Municipality of the District of Lunenburg
Active Transportation Plan

Prepared for:
Municipality of the
District of Lunenburg

Prepared by:
CBCL Limited
TransActive Solutions

Project #: 101265
June 2011

CBCL LIMITED
Consulting Engineers

CBCL LIMITED
Consulting Engineers

8 June 2011

Ms. Trudy Payne, Director of Recreation
Municipality of the District of Lunenburg
PO Box 200
210 Aberdeen Road
Bridgewater, NS B3J 1S5

Dear Ms. Payne:

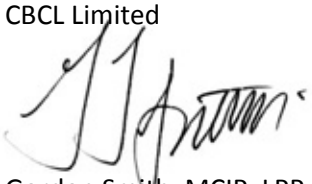
RE: Final Report – District of Lunenburg Active Transportation Plan

CBCL Limited is pleased to submit our Final Report for the District of Lunenburg Active Transportation Plan.

We have enjoyed working with you and other Municipal staff on this very interesting project. As one of the first completely rural active transportation plans in Canada, we trust that it not only meets your needs at this time, but that it also will help set direction for the development of active transportation infrastructure and programs in other jurisdictions in Nova Scotia and throughout Canada.

Yours very truly,

CBCL Limited



Gordon Smith, MCIP, LPP, CSLA
Direct: (902) 421-7241 x2488
E-Mail: gordons@cbcl.ca

1489 Hollis Street
PO Box 606
Halifax, Nova Scotia
Canada B3J 2R7

Telephone: 902 421 7241
Fax: 902 423 3938
E-mail: info@cbcl.ca
www.cbcl.ca

Solving today's problems with tomorrow in mind

ISO 9001
Registered Company

Contents

Appendices

CHAPTER 1 INTRODUCTION

1.1 Project Objective

By creating a well-connected, safe and functional Active Transportation Plan, the District of Lunenburg can encourage a more active, healthy lifestyle. Active transportation enhances quality of life, attracts business and knowledge workers to a community and contributes to economic development. Active transportation includes walking and biking, but also in-line skating, jogging, skateboarding and the use of motorized personal mobility devices such as powered wheelchairs or medical scooters.

The Active Transportation Plan for the Municipality of the District of Lunenburg provides:

- an inventory of existing active transportation infrastructure;
- mapping of proposed active transportation infrastructure improvements;
- a 20 year phased approach for implementation, identifying priorities and including cost estimates;
- an active transportation policy statement;
- proposed changes to the subdivision bylaw; and
- suggestions for funding;

The plan is based on an analysis of local conditions, a review of existing policies and by-laws, best case active transportation practices, and community consultation.

1.2 Planning Context

In the Municipality, Hebbville, Oakland, the Lunenburg Municipal Industrial Area, Princes Inlet and Area, Blockhouse, Riverport and District, and Osprey Village have Secondary Planning Strategies and Land Use By-laws, covering approximately 30% of the land in the municipality.

A number of recent municipal planning documents have clearly outlined the need for coordinated active transportation planning in the District. These plans, in conjunction with provincial and federal initiatives, have created a positive momentum and climate in which the preparation of an active transportation plan can serve as a critical building block in striving towards an overall improvement of the conditions for residents' participation in self-propelled transportation activities.

The *Municipal Planning Strategy (MPS)* adopted in 1999 and most recently amended in 2007, sets out the Council's policies for governing planning in the Municipality. Generally, the MPS addresses problems and opportunities in the development of land, as well as the environmental, social and fiscal effects of developments. Municipal Council also has a number of other policy documents outlining its approach to administrative and development issues. Currently, there is no reference or specific policy dealing with the provision of active transportation facilities or the promotion of active and healthy lifestyles of the District's residents.

The *2003 Municipal Strategic Plan* is the established mechanism used by Council and senior management to determine priorities in the Municipality. In 2009, the Municipality updated the Strategic Plan with an emphasis on community, services and planning. One of the strategic priorities that were identified in the plan, was the development of an Active Transportation Master Plan.

The 2010 Municipality of the District of Lunenburg Integrated Sustainability Plan also recommends:

- the development of an active transportation plan that covers all communities in Lunenburg District;
- A local land use / development policy framework amended to support active transportation principles that will provide opportunities for residents to live healthier lives through the use of AT infrastructure in daily trips;
- delivery on identified infrastructure priorities found within the Municipality's active transportation plan; and
- the design of new communities designed and the re-design, where possible of existing communities to provide a connected network of AT infrastructure.

The *Open Space Strategic Plan* (2002-2003) with its 2010 amendments, highlights the importance of properly designed and managed open spaces as assets to the Municipality. Public consultation found trail development in high demand. The following changes to municipal policy were recommended:

- The continued support of trail development;
- The determination of necessary changes to legislation to facilitate coastal walking trails; and
- The examination of the abandoned road network for use as walking trails.

The *Municipalities for Green Mobility* report, completed by the Ecology Action Centre TRAX program and Cities & Environment Unit at Dalhousie University in August 2009, recommends the creation of a network of safe, continuous and connected pedestrian and cycling routes that are inviting for people of all ages and abilities. It also provides recommendations on trail development and cycling route improvements in the District.

The Town of Bridgewater completed an active transportation plan in 2008. It has implemented a number of the recommendations in the report and has developed an interactive website to promote active transportation in the community (http://www.bridgewater.ca/activetransportation/).

CHAPTER 2 POTENTIAL IMPACTS AND BENEFITS

Over the last 10 years, the concept of Active Transportation has been gaining popularity because the health, social, environmental, economic and tourism benefits are so substantial. There is clear evidence of the benefits associated with designing cycling and pedestrian friendly communities and encouraging people to be more active by walking and biking more often, for both recreation and utilitarian purposes.

Promoting active transportation, especially through the development of an integrated on and off-road system that provides transportation and recreation options, is a simple and obvious strategy that can encourage people to reduce their use of the personal automobile and create sustainable, more liveable, safe and active communities.

Certain benefits of active transportation are universal across urban, suburban, and rural areas. These benefits include improved health, fitness, quality of life, and social interaction for citizens, a cleaner environment resulting from more sustainable means of transportation, and economic benefits related to new tourism opportunities and diversified transportation options to shops and services for workers and patrons. As distinct from urban and suburban areas, rural areas have particular active transportation challenges, but there are also unique opportunities on which rural areas can capitalize. The following summary review provides the Municipality of the District of Lunenburg with "lessons learned" about challenges, advantages and key components of current approaches and practices in planning for rural active transportation.

2.1 The Canadian Context

Active Transportation activities provide significant health and fitness, transportation, environmental, economic and tourism benefits. Municipalities in Nova Scotia, Canada, and throughout North America are implementing initiatives to promote and encourage active transportation activities as a preferred option to the private automobile for short-distance trips and as a method of promoting a more active and healthy lifestyle.

2.1.1 Health and Fitness

Walking and cycling, as well as skateboarding and inline skating, provide enjoyable, convenient and affordable means of exercise and recreation. Research suggests that the most effective fitness

routines are moderate in intensity, individualized, and incorporated into our daily activities. In addition, studies have shown that people who use active transportation are, on average, more physically fit, less obese and have a reduced risk of cardiovascular disease.

Current estimates place the cost of physical inactivity in Canada at $5.3 billion ($1.6 billion of direct costs and $3.7 billion in indirect costs) and the cost of obesity in Canada at $4.3 billion ($1.6 billion of direct costs and $2.7 billion of indirect costs) in health care expenditures[1]. Our health system is attempting to shift from simply protecting people from hazards in the environment to developing healthy environments in which people can live.

Increased physical activity such as walking, cycling and other active transportation related activities can help reduce the risk of coronary heart disease, premature death, high blood pressure, obesity, adult-onset diabetes, depression and various types of cancer. A more active population can in turn reduce the cost of medical care, decrease workplace absenteeism, and maintain the independence of older adults and younger children exploring potential new active transportation options. If Canadians were to become more active, there would be:

- 26% fewer deaths from type II diabetes;
- 20% fewer deaths from colon cancer; and
- 22% fewer deaths from cardiovascular disease[2].

Sedentary lifestyles have serious consequences for public health. The most visible is the sharp rise in obesity across Canada in recent years. Almost half of Canadians ages 12 and over report being physically inactive and 26% of youth between the ages of two and 17 years old are overweight or obese (Statistics Canada, 2006). In Canada, the prevalence of obesity has more than doubled in the last 20 years (Katzmarzyk & Mason, 2006). Comparatively, the proportion of overweight and obese adolescents aged 12-17 doubled from 14% to 29% between 1979 and 2004, and today only 12% of children and youth get adequate levels of physical activity.

There is strong evidence that people who commute to work using Active Transportation are more likely to be fit and less likely to be overweight or obese than those who use exclusively motorized modes. In addition, there are other health benefits to the physical fitness gains. Active Transportation can enhance one's mental outlook and well-being, improve self-image, social relationships and increase self-reliance by instilling a sense of independence and freedom. These can contribute to healthier and happier personal relationships, and improve work and school productivity.

Improving active transportation methods such as walking and cycling can help make communities more liveable by creating an environment that is pleasant and safe with reduced noise and pollution. This can encourage more social interaction within a neighbourhood and create a stronger sense of community.

[1] Canadian Fitness and Lifestyle Research Institute. 2010. *Cost of Physical Inactivity.* http://www.cflri.ca/eng/provincial_data/information/cost_inactivity.php, accessed on 31 March 2011.
[2] Ibid.

2.1.2 Transportation

Walking and cycling are means of transportation that are efficient, affordable and accessible. They are the most energy efficient, and generate no pollution. The transportation benefits of walking, cycling and other Active Transportation modes include reduced road congestion and maintenance costs, less costly infrastructure, increased road safety and decreased user costs.

In general, active transportation modes provide no emissions during use and have low lifecycle greenhouse gas emissions. In many cases, for distances up to 8 km in urban areas, cycling can be the fastest of all modes from door to door.

Canadians make an average of 2,000 trips per year of distances less than 3 km, using their automobile in more than 90% of the time. Surveys show that 66% of Canadians would like to cycle more than they presently do. Seven in 10 Canadians say they would cycle to work if there "were a dedicated lane which would take me to my workplace in less than 30 minutes at a comfortable pace" (National Active Transportation Survey, Go *for* Green, 2005). These facts clearly demonstrate the potential for increasing the number of trips by bicycle, especially in the more developed areas of the Municipality.

It has been estimated that due to rising gasoline prices, more than 10 million cars – mostly belonging to low income families – will disappear in the US in the next five years, and a similar trend is expected in Canada (CIBC World Markets, 2008). This issue will be even more relevant in rural communities, where income levels are typically lower. Providing safe options for bicycle and pedestrian travel is going to become increasingly important.

Road improvements to increase the safety of pedestrians and cyclists can and will also enhance the safety of other road users. The U.S. Federal Highway Administration reports that paved shoulders on two-lane, rural roads have been shown to reduce run-off-the-road, head-on and sideswipe collisions by 30% to 40%. In addition, many municipalities have found that paved shoulders reduce maintenance costs related to shoulder deterioration, grading and snow removal.

2.1.3 Environment

Active Transportation activities are energy-efficient, non-polluting modes of travel, whereas short-distance automobile trips are the least fuel efficient and generate the most pollution per kilometre. Reducing the number of motor vehicles on the road decreases the number of pollutants released into the atmosphere by motor vehicles. Short-distance trips have the greatest potential of being undertaken by Active Transportation.

The effects of climate change can be reduced by encouraging drivers to use other modes of transportation, especially for travel outside rush hours. Motor vehicles, roads and parking facilities are major sources of water pollution and hydrologic disruptions due to such factors as road de-icing, air pollution settlement, and roadside herbicides.

Motor vehicles generate various types of unwanted noise that cause disturbance and discomfort to residents: engine acceleration, tire/road contact, braking, horns and vehicle theft alarms. Cyclists and walkers are not disruptive to communities from a noise perspective.

