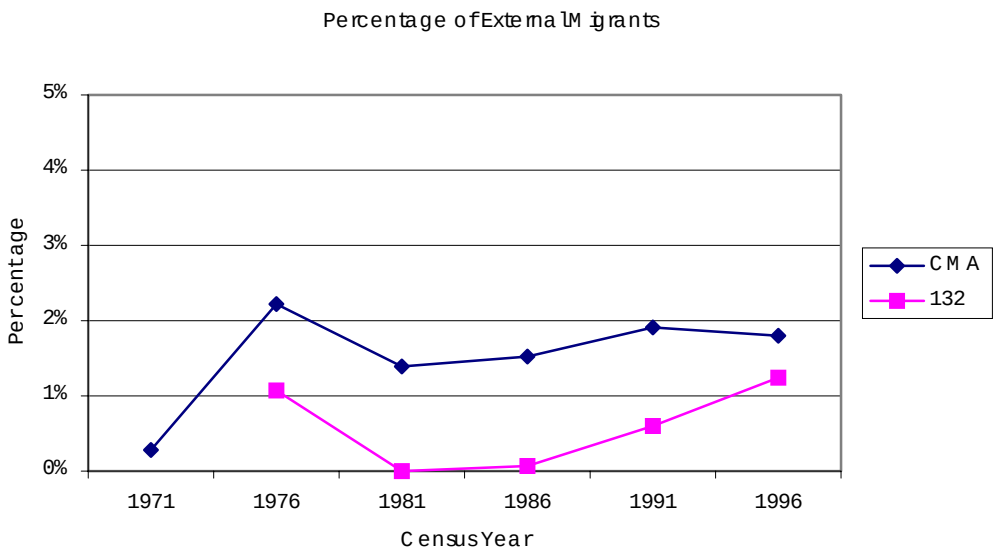


Figure 2.9. External migration by five-year intervals for Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1971[2], 1976, 1981, 1986, 1991, 1996)

Internal migration refers to the number of people who have moved into HRM from the other provinces and territories within Canada (see Figure 2.10). The most interesting trend to note here is the sudden jump of people moving into Census Tract 132 between 1987 and 1991. It is possible that people wanted to stay out of the city because of problems associated with urban centres, as well as the lower cost of living associated with the urban/rural fringe.

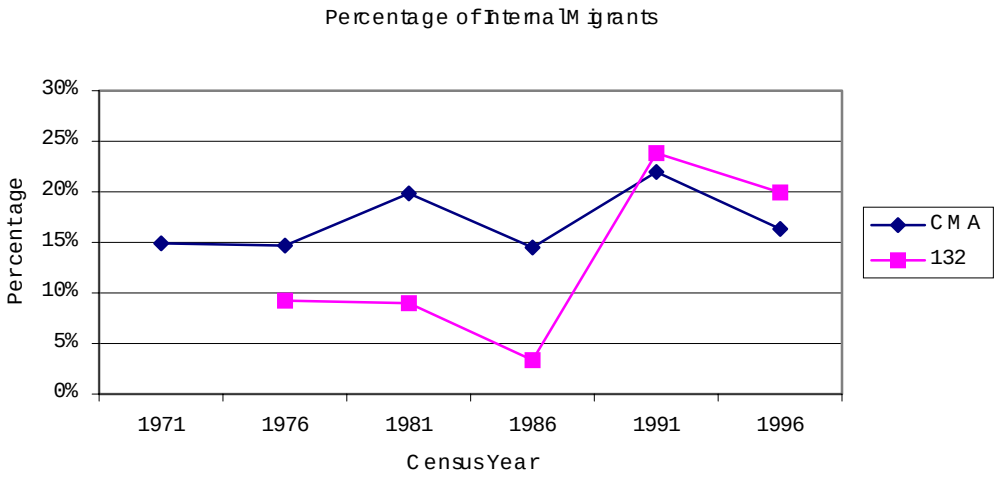


Figure 2.10. Internal migration by five-year intervals for Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1971, 1976, 1981, 1986, 1991, 1996)

[2] Note: Census Tract 132 did not exist prior to 1976, therefore no data is available for comparison in 1971.

The last migration type to discuss is the non-migrants, people who have moved within Halifax, but have not left or re-entered the area (see Figure 2.11). This might include a person who moves from downtown to Clayton Park, or even someone who moves a few streets away. In this graph, there is a marked contrast in the number of people moving between 1967 and 1971 (the time frame in which the respondents from 1971 may have changed residence), as compared to after that point. There are many reasons that such a change could have occurred during this period. For example, when social housing programs started in the 1970's, more people were able to find permanent accommodation near the urban core. Another factor may have been an abundance of rental properties with fierce price competition, causing people to relocate between apartments more frequently. The large and growing student population in Halifax would have exacerbated this. Finally, the construction of new military housing units in the early 1970's would have caused a large proportion of military families to relocate within the city. After 1976, the trend line levels off, as people continue to migrate to the suburbs and change homes. In 1996, the number of people moving within Census Tract 132 mirrors the trend in Halifax, although prior to this time, fewer people were likely to change residence outside of the city.

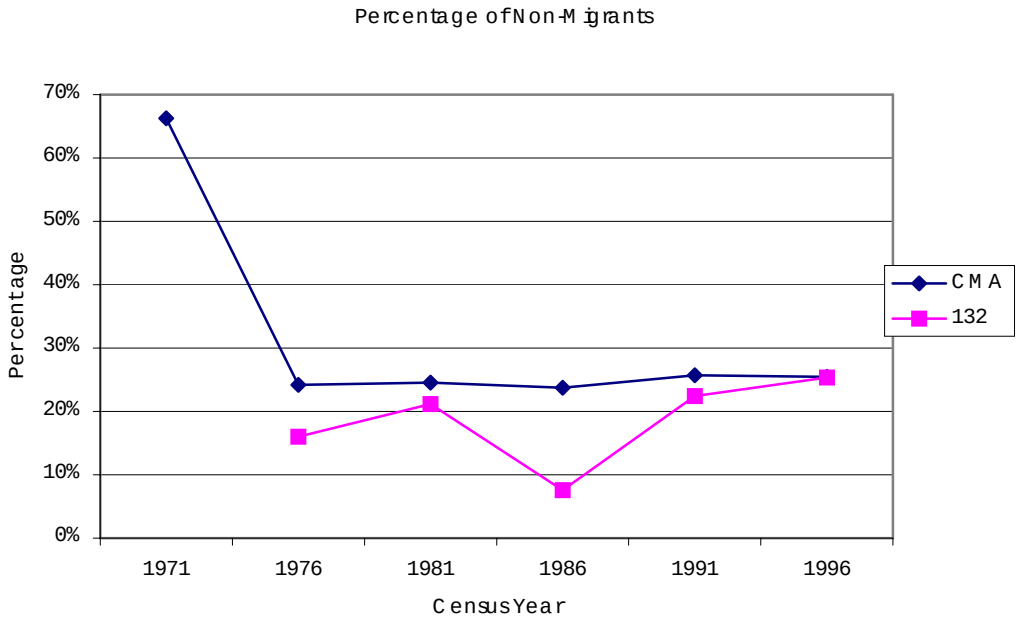


Figure 2.11. Non- migrants by five-year intervals for Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1971, 1976, 1981, 1986, 1991, 1996)

2.4 Dwelling Types

To further this analysis an examination of the distribution of dwelling unit types will be discussed. For this study, three types of dwellings were chosen: apartments, single detached

homes, and movable dwellings. These dwelling types provided the greatest contrast between the city and Census Tract 132. Starting with single detached homes (see Figure 2.12), we can see that for every year surveyed this type of home constitutes the majority of housing for the population in Census Tract 132. Halifax has a constant rate of approximately 45-55% of single detached units.