Making communities less auto-dependant by providing infrastructure for Active Transportation modes, such as walking and cycling, can reduce the amount of land required to construct new communities, thus creating more compact subdivisions that make more efficient use of available land.

In order to support the inclusion of these community design elements in future development in the Municipality of the District of Lunenburg, it would be helpful if neighbouring municipalities incorporated in their planning policy an Active Transportation review for cycling and pedestrian connectivity and safety for planning applications.

2.1.4 Economic

The average cost of driving 1 km in a Dodge Grand Caravan costs the owner between $0.449 and $0.882[3]. Walking or biking 1 km costs nothing.

In 2004, Go *for* Green published what remains the principle Canadian document examining the economic benefits of Active Transportation: "The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling[4]".

This report specified that savings could be obtained by shifting mode share from driving to walking and cycling. These savings include a reduction in the following costs:

- Road construction, repair and maintenance costs, which will be reduced because of lower demand as mode share shifts to walking and cycling;
- Health costs of treatment for those affected by air pollutants and greenhouse gas emissions;
- Health care costs due to increased physical activity and reduced respiratory and cardiac disease;
- Fuel, repair and maintenance costs of personal vehicles for individuals who substitute some of their driving for walking and cycling;
- External costs due to traffic congestion;
- Parking subsidies.

Positive benefits to the community, in economic terms, will also include:

- The economic impact of bicycle tourism;
- The economic impact of bicycle sales and manufacturing;
- Increased property values along greenways and trails and in pedestrian and cycling friendly neighbourhoods; and
- Increased productivity and a reduction of sick days and injuries in the workplace.

[3] Canadian Automobile Association. 2011. *Driving Costs: Beyond the Price Tag – Understanding Your Vehicles Operating Costs.*

[4] Richard Campbell and Margaret Wittgens. 2004. *Business Case for Active Transportation: The Economic Benefits of Walking and Cycling.*

Considerable examples exist that show on and off-road trails provide significant economic benefits for both local businesses and even adjacent landowners. Benefits are provided to the local economy during both construction and operation.

Figure 2.1: Potential Benefits to Land Owners

Trail construction results in direct benefits such as jobs, including the supply and installation of materials. Following construction, benefits emerge in the form of expenditures by trail users. A few examples include[5]:

- Trails in New Brunswick employ around 1,500 people for an average of six months per year;
- 70% of Bruce Trail (Ontario) users cite the trail as the main reason for visiting the area in which they are walking. They spend an average of nearly $20/person per visit within a 10 km corridor on either side of the trail;
- Quebec's La Route Verte produced annual expenditures of $95.4 million in 2000, representing 2,000 jobs, or $15.1 million in tax revenue for the government of Quebec and $11.9 million for the government of Canada;
- In 2002, Quebec hosted no fewer than 190,000 bicycle tourists. These spent an average of $112 per day and an average of 6.5 nights during their visit. This compared to $52 per day and an average of 3.1 nights spent by other tourists;
- The Eastern Ontario Trails Alliance estimated that at the end of a ten year build-out period, 320 km of their system, constructed at a cost of $5.4 million, will generate approximately $36 million in annual economic benefits in the communities through which it passes, and create/sustain over 1,100 jobs. Their trails system in shared-use, including motorized;
- A 2009 study of Bloor Street, a commercial street in Toronto, Ontario showed that encouraging bicycling is good for business: people who had biked and walked to the area reported that they spent more money in the area per month than those who drove there. The study concluded that the addition of bike lanes would be unlikely to harm local business and predicted that commercial activity on the street would likely increase. Three-quarters of merchants surveyed on the street believed that business activity would improve or stay the same if a bike lane replaced half of the on-street parking[6].

On and off-road trails systems can have varied levels of attraction for tourists. They can be travel destinations in themselves, encouraging visitors to extend their stay in the area or enhancing business and pleasure visits. By increasing the level of tourist draw, travelers can be expected to stay longer, resulting in an additional night's lodging and meals, a major direct new benefit to local businesses. A local hotel is already taking steps to connect to the neighbouring rail-trail along the La Have River.

[5] Jennifer Dill. 2009. *Bicycling for Transportation and Health: The Role of Infrastructure.*
[6] Nancy Smith Lea. 2010. *Converting On-Street Parking to Active Transportation in Toronto: Two Studies of Merchant and Patron Preferences.*

- A 2007 survey of Canadian tourists active in the outdoors showed that more than 30% cycled on at least one occasion while on vacation.
- The Ontario Ministry of Transportation reported that touring cyclists spend an average of $130 per day in Ontario, and bicycle retail and tourist industry contributes to a minimum of $150 million a year to the Ontario economy.
- Bed and breakfast operators between Ottawa and Kingston report that the majority of their business is from touring cyclists.

Although not a Canadian example, the following statistic from the United States is worth quoting:

- Cyclists in Vermont spend an average of $180 U.S. per day, the same amount as someone traveling by car.

2.1.5 Tourism

There is a growing demand for cycling and ecotourism throughout North America, stemming from an increasing desire to explore new areas through an active mode of transportation and experience one's natural surroundings. In all cases the increase in cycling and active tourism has a direct impact on the economic standing of the City, Town, County or Region in which it is implemented.

A study done by the Victoria Transport Policy Institute shows that walking and cycling facility improvements and promotion programs have a direct impact on economic development by increasing shopping opportunities and tourism activities. More specifically, "one study estimates that rail trails in Australia provide an average of $51 to the regional economy per cycle tourist per day (Beeton, 2003)". A number of studies show a direct correlation between the implementation of well-planned, non-motorized transportation improvements and an increase in local tourism economies.

In the United States, studies have shown that trails and greenways have been able to stimulate tourism and recreation-related spending and that trail and greenway systems have become the central focus of tourist activities in some communities. In these communities, this push in active tourism can be a key means of "kick-starting" the economy.

Though tourism benefits from AT and Trail facilities prove to provide an injection into the local economy there are also a wide range of social, environmental and health benefits associated with AT and trail tourism. As people become increasingly more aware of the benefits to trail use and pedestrian and cycling activities there tends to be a continuous increase in the number of cycling tourists who will provide further benefits to their communities and the communities to which they visit.

2.2 Challenges in a Rural Area

Challenges to rural active transportation include a dispersed built form, a car-oriented culture, lack of infrastructure, programs and amenities to support active transportation, and financial limitations.

It can be a challenge to promote active transportation in rural areas where the dispersed built form and separation of land uses results in a great distance between origins and destinations like people's

homes and workplaces, schools and stores. Attitudes and awareness are also challenges in many small towns and rural communities where there can be a prevailing car-oriented culture. The costs of providing the physical infrastructure (including construction and maintenance of sidewalks and road shoulders along many km of rural roads) and programs to promote active transportation can be prohibitive in small communities and rural areas where local tax dollars cannot cover the costs. Amenities like showers and bike racks at workplaces can also be less common in rural and small communities. According to a Canadian Fitness and Lifestyle Research Institute survey (2004), residents in small Canadian communities were less likely to cite many available places to walk or bicycle, cited less recreational trails, and in general were less satisfied with local opportunities for physical activity.

2.3 Advantages & Opportunities in a Rural Area

Advantages and opportunities for rural active transportation include scenic potential, creative and alternative transportation modes, and the power of closely knit social networks in promoting AT.

The scenic potential of pleasant and interesting surroundings can be an advantage in establishing and building on rural and small town active transportation, recreational and tourist oriented trails networks. Rural areas can also become creative, with active transportation extending the traditional understanding of AT as cycling or walking, to horseback riding, canoeing, kayaking, cross-country skiing, snowshoeing, skating, dog sledding and making use of wilderness trails. Promotion of active transportation can also be easier in small communities and rural areas where word of mouth is a powerful tool, and the example of one or two prominent citizens or community groups can have a large ripple effect.

CHAPTER 3

EXISTING CONDITIONS

3.1 Community Snapshot

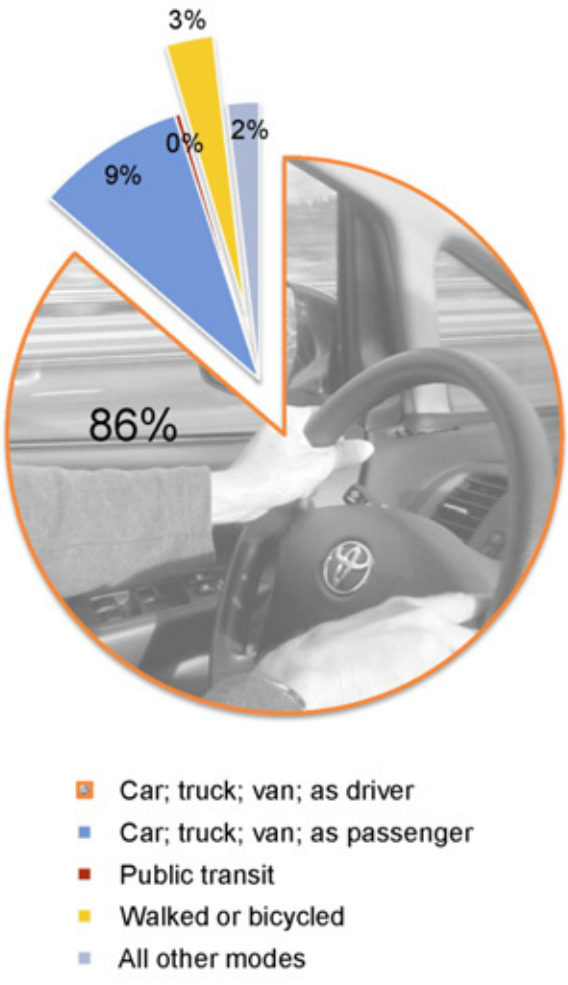
A large rural municipality located on the South Shore of Nova Scotia, the Municipality of the District of Lunenburg consists of 130 communities and surrounds the towns of Lunenburg, Mahone Bay and Bridgewater.

The municipality covers an area of 1,759 square kilometres and has a population of 25,164 (2006 Census). Based on total property assessment, the district is the third largest rural municipality in Nova Scotia. Despite a steady population decline of about 3% since 1996, the municipality is considered one of the "hot spots" for development and growth in Nova Scotia.

Similar to most municipalities across the country, the District of Lunenburg's mode share for transportation to work is dominated by the automobile (Figure 3.1). In 2006, about 95% of the total employed labour force 15 years and over, travelled to and from work in a car as either driver or passenger. Only 3% of the work force walked or bicycled to work.

Given the low population density and significant travel distances in this rural district, walking and cycling for utilitarian travel is undoubtedly considered unpractical by the wider population at this point. However, low population density alone does not necessarily explain the low

Figure 3.1: Mode of Transportation to Work, Municipality of the District of Lunenburg (2006 Census)



participation in active transportation activities, as is evident when active transportation mode shares are compared amongst the neighbouring rural districts of Chester, Annapolis, Kings and Queens (Figure 3.2).