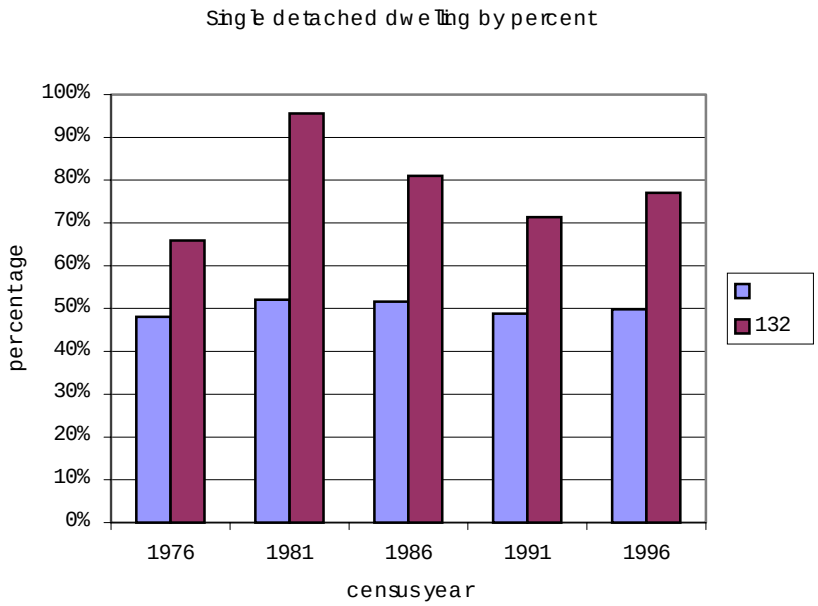


Figure 2.12. Proportion of single-detached dwellings for Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1976, 1981, 1986, 1991, 1996)

Only a very small number of people living in the Census Tract are housed in apartments. In contrast, nearly 40% of people in the urban area are living in apartments during most of the census periods.

Lastly, the number of movable dwellings in the Census Tract greatly outnumbers those in the city. The number of mobile homes has declined since the 70's, but remain an important housing type for those living outside the urban area. Movable dwellings are often found on the outskirts of a city due to restrictive urban zoning regulations, and also because of the inexpensive land available in the urban/rural fringe.

This shows us that different types of people choose to live in the urban/rural fringe than those who live in the city. The presence of numerous apartments in Halifax points to the large number of young people and students who live in the urban core. Younger people do not want to tie themselves to a piece of real estate early in life, and usually choose to rent. Homeowners on the

urban/rural fringe, by contrast, are more likely to be long-term residents. Homes are generally more affordable here than in the city, and the availability of land allows one to choose a location more easily.

2.5 Housing Quality

Housing quality is another important characteristic used to determine the character of a place. There is very little discrepancy between the two areas of evaluation in this matter (see Table 2.1). The table clearly shows that housing quality is quite good, with about one quarter of homes needing some minor repairs. Only 6% of homes in Census Tract 132 and 7% of homes in Halifax were in need of major repairs during the last census.

Table 2.1. Housing quality for Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1991, 1996)

Unit Needs	1991 CMA	1991 c132	1996 CMA	1996 c132
Regular maintenance	67.54%	71.33%	65.92%	71.52%
Minor repairs	25.38%	22.68%	27.09%	22.57%
Major repairs	7.07%	5.99%	6.99%	5.91%

2.6 Construction

Halifax County's (the urban rural fringe) share of the Halifax industrial construction values has been declining since the early 1990s (see Figure 2.13). The last year reported, 1997, the rural fringe's share was about 20% of the total monetary amount of industrial permits issued. However, between 1985 and 1990, the urban rural fringe represented about 40% of the total amount of industrial development in Halifax. The reason for this build up in the late 1980's was due to the policy pursued by many municipalities during this time. These municipalities were interested in diversifying their property tax income and were encouraging industrial and commercial uses outside of Halifax. This policy became less popular in 1996 after amalgamation of the region.

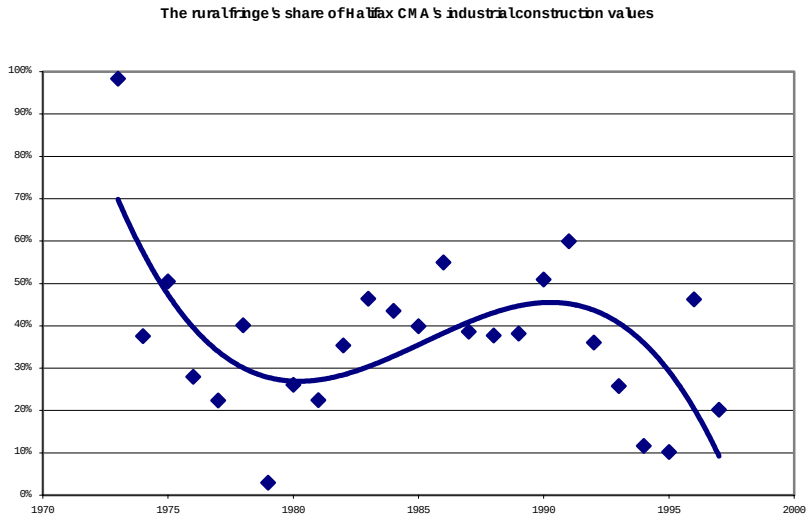


Figure 2.13. The rural fringe's share of Halifax's industrial construction values (Source: Statistics Canada, National Building Permit Survey, 1973-1997)

The rural fringe's share of Halifax's commercial construction values has remained more or less constant in the 25-year period that was studied (1973-1997, see Figure 2.14). Typically, commercial development varied between 8% and 18% of dollars spent from year to year.

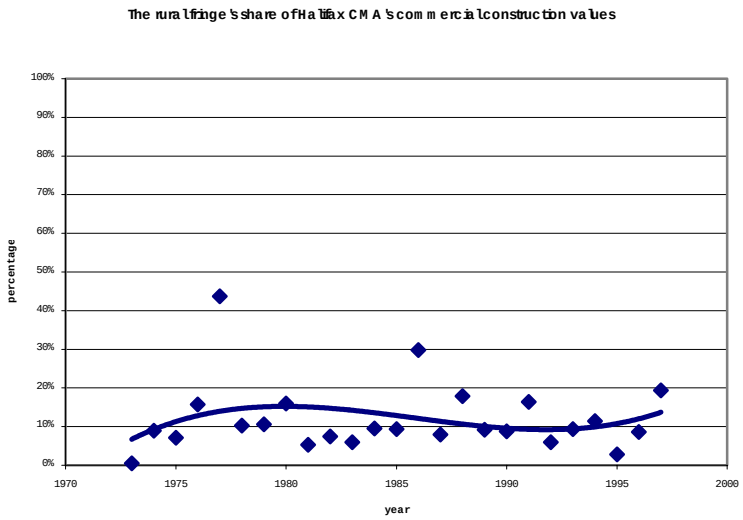


Figure 2.14. The rural fringe's share of Halifax's commercial construction values (Source: Statistics Canada, National Building Permit Survey, 1973-1997)

The rural fringe represents a large share of the residential building permits issued in Halifax for single and double dwelling units over the last 30 years (see Figure 2.15). However, its share of apartment building permits issued is relatively small (see Figure 2.16).

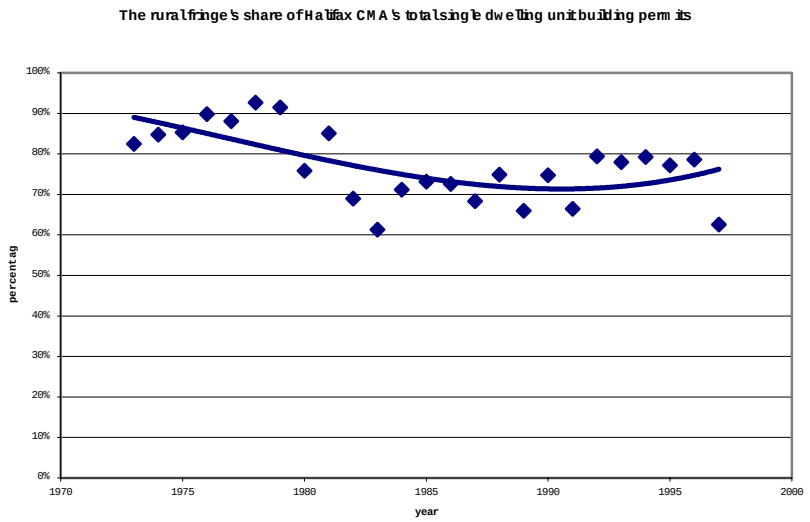


Figure 2.15. The rural fringe's share of Halifax's single dwelling unit building permits (Source: Statistics Canada, National Building Permit Survey, 1973-1997)

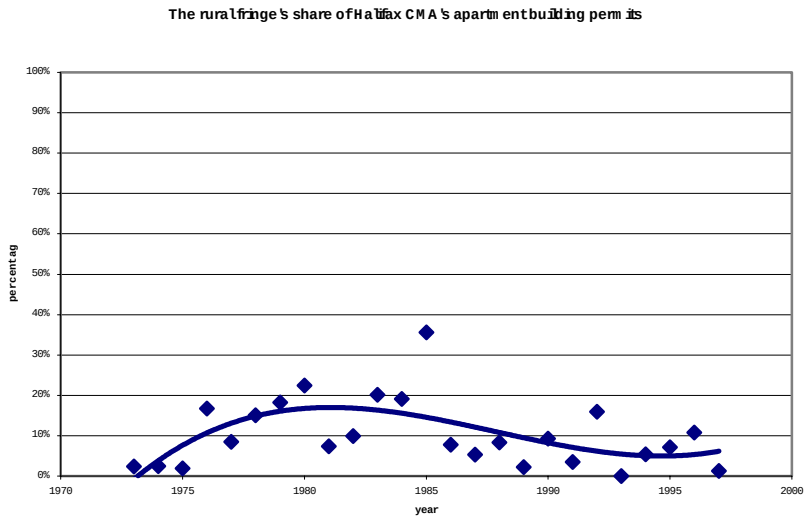


Figure 2.16. The rural fringe's share of Halifax's apartment building permits (Source: Statistics Canada, National Building Permit Survey, 1973-1997)

2.7 Income

Economic indicators are another interesting aspect of this analysis. Average income was used to clarify the situation in the region (see Figures 2.17 and 2.18). When looking at the graphs, one must be aware that the numbers are not adjusted for inflation. That means that while it appears incomes have been steadily rising for both males and females, the results are slightly exaggerated. The main observation is that incomes in Halifax have been nearly identical with those in Census Tract 132. However, in 1996 this trend changes: the income for males in Census Tract 132

surpasses that of city dwellers, and is almost identical for females. It will be interesting to see if this trend continues in 2001, as it would suggest that more affluent people are moving away from the city to the outlying areas. This trend is supported in recent high-end subdivisions appearing outside the urban core, such as Glen Arbour.

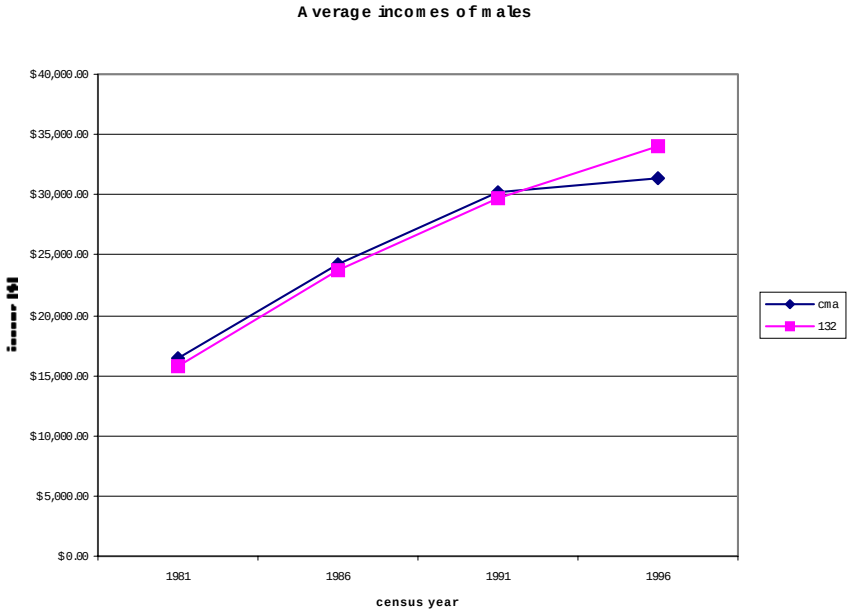


Figure 2.17. Average incomes of males in Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1981, 1986, 1991, 1996)

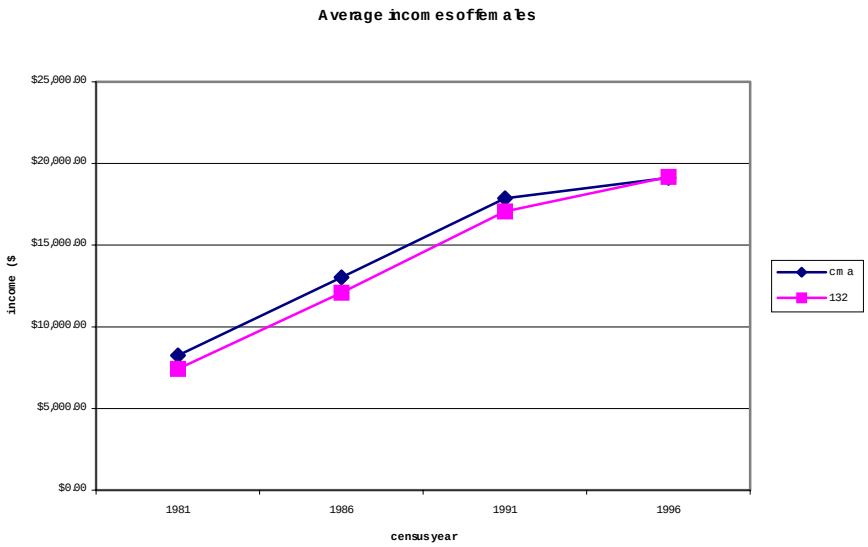


Figure 2.18. Average incomes of females in Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1981, 1986, 1991, 1996)

2.8 Education

Education levels are another economic indicator, although in a less obvious manner than income. The assumption is that people who have a higher level of education will earn more money. In general, people have a higher level of education in 1996 (see Figure 2.19) than they did in 1986 (see Figure 2.20). In Halifax, the major changes manifest themselves as slightly higher numbers of non-university post-secondary education now than in the past, and it appears as though few graduates of the universities in the area are choosing to stay in the urban core. In the Census Tract, education levels are improved with fewer high school dropouts, and more people attending some form of post-secondary institution. The most interesting trend is that the proportion of university graduates has made a significant shift towards the urban/rural fringe. More highly educated people are choosing to live on the outskirts of the city.