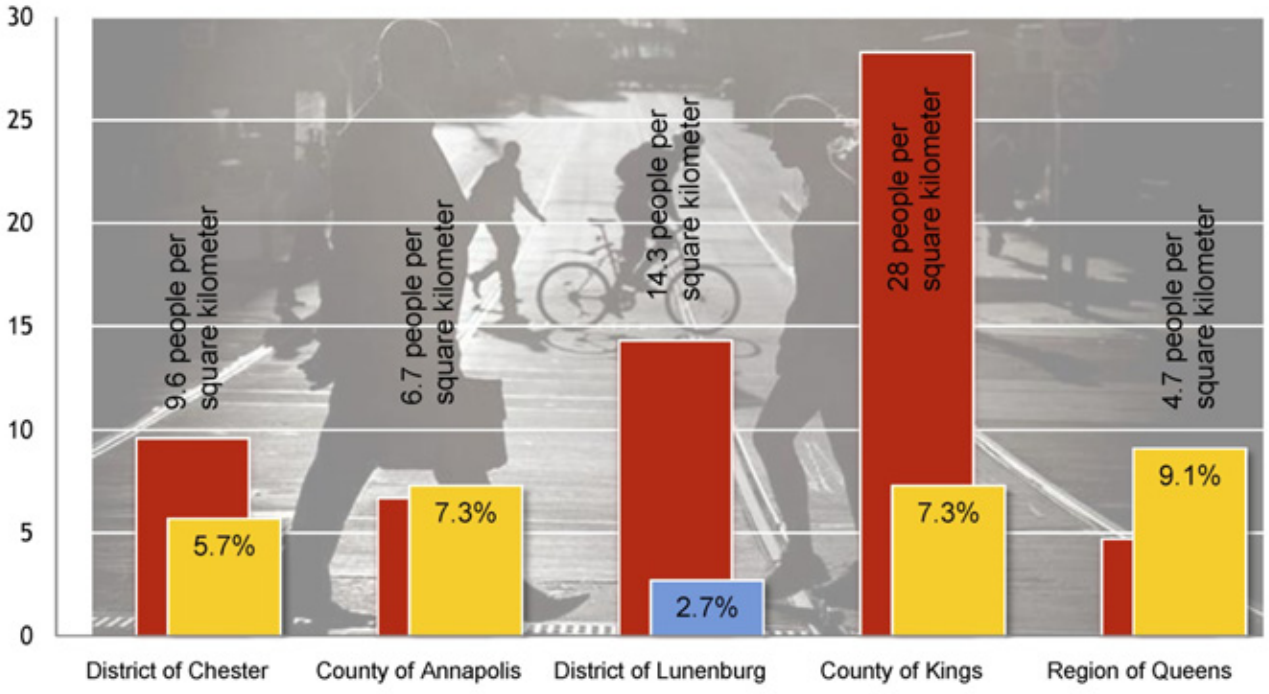


Figure 3.2: Percentage of Population Walking or Bicycling to Work (yellow and blue columns) and population densities (red columns) in District of Lunenburg and Adjacent District Municipalities (2006 Census)

The Municipality of the District of Chester, the Municipality of the County of Annapolis and the Region of Queens Municipality all have lower population densities than the District of Lunenburg, but nevertheless more than double or triple the share of the population traveling to work by bike or foot. While some of these discrepancies are likely a direct result of external factors, such as differences in population distribution and settlement patterns (i.e., compact settlements such as Liverpool or the village of Chester are included in their respective district municipalities), other factors such as the lack of active transportation infrastructure, awareness or promotion can be directly influenced by policy decisions at the municipal level.

On a more positive note, it is clearly evident that, by looking at the mode share of the towns that are surrounded by the Municipality of the District of Lunenburg (Figure 3.3), active transportation is a concept that is familiar to a significant portion of the population in the area. In addition, the extensive rails-to-trails network in the district and associated grassroots organizations seem to suggest that the District is at least at par if not above the trend seen in the rest of country, where 78% of Canadians walk for leisure or recreational activity.[7]

[7] Nova Scotia Department of Health Promotion and Protection. 2006. *Nova Scotia Pathways for People – Framework for Action.*

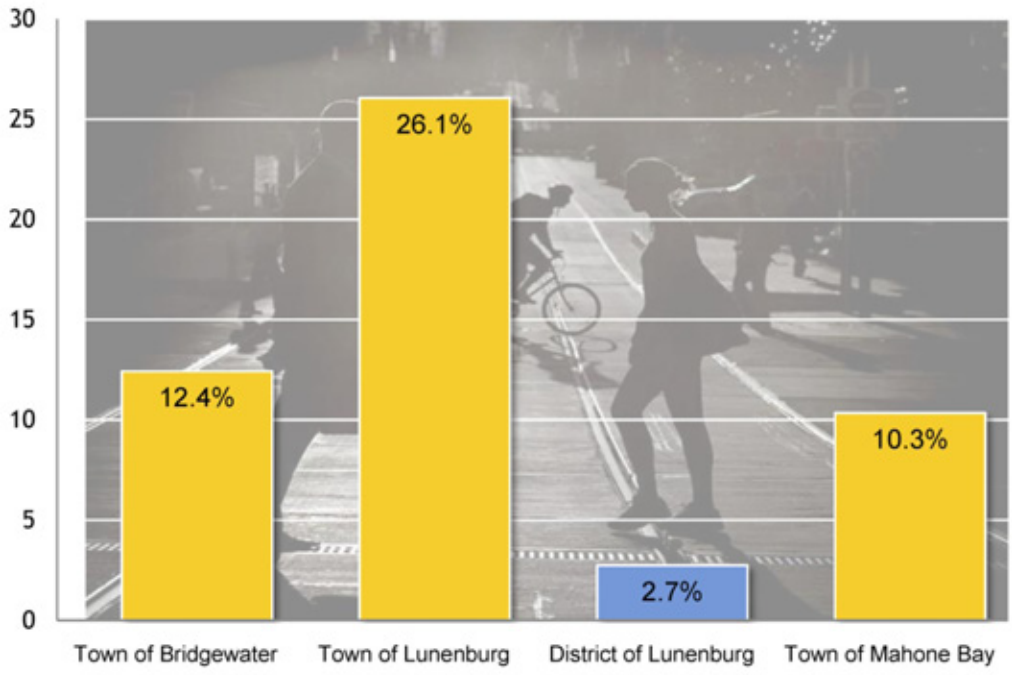


Figure 3.3: Percentage of Population Walking or Bicycling to Work in District of Lunenburg and the Towns surrounded by the District (2006 Census)

3.2 Road Network

Typically, road networks are the primary corridors that can accommodate active transportation infrastructure. Especially in areas that were settled several centuries ago, secondary roads tend to gingerly wind through the countryside, largely avoiding topographic obstacles such as steep slopes, thus making them especially suitable for walking and biking. Newer arterial or bypass roads on the other hand are often unsuitable for active transportation because of safety concerns due to higher design speeds.

The Municipality of the District of Lunenburg has about 1,600 km of roads (Figure 3.4) for which the Municipality is responsible for only 0.5 %, or 8.4 km. All of these municipal public roads are gravel-surfaced and were created by means of subdivision or transfer from private ownership. All other public roads in the Municipality are owned and maintained by the Province of Nova Scotia through the Department of Transportation and Infrastructure Renewal (NSTIR).

NSTIR does not yet have a policy in place regarding the development of active transportation infrastructure but in conversation with staff from the department, they have indicated that they are unlikely to pave any shoulders with average annual daily traffic of less than 1,000 vehicles per day.

The main artery in the District, Highway 103, runs along the southshore of Nova Scotia, connecting communities to the urban centres of Halifax and Yarmouth on either end. Bridgewater, the largest settlement in the area is the origin for a number of north-south roadways extending into the rural northern parts of the District and further connecting the District with the Annapolis Valley and the District of Queens. Further south, the Scenic Lighthouse Route runs along the Atlantic shore, connecting Mahone Bay, Lunenburg, Bridgewater, Petite Riviere and East Port Village along the way.

Figure 3.4: Road Network in District of Lunenburg

3.3 Development Pattern

Development patterns and correlating population densities are both an indicator for the suitability of new active transportation infrastructure in existing developments, as well as a means with which municipalities can increase active transportation participation by regulating active transportation friendly community design in new developments. By and large, there is a strong connection between the design and density of development and the overall physical activity of residents.

The settlement pattern in the District of Lunenburg originated in the period of European settlement in the eighteenth and nineteenth century. There are over 130 established communities, most of which are dispersed along the rural roads extending into the District from the Towns of Bridgewater, Mahone Bay and Lunenburg (Figure 3.5). Dense linear development patterns along the coastal Lighthouse Route are evidence of both the importance of access to the ocean for original settlers as well as today's popular demand for scarce waterfront properties.

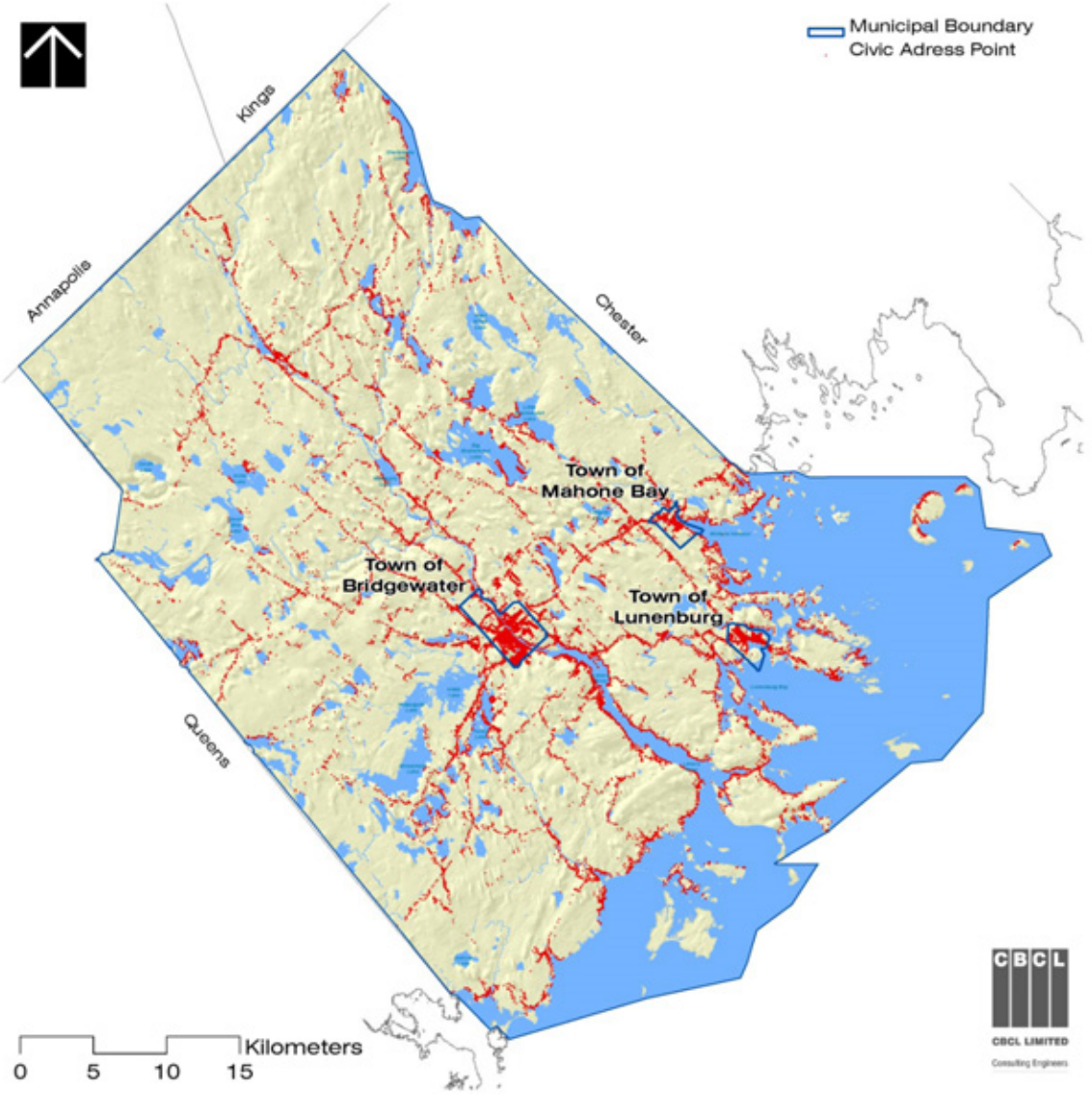


Figure 3.5: Settlement Pattern in the District of Lunenburg Represented by Distribution of Civic Address Points

The predominant built form and linear distribution of development poses a nearly insurmountable challenge to the promotion of active transportation. For most people, distances are simply too great to consider walking or biking to get to the next school, place of work or grocery shop.