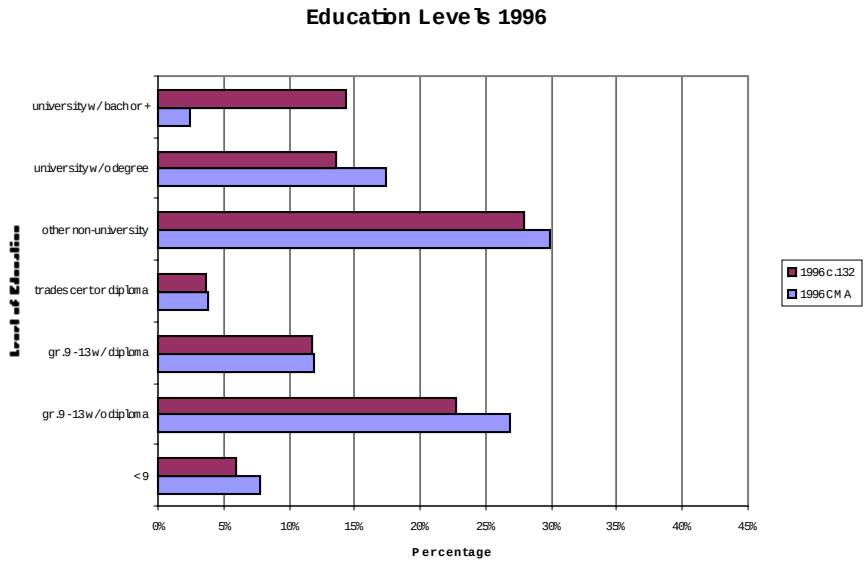


Figure 2.19. Education levels in Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1996)

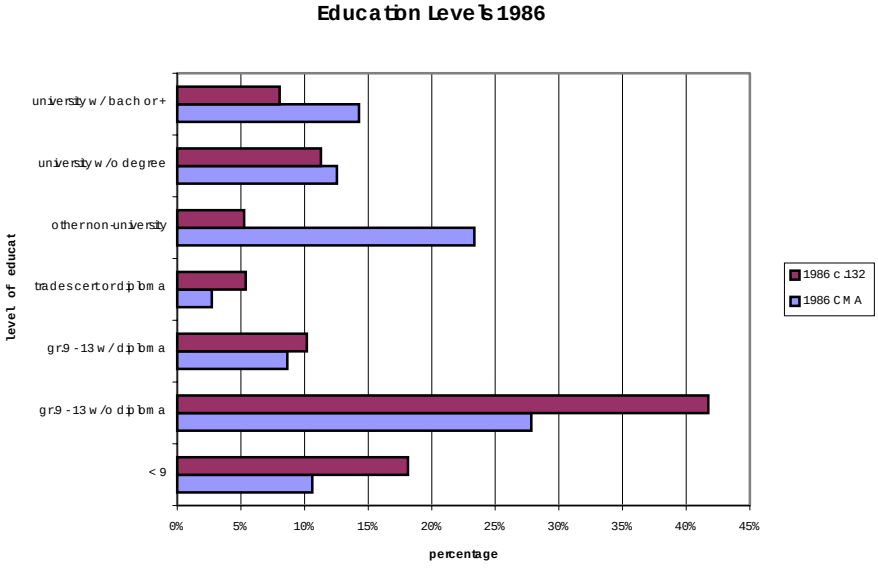


Figure 2.20. Education levels in Halifax CMA and Census Tract 132 (Source: Statistics Canada, Census of Canada, 1986)

3.0 Transportation Issues

3.1 Introduction

The automobile has a major influence on densities and the liveability of urban areas. Cities that grow in population typically consume more land to accommodate low-density residential areas. These land use patterns commonly create dependence on the use of automobiles. Such growth places additional demands on existing road networks and may require new roads to accommodate the increased traffic. This creates a vicious cycle because as more roads are developed, there is an increase in the opportunity to access more land for further development.

"Virtually all growth trends point to a future urban transportation scenario where the private automobile is used more frequently to make longer trips at lower speeds, with serious impacts on economic, social, and environmental viability of Canadian cities." (IBI Group, 1993, p. 31)

Additional automobile use leads to traffic congestion and further delays for commuters. This exacerbates environmental concerns such as increased air and noise pollution, additional road salt usage, and increased fuel consumption. Transportation and land use planning must be closely monitored and studied in order to accommodate traffic growth.

3.2 HRM Transportation Vision

The Halifax Regional Municipality (HRM) bases its transportation strategy on two primary reports: the Interim Regional Transportation Strategy (1999) and the GoPlan (1997). The reports are framed by the Transportation Association of Canada's new vision for urban transportation. The vision provides a generic framework for municipalities to establish plans that address issues associated with urban transportation. Halifax Regional Municipality espouses the same framework.

Vision for Urban Transportation in the year 2023 in greater Halifax:
A long-term urban development plan has been approved. It emphasizes multi-use town centres and high density, mixed land use along connecting corridors. Transit has funding and operating priority along those corridors.

- Short/medium term, community/neighbourhood plans have been approved. They emphasize compact, mixed land use communities based on pedestrian, cycling, and transit friendly design.

- Transit, highways, arterials, traffic control, parking, and truck routes are planned, coordinated, and consistent across the urban area.
- The percentages of trips made by walking, cycling, transit, and high-occupancy automobiles are all increasing; the percentage of trips made by single occupant automobiles is decreasing.
- The average peak hour commuter trip distance and duration is decreasing.
- An area wide parking strategy is in place and enforced.
- There are very few places which still require on-street goods transfer (loading zones).
- Persons with physical challenges enjoy universal access to public transit facilities and services.
- Roads and bridges are in a good state of repair.
- Air pollution from motor vehicle sources is declining.
- Construction and maintenance of urban transportation infrastructure and services are adequately funded from stable and sustainable revenue sources.
- Political leaders have the support of a well-informed public when making decisions on urban development and transportation systems to serve the area. (Interim Regional Transportation Strategy, 1999 pg. 3).

3.3 Road Classification

The urban street classification consists of five groups: expressways, arterials, major collectors, minor collectors, and locals. Expressways and arterials are planned to provide mobility and circulation to an area, while restricting or eliminating all direct access to land. The primary purpose of local streets is to allow access to land, while reducing through traffic and operating speeds. Minor and major collectors serve to connect services in between the above classes. Minor collectors are intended to have traffic movement at equal importance as land access. Major collectors provide traffic movement as priority. The different characteristics are shown in table 3.1.

Street classification is particularly important for new development areas to address elements of land use, traffic density and mobility, safety and land access requirements. The major roadways should be planned in advanced to ensure they can accommodate the land use. This would alleviate problems that occur when roads are serving local traffic as well as through traffic (i.e. Lucasville Rd., Hammonds Plains Rd, Kearney Lake Rd.)

Table 3.1 : Characteristics of Street Classes

Characteristic	Arterial Street	Major Collector Street	Minor Collector Street	Local Industrial	Local Street
Traffic service function	First consideration	Traffic movement primary consideration, land access secondary consideration, some parking	Traffic movement of equal importance with land access, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted
Land access function	Limited access with no parking				
Range of design traffic average daily volume	More than 20,000	12,000 to 20,000 or more	Up to 12,000	Less than 3,000	Less than 3,000
Characteristics of traffic flow	Uninterrupted flow except at signals; with pedestrian overpasses	Uninterrupted flow except at signals and crosswalks	Interrupted flow	Interrupted flow	Interrupted flow
Average speed in off-peak conditions	50-70km/h	40-60 km/h	30-50 km/h	15-30 km/h	15-30 km/h
Vehicle Type	All types	All types but trucks maybe limited	All types with truck limitations	All Types	Passenger and service vehicles, transit buses; large vehicle restrictions
Connects to	Expressways, arterials, major collectors, minor collectors	Expressways, arterials, major collectors, minor collectors, some locals	Arterials, major collectors, minor collectors, some locals	Some major collectors, minor collectors, local	Some major collectors, minor collectors, local

(Source: Interim Regional Transportation Strategy, 1999)

3.4 Existing Road Network

The primary road network in the Sandy Lake area includes Lucasville Road, Hammonds Plains Road, Kearney Lake Road, Bicentennial (102) Highway, 101 Highway, Bedford Highway (Refer to Appendix 3, Figure 1). The 100 series highways and the exits 2, 3, and 4 of Highway 102, are under provincial jurisdiction along with Hammonds Plains Road west of the Lucasville intersection. All other roads in the area are owned and maintained by Halifax Regional Municipality. The provincial highways are classified as expressways, Bedford Highway is considered a major collector, and the other roads are minor collectors. The Hammonds Plains Road currently has truck restrictions (3000 kg) to local deliveries only. This restriction is in place to prevent trucks from using the road to short cut in-between Highways 102 and 103. Restrictions of this nature are typically difficult to enforce.