A closer look at development densities, however, provides a better indication of population concentrations and associated opportunities for the implementation of active transportation infrastructure (Figure 3.6). Density is the characteristic that is typically associated most closely with active transportation. Understandably, the three towns within the municipal boundaries have the greatest development densities, some of which, however, "spill" over the towns' boundaries into the District. These denser urban edge areas not only feature dense enough patterns that make biking and walking a suitable alternative to the car, they are also in close proximity to the service centres which these three towns constitute. Furthermore, densities along the Atlantic Coast and the LaHave River, as well as in select communities throughout the countryside are notably evident.

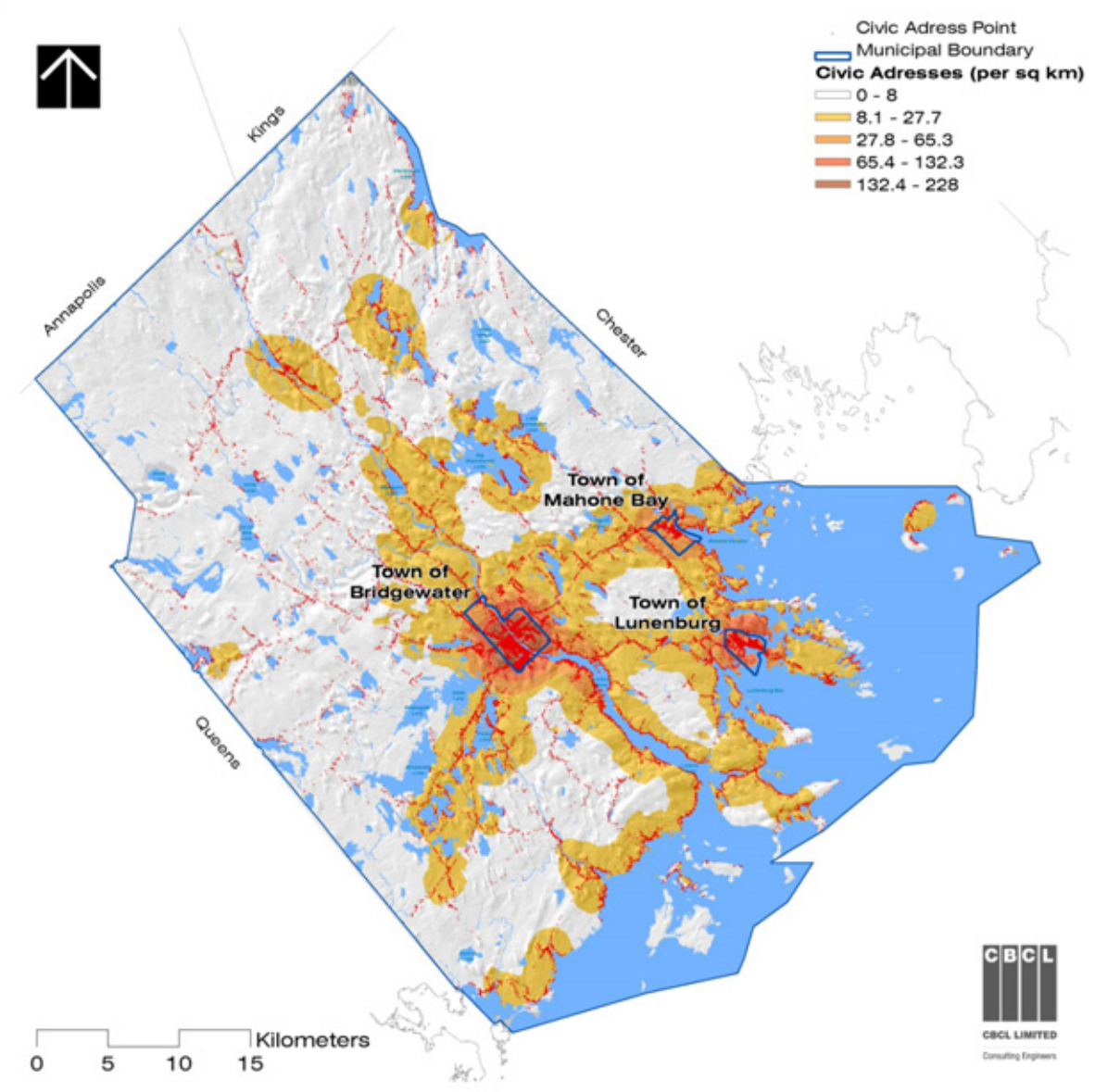


Figure 3.6: Development Densities in the District of Lunenburg

Another interesting picture emerges when the growth that has occurred in the last two decades is mapped out (Figure 3.7). The densities of building permits issued between 1990 and 2009 depict the recent growth areas in the District and give an indication where development with active transportation potential might most likely occur in the future.

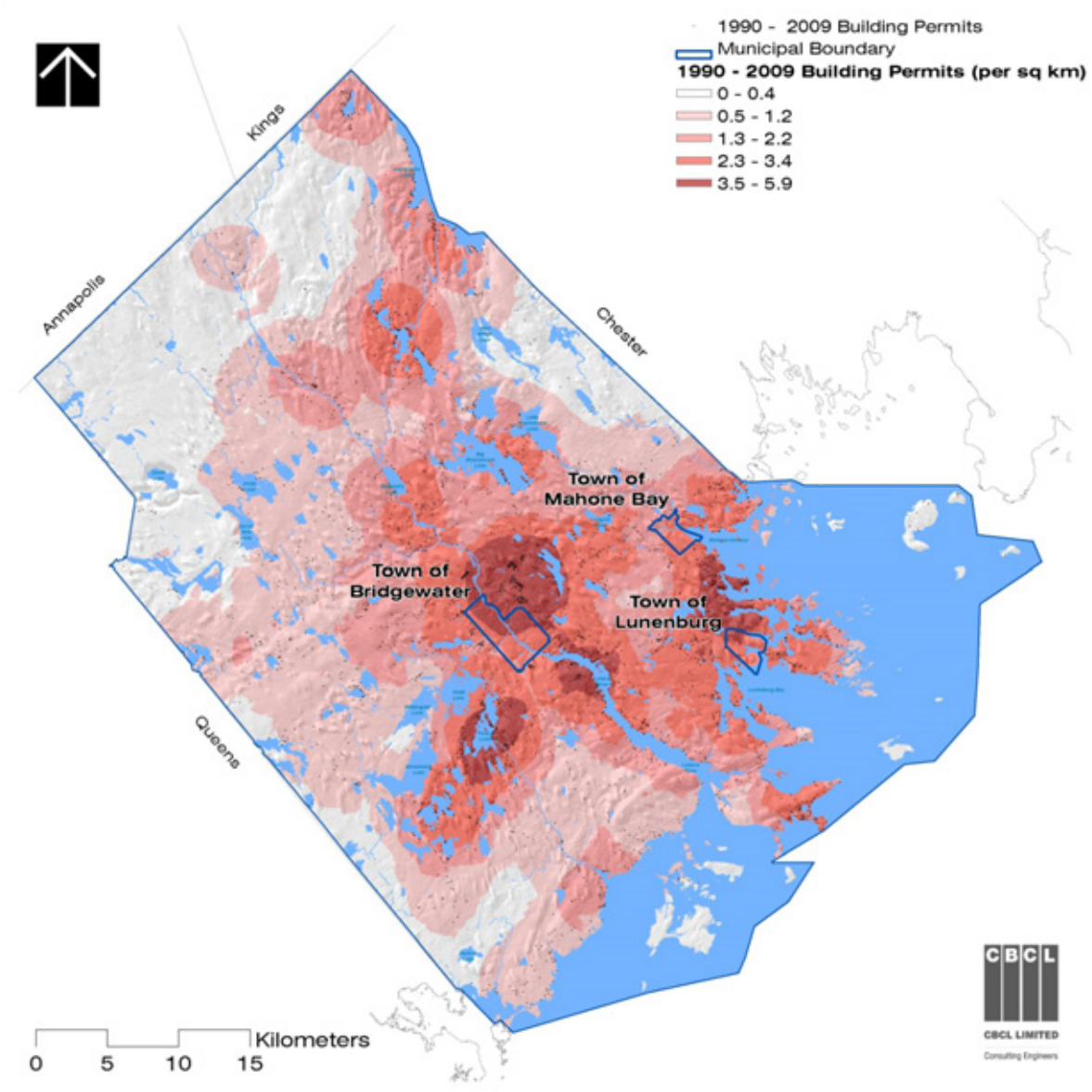
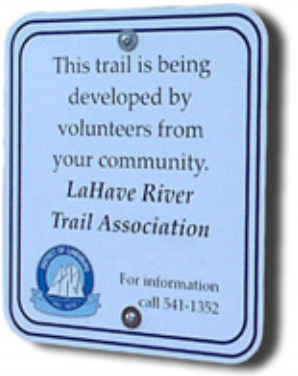


Figure 3.6: Densities of Building Permits 1990-2009 in the District of Lunenburg

The most notable growth has occurred around Pine Grove on the outskirts of Bridgewater where new housing and service developments have sprung up. The location of other development "hotspots", along the ocean shore (between the Towns of Lunenburg and Mahone Bay), along the LaHave River (Conqueralll Bank) and around lakes (Fancy Lake and Indian Lake) suggest a more seasonal nature of building occupancy.

3.4 Active Transportation System

3.4.1 Rails to Trails



There are about 125 km of rails to trails at various stages of construction within the District and in the Towns of Bridgewater, Lunenburg and Mahone Bay (Figure 3.7). These linear multi-use trails mostly provide access to pristine nature for recreational trail users and connect the District to the surrounding rural municipalities. However, in the towns and other high density areas, the trails also accommodate residents' daily active transportation needs.

Figure 3.7: Existing and Planned Rails to Trails in the District of Lunenburg

The following trails currently exist or are planned and in various stages of construction.

Adventure Trail - (partially under construction)

This 15 km trail runs between the Towns of Mahone Bay and Bridgewater and connects with the Dynamite Trail to the East and the Centennial Trail in the Town of Bridgewater to the West. Access includes hikers, bicycles, ATV's, snowmobiles, skies, and horses.

Bay to Bay Trail - (under construction)

This 10 km trail along the "Lunenburg Spur" connects the Towns of Lunenburg and Mahone Bay and links with both the Adventure Trail and the Dynamite Trail. Access includes hikers, bicycles, ATV's, snowmobiles, skies, and horses. Parking is available at access points along the trail.

Bull Run Trail

This 24 km trail connects to the Centennial Trail in the Town of Bridgewater and to the Region of Queens. This trail features a covered bridge in the community of Hebbville along with various restaurants and services along the route. Parking is available at access points along the trail. Access includes hikers, bicycles, ATV's, snowmobiles, skies, and horses.

Centennial Trail

This 8-kilometer multi-use trail suited for hiking, cycling, horseback riding and cross-country skiing. It meanders through forested areas, meadows and parks along the LaHave River and offers an opportunity to run errands as it loops around the center of the Town of Bridgewater and its many amenities.

Dynamite Trail - (under construction)

This 10 km trail runs between the Chester Connection Trail to the East and the Bay to Bay and Adventure Trails in the Town of Mahone Bay. Access includes hikers, bicycles, ATV's, snowmobiles, skies, and horses.

South Shore Annapolis Valley Trail – (under construction)

This 122 km trail travels between the Goose Chase Road in New Germany to the Town of Bridgetown in the Annapolis Valley and Caledonia in the Region of Queens. The trail sections within the District of Lunenburg are comprised of two 17 km long segments. Access includes hikers, bicycles, ATV's, snowmobiles, skies, and horses. Parking is available at various access points along the trail. The trail is groomed in the winter by the Crossburn Snowmobile Club.

Wentzell's Lake Area - LaHave River Trail - (under construction)

This trail will re-create a trail link between the Town of Bridgewater and the South Shore Annapolis Valley Trail in New Germany. Currently, there is 3 km under construction along Wentzell Lake. Parking is available at the Southwest end of the trail. When completed, access will include hikers, bicycles, ATV's, snowmobiles, skies, and horses.

Lunenburg Back Harbour Trail

Starting at the old train station in downtown Lunenburg, this 3 km linear trail is constructed on a stretch of abandoned rail bed and is maintained by the Town of Lunenburg. This is not a wilderness trail but rather a community walking trail that offers a quiet, natural corridor to enjoy. There are rest stations along the way including a number of interpretive sites.

LaHave River Trail - (planned)

This is a planned future trail connection along the LaHave River that will complete the trail started along Wenztell's Lake connecting Bridgewater and New Germany. The two planned trail sections are about 16 km long in total.

Sources: Municipality of the District of Lunenburg, Town of Bridgewater, Town of Lunenburg, GIS



Figure 3.8: Rails to Trails Examples in the District of Lunenburg

3.4.2 Sidewalks

As in much of rural and suburban Nova Scotia, streets and roads lack sidewalks or roadside paths of any kind thus discouraging pedestrian and other non-motorized travel. Sidewalks within the District of Lunenburg has only one 200 m long sidewalk located on Highway 10 near Pine Grove Road[8]. However, the Towns of Bridgewater, Lunenburg and Mahone Bay all have extensive sidewalk networks that may offer opportunities for future extensions into the District.

[8] Personal conversation with MODL planning technician.

3.4.3 Bike Paths

There are currently no designated bike paths within the District. However, despite the lack of on-road or near-road bicycling infrastructure, recreational bike users' needs can be partially accommodated along the rails to trails network. In most instances on the other hand, these trails do not traverse near local schools, shops or service centres and are therefore not suitable for daily active transportation usage.

3.4.4 Intermodal Connections

Cycling or walking is often combined with other modes of transportation in order to get to or from a destination. Intermodal connections are points throughout a network where various transportation modes connect, and where it is convenient to transfer between modes. The lack of access to intermodal transportation is a major obstacle to traveling by bicycle, whether for transportation or recreation. The dominant inter-modal connections within the District are parking lots along rails to trails where trail users access a trail. Due to the lack of public transit in the Municipality, there is currently no opportunity to consider such inter-modal features as bus-mounted bike racks. Another major barrier is the fact that Acadian Lines buses do not guarantee that bicycles arrive on the same day as a passenger.

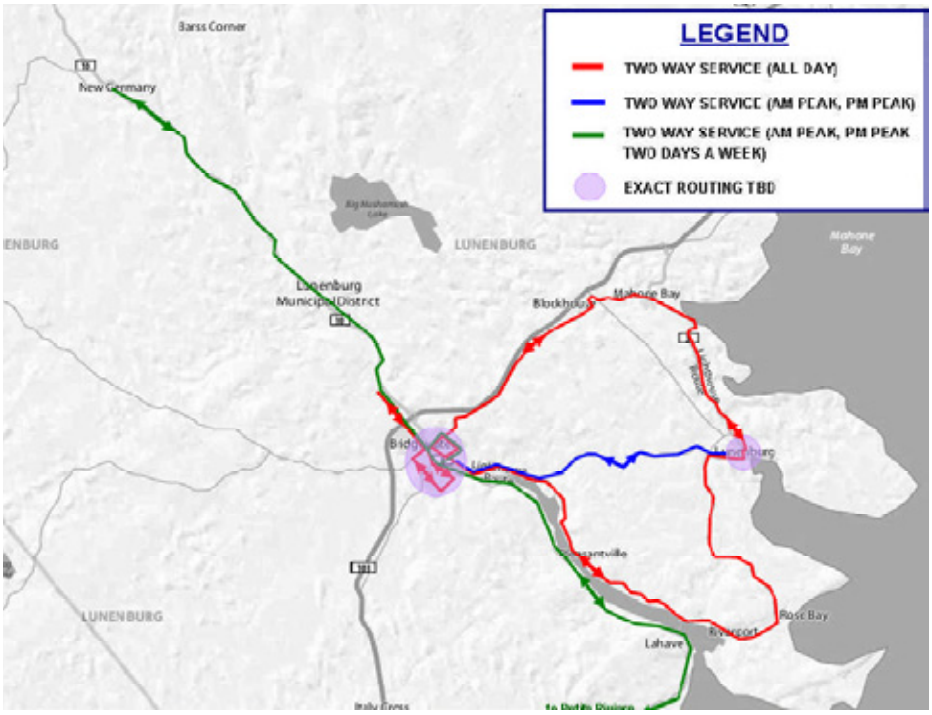


Figure 3.9: Recommended Routes and Service Model for Public Transit (Source: Public Transit Feasibility Study)

A 2009 Public Transit Feasibility Study recommends a fixed route bus system connecting communities and towns in the District. Public transit, if it becomes available, will create new

opportunities for inter-modal connections that will improve the accessibility to active transportation infrastructure.

3.5 Public Lands

Public right-of-ways are the primary lands suitable for the accommodation of active transportation infrastructure. Both their public ownership and linear character make them a logical first choice when a need for active transportation routes has been identified. Large tracts of public lands on the other hand enable the establishment of recreational loop trails as can often be seen in parks.

As depicted in Figure 3.11, the District of Lunenburg does feature significant tracts of public land, albeit to a lesser degree than in other parts of Nova Scotia, due to the high degree of private land that was originally granted by the Crown in Lunenburg County. There is currently no land in the District under protected provincial legislation and the Municipality remains one of the few rural municipalities in Nova Scotia without any protected wilderness areas status or nature reserve status lands.

The network of public road right-of-ways including former rail lines that allow for the establishment of new active transportation routes is considerable, however largely owned and maintained by the Province of Nova Scotia. Paved roads lend themselves to the inclusion of paved shoulders for walking and biking. The network of secondary gravel roads is vast, but typically not suitable for new active transportation infrastructure due to the surface material and their location in low density areas.

Figure 3.10: Example of Paved Shoulder on Rural Road

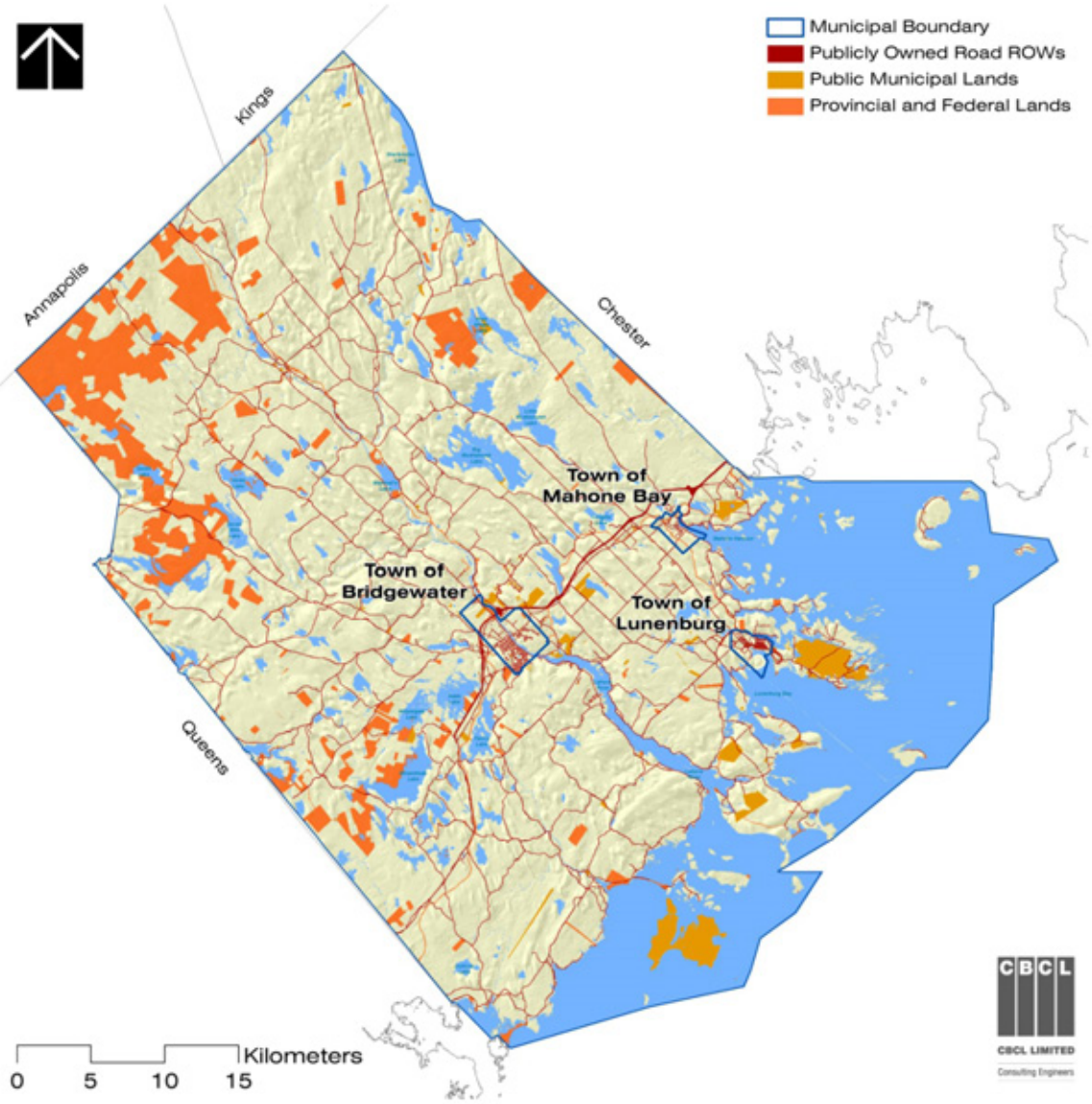


Figure 3.11: Public Lands in the District of Lunenburg

3.6 Destinations

As outlined in section 3.3, higher population densities are favourable to active transportation. This is due in large part to the fact that the existence of high density areas typically implies that daily destinations can be conveniently accessed through various modes of transportation. The likelihood of people walking to school or work is heavily influenced by travel distance to these destinations.

Active transportation for utilitarian purposes is inherently destination-oriented travel. The identification of destinations in the District that might attract frequent active transportation usage provides a good indication on where infrastructure improvements may be most effective. These destinations include key commuter and utilitarian destinations such as convenience and grocery

stores, general merchandise, businesses and offices, community schools and community institutions. For recreational travel, parks and open spaces are often chosen destinations.

Based on the available data, a selection of destinations has been mapped (Figure 3.12). In particular the location of schools is an important indicator for desired active transportation improvements, since educational institutions in rural areas are for the most part still located at the nucleus of a community surrounded by other institutional or commercial uses that constitute a critical mass of active transportation destinations.