Smith's Road is a local street; it is the planned access to the new beach development on Sandy Lake. The road does not have the capacity to handle traffic from new residential or industrial growth, but no major problem is expected from the beach development. The additional traffic generated from beachgoers will be seasonal and likely to occur during non-peak hours. There are concerns with the site's distance from Exit 3 interchange and the intersection with Hammonds Plains Road. This problem will be addressed with additional signage.

The study team monitored traffic in seven areas of concern during peak commuting hours. The Armdale Rotary and Bedford Highway demonstrated traffic congestion at both peak times (7:30 – 8:30 a.m. and 4:30 – 5:30 p.m.). The Bicentennial Highway was more congested in the morning period, whereas the circumferential highway interchange at Windmill Road and Akerley Boulevard experienced higher congestion in the evenings. There was no apparent traffic congestion at the Kearney Lake Road/Bedford Highway intersection or the Dartmouth Road/Bedford Highway intersection. Traffic typically becomes a problem as commuter traffic approached the Peninsula area since there are limited access points. Approximately half of the regions employment is concentrated on the peninsula and about half of those employees live outside the peninsula area (Interim Regional Transportation Strategy, 1999).

3.5 Traffic Count Data

Table 3.2: Average Annual Weekday Traffic in the Sandy Lake Area

Streets	Location	A.A.W.T. 1996	A.A.W.T. 2000	Traffic Increase	Percent Increase
Blue Mountain Road	Arbour Way & Kearney Lake Road	826	2303	1477	179%
Hammonds Plain Road	East of Lucasville Road	10353	12941	2588	25%
Hammonds Plain Road	Kingswood and Kearney Lake Road	13421	17365	3944	29%
Hammonds Plain Road	PI HI Golf Course	10898	13745	2847	26%
Hammonds Plain Road	Bluewater & Bicentennial Highway	12693	15338	2645	21%
Kearney Lake Road	Blue Mountain and Hammonds Plain	7182	9182	2000	28%
Kearney Lake Road	Blue Water and Blue Mountain	5494	8622	3128	57%
Lucasville Road	North of Hammonds Plain Road	4122	5063	941	23%

(Source; Lenord Bugbee, 2002)

Traffic volumes vary from season to season as well as day to day. To compensate for such inconsistencies, the region has determined factors that can be applied to the raw traffic counts to determine average annual weekday traffic (A.A.W.T). The table compares information from

1996 to 2000 for Blue Mountain Road, Hammonds Plains Road, Kearney Lake Road, and Lucasville Road (See Appendix: for Information for other roads). All traffic counts have increased over the four-year period, the most drastic increase occurred on Blue Mountain Rd. This can be contributed to additional residential growth in the area. The street is the only direct access for the area to get to Kearney Lake Road. There is increased usage on the Kearney Lake Road - between Blue Mountain and Bluewater Road the increase was 57 % between 1996 and 2000. This indicates that most of the additional traffic from Blue Mountain Road is travelling south on Kearney Lake Road. Hammonds Plains Road typically experienced an average increase of 25 percent with the range between 21% and 29 %. This is approximately an extra 600 vehicles per day in the area. The highest increase was between Kearney Lake and Kingswood Drive, which is attributed to the additional residential growth.

3.6 Future Road Network

The future of the road system depends on the traffic demand placed on current roadways. When the area was under provincial jurisdiction there was a road plan developed in 1975 (Refer to Appendix 3, Figure 2). The plan consisted of a four-lane highway through the Sandy Lake area. The road was planned to continue the Beaver Bank Road south of Exit 2 until connecting with Hammonds Plains Road near the golf course. The other significant proposal was to extend Smiths Road to the Old Sackville Road. This proposed plan would have improved the access to the land, therefore creating more opportunities to develop the area. This plan was no longer considered after amalgamation of HRM.

The province is planning to connect the 102 and the 103 Highways with a new highway, which will reduce traffic on Hammonds Plains Road (Refer to Appendix 3, Figure 1). This project is estimated to occur with 10 to 15 years. The new highway would allow the Hammonds Plains Road to accommodate more local traffic. There are no plans at this time to improve the current conditions of Hammonds Plains Road. The existing development adjacent to the road has limited the potential to widen it.

The possibility exists to construct an on/off ramp between Exits 3 and 4 towards the North on Highway 102 (Dave McCusker, 2002). This would create a new access point to the Sandy Lake area. The province generally requires that interchanges be situated at least 2 kilometres apart. Any interchanges have to be approved by the province and the municipality. The landowner, HRM would pay an estimated cost of 4 to 5 million dollars. The area does not currently require a

full master plan; therefore the Capital Cost Contribution Policy is not in effect. If it were, the policy would distribute the cost of the interchange to all the developers in the area.

An interchange is planned to connect West Point Drive to Highway 102 and Sackville Drive. West Point Drive is expected to run parallel to Lucasville Road. This road will be constructed as development requires. There is limited potential to expand exit 2 because of the topography of the land and the existing local roads around the interchange.

Existing development around existing roads has limited the opportunities to improve infrastructure in order to accommodate more traffic. This also restricts the possibilities for developers to access the land in the Sandy Lake area.

3.7 Transportation Demand Management Activities

Transportation demand management (TDM) is defined as any measure that reduces the demand on the road system by changing driver's choice of route, travel time, travel mode, or amount of travel. TDM involves reducing the need for road infrastructure, and promoting either alternative to reduce trip demand. These alternative modes of transport include walking, biking and transit, reducing vehicle trips with carpooling, and eliminating trips altogether by increasing opportunities to work at home. In order to reduce traffic demands it is desirable to encourage compact development.

Halifax Regional Municipality has adopted strategies that address the concern of increased automobile usage in the area. The region still has to find ways to implement policies and activities that allow citizens other transportation alternatives. There are many different methods that reduce transportation demand, but the ability to develop more compact development patterns has the highest potential to reduce traffic growth.

3.8 Alternatives

Table 3.3 below demonstrates the relationship between how several countries approach transportation modes. These modes are subject to many variables such as geology, topography, population density and infrastructure. In Canada, 74% of the population are dependent on automobiles while only 14% of the population use public transportation. Walking in Canada is low compared to many European countries; however, this may be in large part due to the variables mentioned above.

Table 3.3 Mode Split in Urban Areas

	Car	Transit	Cycling	Walking	Other
Austria	39%	13%	9%	31%	8%
Canada	74%	14%	1%	10%	1%
Denmark	42%	14%	20%	21%	3%
France	54%	12%	4%	30%	0%
Germany	52%	11%	10%	27%	0%
Netherlands	44%	8%	27%	19%	1%
Sweden	36%	11%	10%	39%	4%
Switzerland	38%	20%	10%	29%	3%
UK	62%	14%	8%	12%	4%
USA	84%	3%	1%	9%	2%

(Source: http://www.vtpi.org/tdm/tdm100.htm, Pucher and Lefevre, 1996)

Tables 3.4 and 3.5 demonstrate the current transportation uses in Halifax and the willingness of Haligonians to change their transportation modes if facilities were improved.

Table 3.4 Combined, everyday, and several times per week.