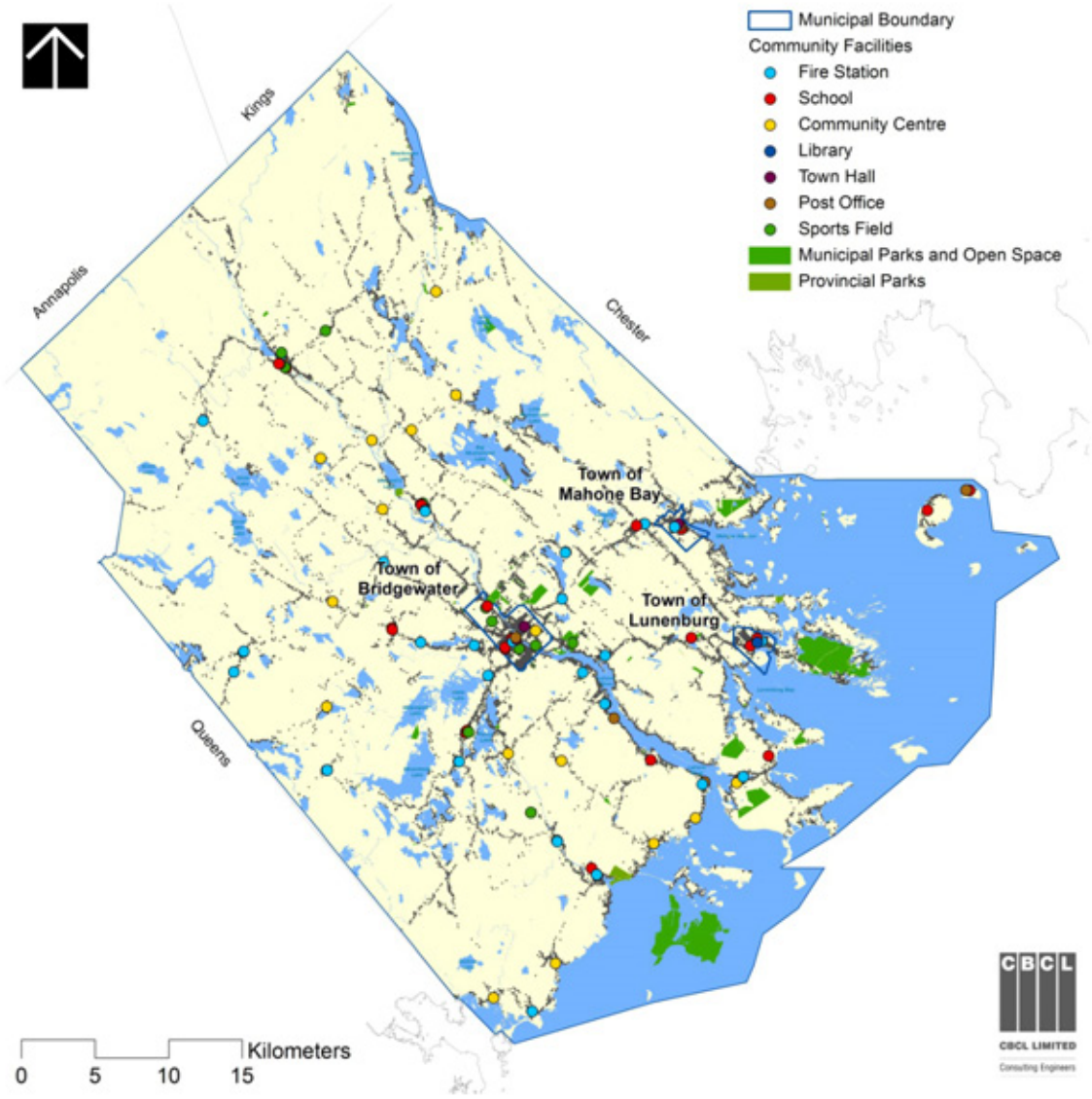


Figure 3.12: Possible Active Transportation Destinations in the District of Lunenburg

3.7 Barriers

Generally, there are both natural and man-made obstacles to walking and cycling. Among others, natural barriers include bodies of water and topographic features; man-made barriers include highways, rail lines, high traffic streets and traditional large-lot or big box developments.

The major physical barriers in the District include Highway 103 and slopes in excess of 8% (Figure 3.13). Steep slopes are predominantly evident on drumlins and along watercourses. The drumlins in the District, also known as Lunenburg Drumlins, have a south-eastern orientation and were shaped by moving glacial ice. They can reach heights of up to 25 m.

The road network in the District mostly meanders around those elevations and steep slopes and therefore largely avoids slopes that are detrimental to effortless walking or biking.

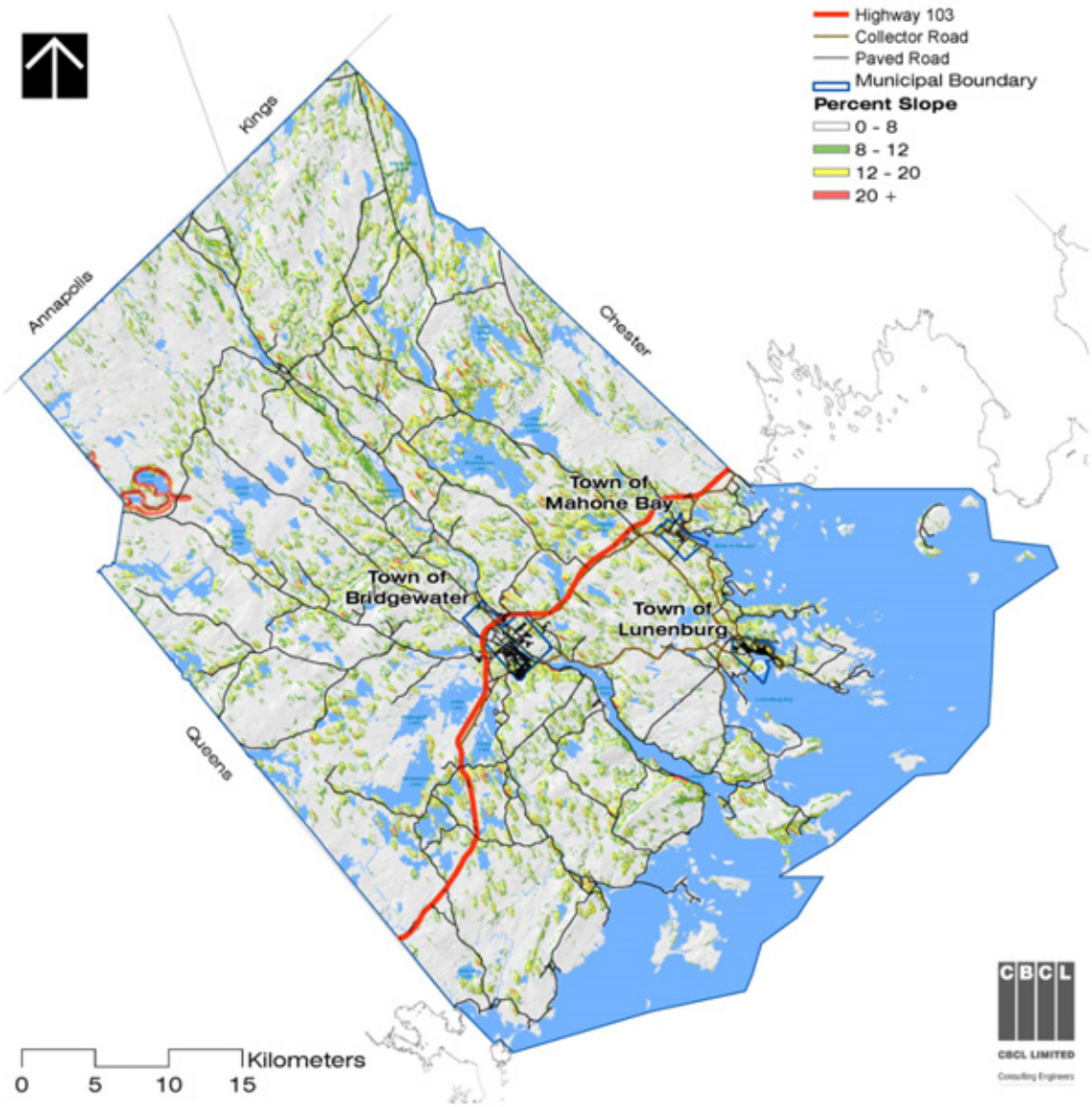


Figure 3.13: Possible Barriers to Active Transportation Destinations in the District of Lunenburg

CHAPTER 4 ACTIVE TRANSPORTATION PLANNING PRINCIPLES

4.1 Consultation

4.1.1 Public Consultation Meetings

Consultations were undertaken in Petite Riviere, New Germany and Blockhouse on 7, 8 and 9 December 2010. A total of approximately 30 people excluding councillors and employees of the District attended the meetings.

In New Germany and Blockhouse, where rails to trails facilities are nearby, people generally discussed the importance of this network for recreational and active transportation activities. There is no existing rail to trail facility close to Petitie Riviere, so people focussed more on roadway improvements and the development of new trails.

People recognized the costs associated with developing new infrastructure and supported a phased approach that would allow incremental / opportunistic improvements to occur, for example the development of a 2 m wide gravel shoulder alongside a road that can later be paved as a bike path or made into a sidewalk at some time in the future as funds become available. The development of small improvements ("$10,000 solutions") was recommended. Focussing on location-based active transportation promotion was recommended (e.g. encouraging walking to school ripples throughout the community).

The development of a "spectrum of opportunities" was recommended so that people would have as many choices as possible available. People also included water-based activities such as canoeing and sailing in their considerations. The importance of promotion / advertising and signage was recognized. Non-trail infrastructure improvements such as benches, garbage cans, and toilets were also recommended.

The need for partnerships between different orders of government, different departments of government, and non-governmental organizations was also recognized. The involvement of the Nova Scotia Department of Transportation and Infrastructure Renewal, as the owner and operator of most of the roads in the district was also recognized as a key requirement. Regular consultations

and review of their five-year plans for the District were recommended. Leverage of tourism opportunities to obtain funding was also recommended.

Given the rural nature of the District, people focussed on recreational activities as a strongly related aspect to active transportation.

4.1.2 On-Line Survey

An on-line survey was available from January 20, 2011 to February 15, 2011. There were 379 complete responses to the survey. Slightly more respondents were female (59.1%) than male (40.9%). About half of respondents were between 45 to 64 years old (see Appendix B, Tables 11 and 12).

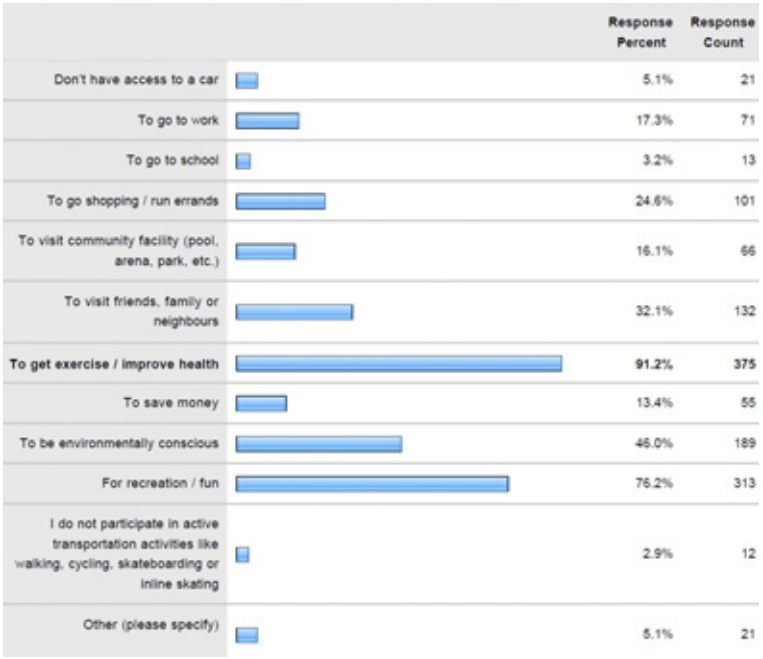
Most people (88%) walk a couple of times a week or more. About 42% of people cycle a couple of days a month or more. Very few respondents skateboard, inline skate or canoe / kayak on more than a very casual basis.

	daily	1-2 days/week	1-2 days/month	1-2 days/year	never	Response Count
Walk	**56.0% (224)**	31.5% (126)	8.0% (32)	1.5% (6)	3.0% (12)	400
Cycle	7.3% (26)	20.6% (73)	21.7% (77)	23.4% (83)	**27.0% (96)**	355
Skateboard	2.0% (6)	3.6% (11)	0.7% (2)	3.9% (12)	**89.9% (276)**	307
Inline skate	0.3% (1)	1.0% (3)	3.0% (9)	6.0% (18)	**89.7% (270)**	301
Canoeing / kayaking	1.2% (4)	8.0% (27)	22.1% (75)	**38.9% (132)**	29.8% (101)	339
Other	12.8% (21)	26.8% (44)	7.3% (12)	10.4% (17)	**42.7% (70)**	164

Walking / hiking, cycling and canoeing / kayaking were seen as the most important active transportation types that should be considered in the development of a comprehensive active transportation plan for the Municipality of the District of Lunenburg.

	Response Percent	Response Count
Walking/hiking	**92.4%**	**377**
Cycling	87.3%	356
Skateboarding	17.4%	71
Canoeing/kayaking	39.5%	161
Inline skating	5.6%	23
Other (please specify)	10.5%	43

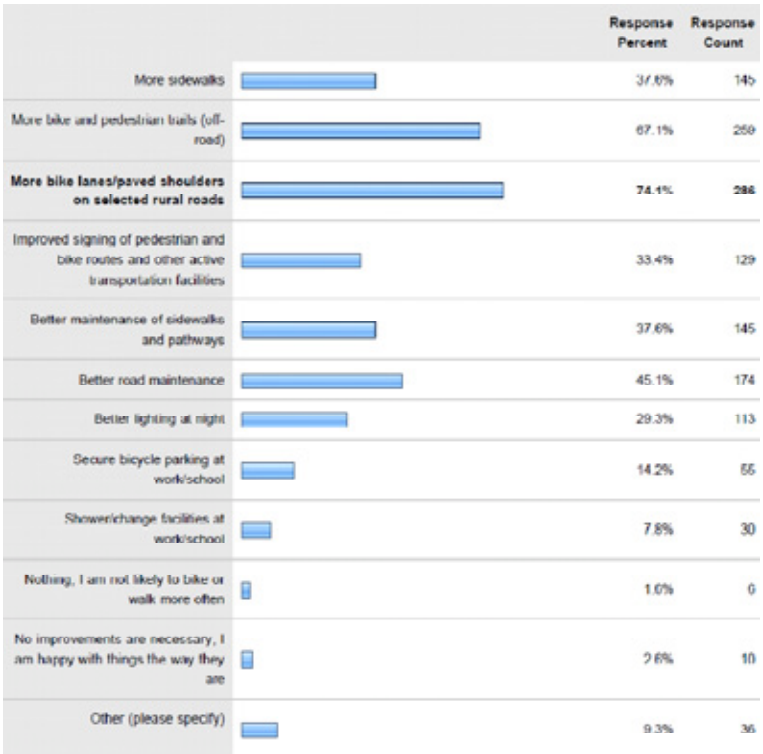
Most people engaged in active transportation to get exercise / improve health, to be environmentally conscious, or for recreation / fun.



	Response Percent	Response Count
Don't have access to a car	5.1%	21
To go to work	17.3%	71
To go to school	3.2%	13
To go shopping / run errands	24.6%	101
To visit community facility (pool, arena, park, etc.)	16.1%	66
To visit friends, family or neighbours	32.1%	132
To get exercise / improve health	**91.2%**	**375**
To save money	13.4%	55
To be environmentally conscious	46.0%	189
For recreation / fun	76.2%	313
I do not participate in active transportation activities like walking, cycling, skateboarding or inline skating	2.9%	12
Other (please specify)	5.1%	21

The most important infrastructure improvements that might encourage people to use active
Transportation are, in order of importance:

1. More bike lanes/paved shoulders on selected rural roads (this was emphasised again in the open-ended responses);
2. More bike and pedestrian trails (off road);
3. Better road maintenance;
4. Better maintenance of sidewalks and pathways; and
5. Improved signing of pedestrian and bike routes and other active transportation facilities.



	Response Percent	Response Count
More sidewalks	37.6%	146
More bike and pedestrian trails (off-road)	67.1%	259
More bike lanes/paved shoulders on selected rural roads	**74.1%**	**286**
Improved signing of pedestrian and bike routes and other active transportation facilities	33.4%	129
Better maintenance of sidewalks and pathways	37.6%	145
Better road maintenance	45.1%	174
Better lighting at night	29.3%	113
Secure bicycle parking at work/school	14.2%	55
Shower/change facilities at work/school	7.8%	30
Nothing, I am not likely to bike or walk more often	1.0%	0
No improvements are necessary, I am happy with things the way they are	2.6%	10
Other (please specify)	9.3%	36

The most important non-infrastructure related improvements that people felt could be made were:

1. Better education for motorists; and
2. Route maps for cyclists and pedestrians.

Other less important non-infrastructure improvements include:

3. Encouragement of walking clubs;
4. Encouragement of cycling clubs; and
5. Better education for cyclists and pedestrians.

People felt more comfortable using modes of active transportation on sidewalks and trails as opposed to roads.

	Completely safe and comfortable	Fairly Safe and comfortable	Fairly Unsafe and uncomfortable	Completely unsafe and uncomfortable	Unsure / not applicable, since I do not do these activities
Sidewalks	32.3% (120)	**51.9% (193)**	8.6% (32)	3.2% (12)	4.0% (15)
Trails	25.8% (96)	**55.6% (207)**	10.8% (40)	3.5% (13)	4.3% (16)
Roads	1.1% (4)	25.7% (97)	**45.8% (173)**	25.1% (95)	2.4% (9)

Everyone felt that an active transportation system was important. The main reasons that people cited for the development of an active transportation system in the District of Lunenburg were to improve quality of life and health of residents and to improve walking and cycling as transportation options.

	Response Percent	Response Count
To provide places to walk/cycle/skateboard/inline skate within communities	49.0%	187
To improve walking and cycling as transportation options	65.4%	250
To connect communities to each other	25.4%	97
To provide access to parks and natural areas	28.0%	107
To provide access to historic /cultural destinations	3.1%	12
To support tourism	22.0%	84
To provide access to community facilities	6.5%	25
To improve quality of life and health of residents	**81.9%**	**313**
I do not think an active transportation system is important	0.0%	0
Other (please specify)	3.7%	14

While most people felt that provincial funding should be used to pay for active transportation infrastructure, many people also recognized that municipal and federal funds should be used as well.

4.2 Goals and Guiding Principles

Goal 1: Improve Infrastructure

Improved active transportation infrastructure will encourage increased active transportation usage.

Guiding principles:

GP 1.1 Concentrate infrastructure improvements

Since active transportation trips are most viable at 30 minutes duration (equal to about 2.5 km of walking or 8.0 km of cycling), efforts to improve active transportation infrastructure should be concentrated in village areas where there is a concentration of population and services.

GP 1.2 Improve both on-road and off-road facilities

Infrastructure improvements should be a combination of on and off-road facilities.

GP 1.3 Accept incremental improvements

Given that much of the work to improve active transportation infrastructure involves retrofitting existing situations, the Municipality should accept that it may only be able to initially implement partial solutions, such as the installation of a crusher dust surface where ultimately a paved surface is desired or the development of only a partial or incomplete route. By eventually stringing together the pieces, the ultimate goal of developing a comprehensive solution may be achieved. In addition, the creation of partial solutions can encourage use that will develop impetus for completion.

GP 1.4 Liaise with Nova Scotia Department of Transportation and Infrastructure Renewal

The Municipality controls only 0.5% of the roads in the District, therefore, there is a need to work with the province to provide active transportation infrastructure on their roads. The Municipality should meet with Department of Transportation and Infrastructure Renewal staff at least once a year to ensure that the Department and the Municipality are aware each others' plans and can seek to build off each others' upcoming activities.

GP 1.5 Develop infrastructure standards suitable for rural environments

Some initiatives such as road shoulder improvements can be implemented at a cost significantly lower than a conventional sidewalk solution. While a paved surface is most desirable, alternatives such as well-graded and maintained crusher dust can also be acceptable in areas receiving less use.

GP 1.6 Encourage active transportation friendly built environments

There is a strong connection between the spatial distribution of the built environment and the overall physical activity of residents. New developments should be encouraged to create more walk-able and bike-able areas by considering origin and destination patterns of users and providing

suitable infrastructure connecting important locations. Existing developments should be retrofitted for active transportation usage and new developments should be designed to suit self-propelled modes of transportation. Transportation and land use should be better integrated.

GP 1.7 Provide all-year round safety

Walking and biking should be safe for all ages and abilities in all seasons. Surface repair and patching, snowplowing, clearing of ice, flood-proofing, and the filling of low spots and potholes are important maintenance considerations.

Goal 2: Create Interconnectivity

Linkages between individual active transportation networks will improve interconnectivity.

Guiding principles:

GP 2.1 Create linkages and extensions between existing and proposed active transportation infrastructure

Linkages and extensions of infrastructure connecting to existing and proposed facilities within towns in the area (Lunenburg, Bridgewater and Mahone Bay) are very important. As an example, there are situations where sidewalks / paved shoulders are within the towns end at their boundary and there are locations where extensions of these types of facilities would enable active transportation access for MODL residents to services (schools, shops, recreational facilities) within the Towns and vice versa.

GP 2.2 Build on rails to trails network as active transportation spines

The rails to trails network already provides links between villages / communities. The Municipality should continue to support the efforts of the existing trails groups to improve these multi-use trails. The existing rails to trails network can act as an inter-community spine and where possible new active transportation infrastructure should connect to this network.

GP 2.3 Link commuting with recreational and tourism routes

Active transportation improvements in the District should be closely tied to recreational and tourism activities. Given the dispersed population density and limited funds for infrastructure improvements linking these activities will provide more return on investments and will allow different sources of funding to be tapped. In addition, people will be able to use the active transportation facilities not only in their daily life running errands, but also for recreational activities.

GP 2.4 Synchronize new infrastructure with surrounding municipalities

The rails to trails network serves as a good example for inter-municipal connections beyond the borders of the District. Regional routes should always create opportunities for future connections. There is an interest within other municipal units in the area to meet regularly to compare notes on active transportation initiatives and to try to coordinate actions.

Goal 3: Encourage Activities

Programs to encourage active transportation are as important as infrastructure investments.

Guiding principles:

GP 3.1 Tap into local community knowledge and enthusiasm

Given the large geographical area and the variety of situations in the Municipality, a self-assessment questionnaire that communities could use to develop mini-active transportation plans for their particular area would be useful (see Appendix D). After completing this self assessment, community groups could approach the Municipality for assistance in implementation. This ground-up, citizen-lead approach would allow the creation of specific solutions for different areas and would assist the Municipality by creating a template for requests that would encourage communities to submit well organized and complete proposals.

GP 3.2 Promote a shift in public attitudes

Education is one of the most important components of this plan. Through publications, events and other activities, tolerance between all transportation modes should be promoted. Individuals and decision makers should be made aware of the costs and benefits of transportation and land use choices. Residents should be enabled to learn how they can reduce their transportation footprint.

GP 3.3 Raise a new generation of active transportation users

Child and youth-based activities should present active transportation as an easy transportation option for young people. Develop infrastructure in areas where there is a concentration of youth without access to an automobile to provide them with greater mobility. Develop activities that will encourage young people to view active transportation as a viable alternative to driving.

Goal 4: Raise Awareness

Raising awareness is a critical component in increasing active transportation participation levels.

Guiding principles:

GP 4.1 Improve signage

Provide adequate municipality-wide signage and identification of the active transportation network. All crossings should be provided with signs identifying the cross road and the trail name. Provide signs along routes where appropriate that indicate distances to destinations and turn offs to local services of interest to users. Provide signs at parking areas with access to trails and other active transportation infrastructure.

GP 4.2 Develop itineraries and mapping

Itineraries and maps should be widely disseminated amongst residents and visitors. Different pamphlets and maps can be created around different themes. Distribute the materials widely, especially to tourist information centres and local businesses that can benefit from having such information available, such as bike shops, B&B's, hotels, etc.

GP 4.3 Create / coordinate partnerships

New projects such as trail creation or improvements or the development of a program should be used to foster partnerships among individuals, orders and departments of government, local businesses and interest group.

GP 4.4 Sponsor local events

Use these venues as an opportunity to promote active transportation by handing out maps, pamphlets and itineraries. This can be done in conjunction with GP 4.2 and 4.3.