Mode	Count	% Total	Total Responses
Car	385	48.4	790
Rideshare	77	9.9	782
Transit	125	15.9	789
Ferry	41	5.3	783
Bicycle	210	26.9	783
Walk	162	20.6	789
In Line Roller Blades	8	1.0	791

(Source: http://www.region.halifax.ns.ca/traffic/Cycling/HRMES.html)

Table 3.5 Would Help Responses by type of facility improvements

Facility Improvement	Count	% Total	Total Response
Indoor Bike Parking	293	37.3	785
Secure Outdoor Parking	386	49.4	781
Showers at Work/School	308	39.2	786
Dedicated Bike Lanes	667	84.2	792
Shared Inline Skates/Bike Lanes	515	65	792
Bicycle Racks on Transit	231	29.5	782
Better Cyclist Education	317	40.4	784
Better Enforcement of Traffic Laws	386	48	784
Licensing and Testing	162	20.8	780

(Source: http://www.region.halifax.ns.ca/traffic/Cycling/HRMES.html)

Public Transit

Forty three bus routes service the Halifax Regional Municipality: this includes 12 rush hour routes (Refer to Appendix 3, Figure 3). Most of the routes connect with the peninsula. There are 18 major transit terminals within the service area, which provide connections to the Woodside Ferry Terminal and the Duke/Barrington stop. Using transit on the peninsula is convenient as so many buses operate there; however, getting to more remote places such as the outer suburbs or to

the Bayer's Lake Industrial Park often requires making several transfers. Scheduling transfers are not optimum in these areas, especially in inclement weather.

Twelve of the Metro Transit terminals provide inexpensive to free Park – and – Ride facilities. There is a planned park and ride facility at Kearney Lake Road and the Bicentennial Highway. The Cobequid terminal has recently introduced a Bike-and-Ride component as well, offering lockable bike containers on sight.

Metro Transit operates two ferries from Dartmouth destinations; one from Alderney Gate, the other from Woodside: both travel to the Halifax Water Street Ferry terminal. Metro Transit also has three routes equipped with accessible low floor buses for wheelchair access, (route 3 Manors, 7 Robie, and the 54 Montebello). Wheelchair devoted Access-a-Bus service is also available; however, it requires two week booking, limiting flexible/changed scheduling for users.

Rail

Canadian National (CN) Rail owns rail lines that run along both sides of the harbour. CN has been re-evaluating the tracks that they wish to keep that run parallel to the Bedford Basin, with an end destination of the South End Halifax VIA Rail terminal. There has been interest expressed by the HRM Transportation Department in acquiring the right of way to these tracks so that they might implement a commuter rail service (Refer to Appendix 3, Figure 4).

"Previous studies have identified potential park-and-ride stations at Beaver Bank, Cobequid, Bedford Industrial Park, Sunnyside Mall and Mill Cove (Bedford Waterfront), with pedestrian-oriented stations at Mount Saint Vincent University (old Rockingham Station), West End Mall (with bus connections at Mumford transit terminal), Dalhousie/St. Mary's Universities and the Halifax South End terminal. There may be potential for stations at the Birch Cove, Princess Lodge and Fairview (Garnet, 2002, pg 10)."

All these stations would be easily accessible and convenient with the exception of the South End terminal, which would require a bus service that would run to the downtown core and hospitals. The rail service is seen to provide predominantly peak business hour services that would be supplemented by the proximity to the Universities.

CN has stated safety concerns regarding the rail proposal as the passenger trains traveling adjacent to heavy load freight trains and require Transportation Canada safety approval. Another concern is regarding proper fencing, pedestrian crossings and public education if the system were to be implemented.

Light Rail

Another rail option is to incorporate rail and road together as is done in many European cities. There has been opposition to this concept due to the size of the city. The number of commuters required to support a transportation form such as this would have to be much greater than the transit participation rates occurring in HRM presently.

Cycling

HRM's Traffic and Transportation Department has been involved in several cycling related projects such as the Brunswick Street bike lane. There has also been another proposal drafted from Dalhousie University via Seymour Street/Vernon Street to Quinpool Road. The concept included new traffic lights triggered by cyclists is intended to direct cyclists off of Robie Street. The department has also been active in identifying roads that are commonly traveled by cyclists in order to install proper signage to notify motorists to take caution and share the road. The Bikeways Task Force is another group that involves several HRM employees and Transportation Halifax (TRAX) organizers. Sheila Fougere, chairman of the task force, was responsible for organizing last year's "Bike to Work Week". The committee is also working on a cycling oriented map of the city that would identify commonly used roads, bike shops and scenic routes.

In the winter 2000/01 'Between the Issues', an EAC publication, Susanna Fuller wrote about the trials and tribulations of cycling in the HRM. Bicycle accessible ferries, the HRM trend setting bike racks at their libraries, the bike lane on Brunswick Street, the bike lane addition to the Macdonald Bridge have all been successful accomplishments towards the campaign to promote cycling as a viable means of transportation. However, there are also obstacles such as the lack of safety training for both cyclists and motorists on how to share the road.

Car/Vanpooling

Ride sharing and carpool match up services are another focus of TRAX. There have been two main areas identified from the approximate 50 people who have shown interest in the service, Highway 102 in the Truro and East Hants area and the South Shore areas of Bridgewater and

Chester. There have also been several inquiries made from the Hammonds Plains Road area West of Bedford. They have also approached businesses regarding the opportunities they offer regarding ride sharing, public transit and cycling. They have surveyed employees regarding their travel habits and their willingness to alter them, whether the business offers carpooling parking spots, Metro Transit schedules, showers and bike racks.

Trails

There are an abundance of opportune areas for trails in and around the HRM due in part to geological history. The recession of the last ice age over 10000 years ago left lakes surrounded by rolling drumlin hill deposits and rock outcroppings that lend them nicely to scenic views (Refer to Appendix 3, Figure 4).

There have been efforts in Halifax to establish more urban trail systems. One initiative is the establishment of a linear trail system that runs parallel to the rail line cut from Jubilee Road to Robie Street south of Saint Mary's.

The Waterfront Development Corporation Ltd. (WDCL) hopes to coordinate the establishment of a linear park system proposed by the Super City and the Community Liaison Committee in Dartmouth. The trail would run from south of the Alderney Ferry terminal, past the marine slips, behind Value Village all the way up to Woodside.

3.9 Initiatives

There is an increased awareness towards implementing alternatives in transportation, both for environmental and health considerations. The HRM has committed itself to a 20% reduction of greenhouse gas emissions by the year 2007. To achieve this task HRM has introduced a Traffic Demand Management (TDM) strategy that offers traffic solutions such as

- Pedestrian and Cycling Facility Enhancements
- Ride Sharing Programs - parking management, Park-and-Ride areas and satellite parking lots
- Transit Incentives – fare subsidization and fare purchasing options
- Road Policy and Vehicle Restrictions – bus-only lanes and toll roads
- Alternative Work Hours
- Intelligent Vehicle Highway Systems

- Telecommuting
- Urban Growth Management

Members of the HRM staff also support and help organize and annual Bike to Work Week through the Bikeways Task Force. The HRM launched the Regional Plan on February 28, 2002. Part of its mandate is to address growth and transportation management. HRM's first Pedestrian/Bicycle Coordinator has also been hired; he will be addressing potential path systems, intersection and safety conflicts and help raise awareness in the city.

TRAX is also heavily involved in promoting transportation alternatives by offering services and holding awareness campaigns such as:

- Car Free Day (an annual event)
- the Bikeways Task Force
- Transportation Issues Committee (TIC)
- Critical Mass rides (a monthly event)
- the Bike Again Program
- U Pass
- Working with Dalhousie nursing students to identify health benefits of the alternatives

There have also been several studies conducted regarding transportation in the HRM including cycling/public perception in regards to safety and psychological behavior studies pertaining to traffic and signage. Another option would be to increase the awareness of developers to transit options by incorporating 'transit- friendly' design guidelines for subdivisions. This would ensure that new areas would have transit accessibility and options.

4.0 Conclusion

There are a large number of factors that affect development in the urban/rural fringe. Transportation, demographics, and economic trends are very important to consider, as are case studies. However, it is imperative that these issues are discussed in a concise manner so that development on the fringe can occur in an informed manner.

This document presents a great deal of information regarding the area of Sandy Lake. It is hoped that with careful examination of this information, a comprehensive plan that considers the holistic nature of this community can be achieved.

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Appendix 1

Demographic and Economic Data Tables

Population

Table 2.1. Population of Halifax CMA and Census Tract 132 for 1996.

	1996 CMA		1996 c.132	
	male	female	male	female
0 to 4	11175	10665	665	650
5 to 9	11670	11315	670	625
10 to 14	10985	10435	545	525
15 to 19	10265	10180	475	415
20 to 24	12095	13005	335	335
25 to 29	13265	14140	470	590
30 to 34	15885	16515	900	935
34 to 39	15150	16015	825	835
40 to 44	13085	14305	655	630
44 to 49	12175	12780	545	510
50 to 54	9160	9290	380	360
55 to 59	6690	6905	245	225
60 to 64	5800	5975	195	175
65 to 69	4610	5565	115	140
70 to 74	3800	5195	110	100
75 to 79	2615	4110	60	65
80 to 84	1465	2870	35	45
85 +	855	2500	15	35

Table 2.2. Population of Halifax CMA and Census Tract 132 for 1991.

	1991 CMA		1991 c.132	
	male	female	male	female
0 to 4	11615	11455	530	535
5 to 9	10815	10320	470	460
10 to 14	10010	9675	450	360
15 to 19	10910	10455	350	350
20 to 24	13530	14540	310	305
25 to 29	17010	17180	545	620
30 to 34	15935	16345	670	665
34 to 39	13365	14415	560	540
40 to 44	12415	12880	480	430
44 to 49	9470	9565	325	305
50 to 54	7120	7270	220	220
55 to 59	6340	6385	180	145
60 to 64	5235	5865	110	130
65 to 74	7980	10185	185	190
75 +	4215	8000	75	110

Table 2.3. Population of Halifax CMA and Census Tract 132 for 1986.

	1986 CMA		1986 c. 132	
	male	female	male	female
0 to 4	10575	10160	340	325
5 to 9	9830	9470	340	295
10 to 14	10405	9740	315	295
15 to 19	11265	10845	305	265
20 to 24	16585	16485	275	315
25 to 34	29185	30545	770	810
35 to 44	21895	22475	660	635
45 to 54	13850	13975	365	315
55 to 64	10715	11965	200	205
65 to 74	6890	9185	155	130
75 +	3415	6535	55	70

Table 2.4. Population of Halifax CMA and Census Tract 132 for 1981.

	1981 CMA		1981 c.132	
	male	female	male	female
0 to 4	10130	9625	350	275
5 to 9	10535	9980	320	325
10 to 14	11080	10575	325	310
15 to 19	13765	13060	315	310
20 to 24	14890	15760	250	265
25 to 34	26110	27640	700	740
35 to 44	17180	17210	500	440
45 to 54	13030	13195	265	225
55 to 64	10415	11590	200	185
65 to 69	3555	4475	55	55
70+	5315	8620	90	105

Table 2.5. Population of Halifax CMA and Census Tract 132 for 1976.

	1976 CMA		1976 c.132	
	male	female	male	female
0 to 4	11030	10400	355	335
5 to 9	11405	10895	325	325
10 to 14	13500	12830	350	340
15 to 19	13680	13115	280	260
20 to 24	14520	15055	230	270
25 to 34	23830	23690	660	640
35 to 44	15110	14655	360	315
45 to 54	12420	13080	235	205
55 to 64	9635	10465	170	155
65 to 69	3235	3745	55	50
70+	4400	7300	70	70

Table 2.6. Population of Halifax CMA for 1971, 1966, 1961 and 1956.

	1971 CMA		1966 CMA		1961 CMA		1956 CMA	
	male	female	male	female	male	female	male	female
0 to 4	10100	9690	11721	10973	12024	11587	10863	10367
5 to 9	11985	11340	11170	10768	10267	9799	8905	8699
10 to 14	11455	10825	9730	9525	8550	8343	6414	6405
15 to 19	10570	10760	9307	9322	7811	7604	5997	5958
20 to 24	11890	12900	9278	9414	8858	7854	8505	7704
25 to 34	16680	16110	13993	13111	14061	13324	13887	13403
35 to 44	12670	12525	12235	12541	12089	12354	11340	11393
45 to 54	11000	11610	9849	10347	8985	8943	7683	7498
55 to 64	7940	8425	6264	6668	5210	5724	4970	5179
65 to 69	2185	2865	1929	2346	1882	2176	1627	1770
70+	3525	5570	3142	4560	2695	3806	2400	3233

Migration

Table 2.7. Non-migrants, internal migrants and external migrants for Halifax CMA and Census Tract 132 (until 1976).

	1996 CMA	1996 c.132	1991 CMA	1991 c.132	1986 CMA	1986 c.132	1981 CMA
Non Migrants	84590	3670	76060	2425	70250	565	68240
Internal Mig.	54280	2885	65020	2575	42920	250	55075
External Mig.	5975	180	5640	65	4510	5	3865

1981 c.132	1976 CMA	1976 c.132	1971 CMA
1400	64835	970	147480
595	39320	560	33180
0	5955	65	615

Dwelling types

Table 2.8. Dwelling types from 1976 to 1996 in Halifax CMA and Census Tract 132.

	1976 c.132	1976 CMA	1981 c.132	1981 CMA	1986 c.132	1986 CMA
Single-detached house	1090	39335	1395	47120	1830	53615
Semi-detached house	0	0	0	0	0	0
Row house	0	0	0	0	0	0
Apt, detached duplex	75	6435	30	5085	0	0
Apt, 5 + storeys	0	0	0	11270	0	11175
Apt, <5 storeys	0	0	15	18680	0	0
Other single attached	20	7235	20	8365	0	0
Movable dwelling	460	3475	0	0	265	1840
Other					165	37205
Apartment	10	25365				

1991 c.132	1991 CMA	1996 c.132	1996 CMA
2495	57800	3645	63465
195	8300	225	9770
50	4570	65	5075
65	6010	75	6000
0	11765	0	11110
35	25720	25	27735
0	355	15	415
655	3800	680	3905

Housing quality

Table 2.9. Housing quality for 1991 and 1996.

	1991 CMA	1991 c132	1996 CMA	1996 c132
regular maintenance	67.54%	71.33%	65.92%	71.52%
minor repairs	25.38%	22.68%	27.09%	22.57%
major repairs	7.07%	5.99%	6.99%	5.91%

Construction

Table 2.10. Industrial building permit values from 1973 to 1997.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
bed													1196	262	38	
dart	10	2257	3092	397	266	1720	3904	6535	2026	992	1903	3742	2174	6967	2829	1405
hfx		2934	701	1461	174	173	3331	2104	704	2638	1681	651	1001	2103	10603	489
hfx co	583	3127	3869	721	127	1271	220	3046	790	1990	3108	3387	2903	11393	8468	1148
TOTAL	593	8318	7662	2579	567	3164	7455	11685	3520	5620	6692	7780	7274	20725	21938	3042

1989	1990	1991	1992	1993	1994	1995	1996	1997
1050	1102	503	1597	1356	237	4454	3245	
1271	1380	450	1192	866	3630	3720	353	4904
1866	2595		971	1418	2215	2016	1486	2577
2589	5278	1428	2123	1262	803	1157	4376	1891
6776	10355	2381	5883	4902	6885	11347	9460	9372

Table 2.11. Commercial building permit values from 1973 to 1997.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Bed											2362	2559
dart	951	15404	13531	5365	3327	6646	14840	25345	21266	12988	12737	33207
hfx	2541	23978	43538	15201	14409	16265	11685	9288	32089	29629	32942	68465
hfx co	16	3878	4384	3848	13757	2611	3154	6568	2961	3446	3063	10956
TOTAL	3508	43260	61453	24414	31493	25522	29679	41201	56316	46063	51104	115187

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5588	7287	4684	7257	13051	4849	2372	2385	6043	3214	728	10275	1298
35642	29391	46204	43190	57547	38794	23981	11455	18638	17324	9460	11240	18720
45901	20255	70124	39836	64817	97486	26218	27412	17383	48236	42659	37326	38057
9007	24193	10448	19658	13701	13636	10286	2631	4322	8843	1533	5518	13931
96138	81126	131460	109941	149116	154765	62857	43883	46386	77617	54380	64359	72006

Table 2.12. Single dwelling unit building permits issued from 1973 to 1997.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
bed											98	116	99	108	174	123
dart	15	185	171	103	117	72	53	62	68	221	414	261	265	259	226	141
hfx	8	57	51	49	49	30	41	97	44	45	98	92	79	126	147	84
hfx co	108	1344	1293	1335	1229	1286	1008	499	638	591	967	1159	1207	1304	1178	1037
TOTAL	131	1586	1515	1487	1395	1388	1102	658	750	857	1577	1628	1650	1797	1725	1385

1989	1990	1991	1992	1993	1994	1995	1996	1997
164	123	64	88	95	108	73	85	204
119	112	121	106	134	105	73	99	95
116	79	136	81	64	85	132	214	247
772	929	635	1061	1037	1139	940	1461	911
1171	1243	956	1336	1330	1437	1218	1859	1457

Table 2.13. Double dwelling unit building permits issued from 1973 to 1997.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
bed												6	8	76	40	94
dart	2	66	90	68	6	8		6	4	50	118	59	220	92	84	30
hfx	2	11	9	12	12	24	8	6	12	4	26	36	64	90	106	82
Hfx co	4	108	228	275	146	114	93	12	58	132	67	154	404	545	338	326
TOTAL	8	185	327	355	164	146	101	24	74	186	211	255	696	803	568	532

1989	1990	1991	1992	1993	1994	1995	1996	1997
69	32	26	29	16	56	14	8	10
14	18	4	20	22	44	56	14	32
28	24	6	28	66	66	58	30	34
250	122	118	224	232	204	128	176	54
361	196	154	301	336	370	256	228	130

Table 2.14. Apartment unit building permits issued from 1973 to 1997.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
bed													111		276	
dart	50	555	301	259	517	23	15	51	522		276	127	413	134	178	239
hfx	114	717	1221	596	2093	886	344	243	232	200	358	443	563	1063	763	498
hfx co	4	32	29	172	242	161	80	85	60	22	160	135	602	101	68	67
TOTAL	168	1304	1551	1027	2852	1070	439	379	814	222	794	705	1689	1298	1285	804

1989	1990	1991	1992	1993	1994	1995	1996	1997
148		29		8	120	72	90	73
423	769	669	99		80	64		
469	487	1012	588	202	116	369	134	314
24	128	62	130		18	39	27	5
1064	1384	1772	817	210	334	544	251	392

Income

Table 2.15. Average incomes for males and females from 1981 to 1996.

Males		1981	1986	1991	1996
cma		$16,473.00	$24,289.00	$30,203.00	$31,345.00
	132	$15,720.00	$23,763.00	$29,697.00	$34,046.00
Females		1981	1986	1991	1996
cma		$8,240.00	$13,030.00	$17,875.00	$19,120.00
	132	$7,433.00	$12,084.00	$17,068.00	$19,173.50

Table 2.16. Incomes for 1996.

	1996 CMA	1996 c.132
< $1000	13400	435
$1000 to $2999	12500	400
$3000 to $4999	10975	370
$5000 to $6999	12710	410
$7000 to $9999	17145	640
$10000 to $11999	13755	400
$12000 to $14999	17600	625
$15000 to $19999	23565	730
$20000 to $24999	22060	955
$25000 to $29999	20660	905
$30000 to $34999	17005	840
$35000 to $39999	15885	780
$40000 to $44999	12795	755
$45000 to $49999	8600	475
$50000 to $59999	11695	600
$60000 +	14510	470

Table 2.17. Incomes for 1991.

	1991 CMA	1991 c.132
< $1000	7740	245
$1000 to $2999	11645	380
$3000 to $4999	11570	385
$5000 to $6999	11840	315
$7000 to $9999	19765	440
$10000 to 14999	28105	770
$15000 to $19999	24585	875
$20000 to $24999	24585	770
$25000 to $29999	19695	590
$30000 to $39999	31765	1160
$40000 to $49999	18870	720
$50000 +	21505	530

Table 2.18. Incomes for 1986.

	1986 CMA	1986 c.132
< $1000	9480	215
$1000 to $2999	14795	370
$3000 to $4999	13930	240
$5000 to $6999	13510	250
$7000 to $9999	22005	480
$10000 to $14999	26835	550
$15000 to $19999	26130	705
$20000 to $24999	19675	440
$25000 to $29999	17330	500
$30000 to $34999	13195	340
$35000 +	26980	580

Table 2.19. Incomes for males and females, 1981.

male (1981)	1981 CMA	1981 c.132	female (1981)	1981 CMA	1981 c.132
< $2000	7035	115	< $2000	14515	340
$2000 to $3999	5885	120	$2000 to $3999	12040	185
$4000 to $5999	6940	210	$4000 to $5999	13930	210
$6000 to $9999	11620	220	$6000 to $9999	16195	285
$10000 to $14999	16455	340	$10000 to $14999	17020	410
$15000 to $19999	16940	515	$15000 +	12555	155
$20000 to $24999	13705	370			
$25000 +	17245	290			

1976 – no income data available

Table 2.20. Incomes for males and females, 1971.

male	1971 CMA (m)	female	1971 CMA (f)
< 1000	5940	< 1000	13625
1000 to 2999	9615	1000 to 2999	17480
3000 to 4999	10495	3000 to 4999	12405
5000 to 6999	13845	5000 to 6999	5550
7000 to 9999	17270	7000 to 9999	2600
10000 to 14999	8700	10000 +	1170
15000 +	4145		

1966 – no income data available

Table 2.21. Incomes for 1961.

	1961 CMA
< 1000	7783
1000 to 1999	10615
2000 to 2999	13313
3000 to 3999	13973
4000 to 5999	14328
6000 +	6105

1956 – no income data available

Table 2.22. Incomes for 1951.

	1951 CMA
< 1000	9950
1000 to 1999	18790
2000 to 2999	14082
3000 to 3999	4142
4000 +	2281

Education

Table 2.23. Education levels from 1981 to 1996.

	1996 CMA	1996 c.132	1986 CMA	1986 c.132	1981 CMA	1981 c.132
< 9	16950	640	24715	810	27445	805
gr.9 - 13 w/o diploma	58525	2435	64845	1865	64790	1625
gr.9 - 13 w/ diploma	26055	1265	20145	455	18360	470
trades cert or diploma	8420	400	6345	240	7240	200
other non-university	65240	3000	54385	235	46730	1095
university w/o degree	38090	1455	29235	505	23420	280
university w/ bach or +	5290	1545	33255	360	25890	230

1991 – no education data available

Table 2.24. Education levels for 1976.

	1976 CMA	1976 c.132
< 9	33915	1900
gr 9 - 13	57295	1645
other non-university	17475	720
university w/o degree	15935	245
university w/ bach or +	16375	110

Table 2.25. Education levels for 1971.

	1971 CMA
< 9	78845
gr 9 - 13	99275
university w/o degree	13105
university w/ bach or +	11685

1966 – no education data available

Table 2.26. Education levels for 1961.

	1961 CMA
elementary	67579
gr. 9 - 13	76477
some univ.	11902

1956 – no education data available

Table 2.27. Years of schooling for 1951.

yrs school	1951 CMA
none	3805
1 - 4 yrs	15493
5 - 8 yrs	37900
9 - 12 yrs	49346
13 yrs +	10567

All data obtained from Statistics Canada for the years 1956 –1997

Appendix 2
Transportation Maps