Goal 5: Secure Funding

A variety of funding sources will ensure the viability of this plan.

Guiding principles:

GP 5.1 Draw on momentum and uniqueness of plan

MODL will be one of the first rural municipalities in Canada to create an active transportation plan. Having the plan will make it somewhat easier to attract assistance from other groups for implementation. The Municipality should promote the uniqueness of the plan and the ability to use it as a template to attract funding from different levels and departments of government and non-governmental organizations interested in the benefits of active transportation from a health and transportation perspective.

GP 5.2 Utilize congruencies between municipal, provincial and federal initiatives

Provincial and federal governments have recognized the importance of active transportation for the health and well-being of Canadians. Municipal active transportation investments should occur in unison and should be benchmarked against initiatives from higher levels of government to improve funding opportunities.

GP 5.3 Look for correspondence with potential partners' interests

Different departments of government and different non-governmental organizations have different areas of focus like health, recreation, economic development, etc. When seeking funding for a particular piece of infrastructure or program, review potential partners and tailor the request for funding to match their particular areas of interest. Different organizations may support the same initiative for vastly different reasons.

Goal 6: Plan Implementation

Implementation will move this plan from concept to physical realization.

Guiding principles:

GP 6.1 Get the best return on investment

Concentrate efforts in areas where investment will have the biggest impact.

GP 6.2 Focus on low cost-high impact items first

There are some easily implemented and relatively low cost items such as improved signage that could have an immediate impact.

GP 6.3 Be opportunistic

While this plan provides suggestions for priorities for implementation take advantage of making improvements to existing related facilities like rails to trails. Take advantage of opportunities that come up such as the development of new subdivisions or commercial areas, the resurfacing of roads, or new funding opportunities to create infrastructure, even if it is not in the priority list. However, recognizing guiding principle 6.1, it is important to balance efforts to make sure that low-impact items are not siphoning energy and effort from higher impact items.

GP 6.4 Plan for incremental improvements

This will be a 20 year plan, so incremental improvements will be the norm. Recognizing guiding principles 1.3, accept partial improvements with the intention of achieving the full solution later, but ensure that initial improvements will not make later full development of solutions more difficult or costly.

GP 6.5 Develop Municipal Policy and improve the Subdivision Bylaw to encourage active transportation

The Municipality of the District of Lunenburg should implement the policy provided in Appendix E. The subdivision bylaw should be altered to provide for the sidewalks or paved shoulders within new subdivisions as well as connections to nearby destinations and other active transportation infrastructure (see Appendix F).

GP 6.6 Evaluate regularly

Review investments made in active transportation infrastructure and programs to determine what is working, what is failing, and the reasons for their success or failure. Determine how to build on the successes and improve on less-successful activities.

CHAPTER 5 RECOMMENDATIONS

The following recommendations lay out a plan for the ultimate development of an active transportation network and activities for the District of Lunenburg. It is in many ways a "wish list" in that it recognizes that all of these improvements are not immediately achievable, but through the establishment of priorities (see section 6.2, Table of Phasing, Responsibilities and Costings), it denotes areas where immediate actions could have a significant impact on improving active transportation conditions in the District. It is important to show the ultimate plan, to allow opportunities for improvements in lower priority areas to be recognized and exploited if and when they become available.

It is also recognized that all of the on road improvements require cooperation and investment by the Nova Scotia Department of Transportation and Infrastructure Renewal who control 99.5% of the roads in the District. While they do not yet have a policy in place regarding the development of active transportation infrastructure, the department has indicated that they are unlikely to pave any shoulders with average annual daily traffic of less than 1,000 vehicles per day. The District of Lunenburg should work with NSTIR and other municipalities in the province, perhaps through the Union of Nova Scotia Municipalities to develop an appropriate policy. Using an average annual vehicle count could inappropriately skew the criteria. Vehicular traffic in the District, especially along coastal routes such as Routes 331 and 332 along the LaHave River and Route 331 from the Lahave River Ferry to Petite Riviere, experience traffic volumes at or close to 1,000 vehicles per day in the summer, when active transportation infrastructure is most likely to be used. However, these routes and others such as the Kingsburg Road to Hirtles Beach are also candidates for improvements for other reasons, such as tourism potential and the volume of pedestrian and bicycle traffic experienced.

In addition, the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal, whereby the District could partner with the Department on obtaining funding and building the proposed improvements.

5.1 Network and Priority Areas

A suitability analysis was carried out to inform a decision on what areas in the District are conducive to active transportation. Density and distance to certain institutions were the determining variables

that factored into the analysis (for more details on the suitability criteria, see Appendix C). While the derived map (Figure 5.1) should not be used as a stand-alone tool to determine where active transportation infrastructure should be implemented, it serves as an initial indicator on possible focus areas. These indicators were further refined through field visits and consultation, the entire process of which lead to the recommendations below.

5.1.1 Regional Routes

The Rails to Trails network forms a framework for the inter-community links within the District. This network needs to be upgraded and maintained to ensure a good quality walking and wheeling surface. The development priorities for this network are to complete the link from Bridgewater to New Germany and to ensure that all trail surfaces are acceptable for cycling.

The existing Venture, Bay to Bay and Dynamite trails all meet at the Town of Mahone Bay boundary near Blockhouse. The Bay to Bay Trail enters the Town of Mahone Bay near Maders Cove. The Dynamite Trail enters the Town of Mahone Bay at the Mushamush River. All three are major interconnection points, and the Municipality of the District of Lunenburg should work with the Town of Mahone Bay to continue to assist the local trails groups to finish trails in the area and to keep them open.

The Municipality of the District of Lunenburg should continue to assist the local trail group to obtain funding and implement improvements to the Dynamite Trail up to the boundary with the District of Chester. The District of Lunenburg should meet with the District of Chester regularly to ensure maintenance of the trail in the area of the boundary is to a similar standard.

To improve safety and desirability of this formerly popular tourist route, the Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave the shoulders and make safety improvements on Route 331 from the municipal boundary with Queens County to the LaHave Ferry and Route 332 from the LaHave Ferry to Lunenburg. In the short term, enhancements to surfacing to improve usability should be made to the Bay to Bay Trail to better connect Lunenburg to Mahone Bay. Over the longer term, improvements could be considered to Princess Inlet Drive, Herman Island Road, Maders Cove Road, and Main Street (Trunk 3) to create a more picturesque coastal route that would also pass by more residences.

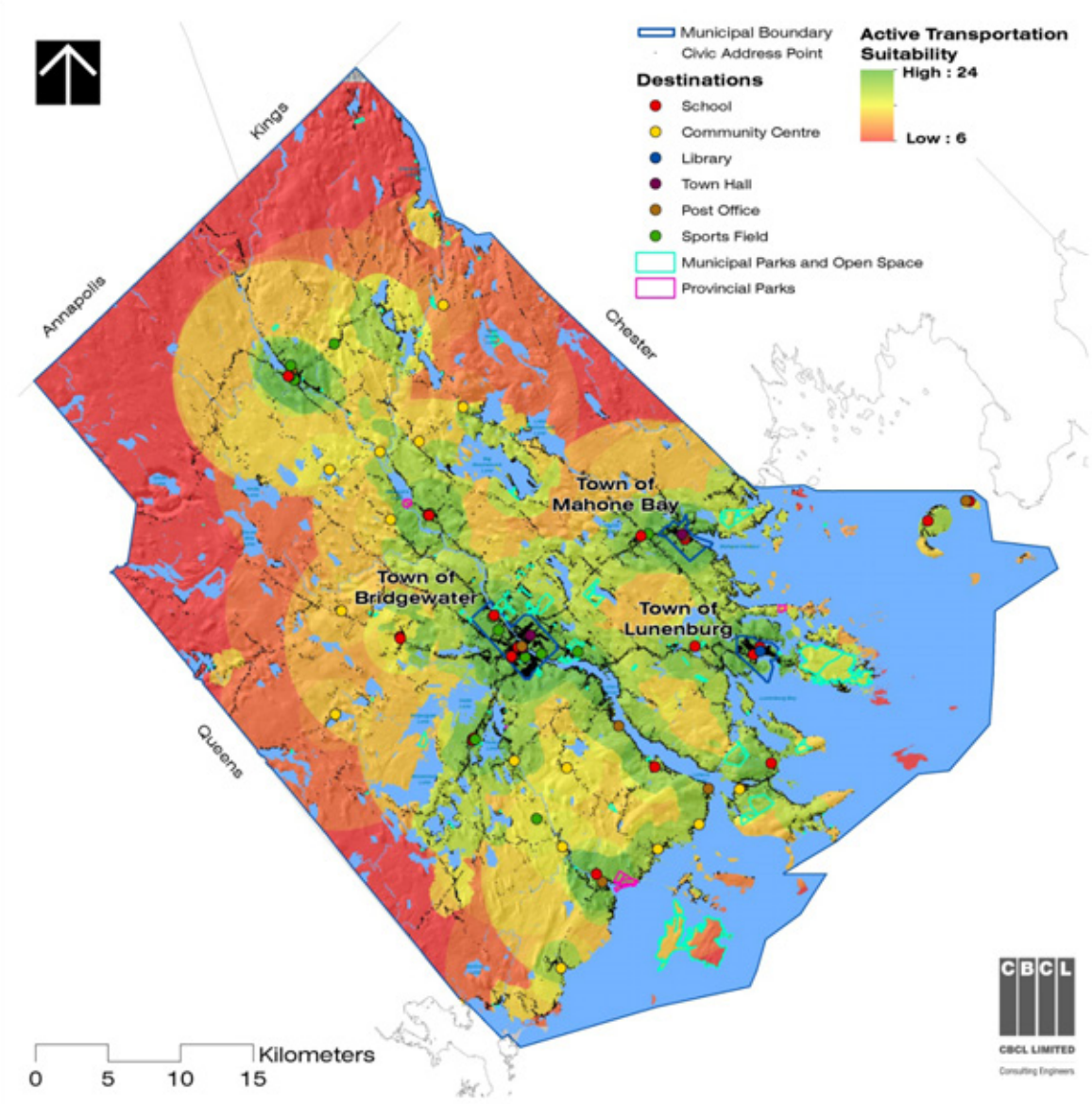


Figure 5.1: Active Transportation Suitability Analysis

Figure 5.2: Overview of Proposed Regional and Local Routes

5.1.2 Local Routes

The following local routes create important active transportation connections in priority areas.

New Germany Improvements

Provide sidewalk and trail improvements as per Figure 5.3. This will improve conditions for students and staff to use active transportation options to and from school and will make it easier for people to access commercial establishments in town via foot, bicycle, or other means of active transportation. In addition to the trail paralleling Route 10, a sidewalk should be developed on the south side of Route 10 to enable easy pedestrian access to the commercial development on that side of the road. The Municipality will need to work with the Nova Scotia Department of Transportation and Infrastructure Renewal to make the suggested on-road improvements.

Figure 5.3: New Germany Improvements

Chelsea Improvements

There is a density of cottage and longer term residential development in the area that could make investments in active transportation worthwhile. The Municipality should work with local citizens and seasonal residents to encourage cycling and walking along back roads.

Wileville / Newcombville Connector

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave the shoulders along Route 325 from Bridgewater Town line to Newcombville School. This will allow better access to the school and will also pass alongside the mini-home park just west of Highway 103, enabling students to ride to school and all people to ride or walk into town. The paving could extend approximately 1 km further north past the school and 2 km south along Route 210 from Route 325 to pick up local residents.

Figure 5.4: Wileville / Newcombville Connector

Hebbville / Conquerall Connector

The Municipality should continue to assist the local trail group to obtain funding and implement improvements to Bull Run trail surface from Bridgewater to the Conquerall Road and provide a direct connection to the school. Over the longer term, the Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave the shoulders of Conquerall Road and Conquerall Mills Road to allow improved access for students and to create a loop around Fancy Lake.

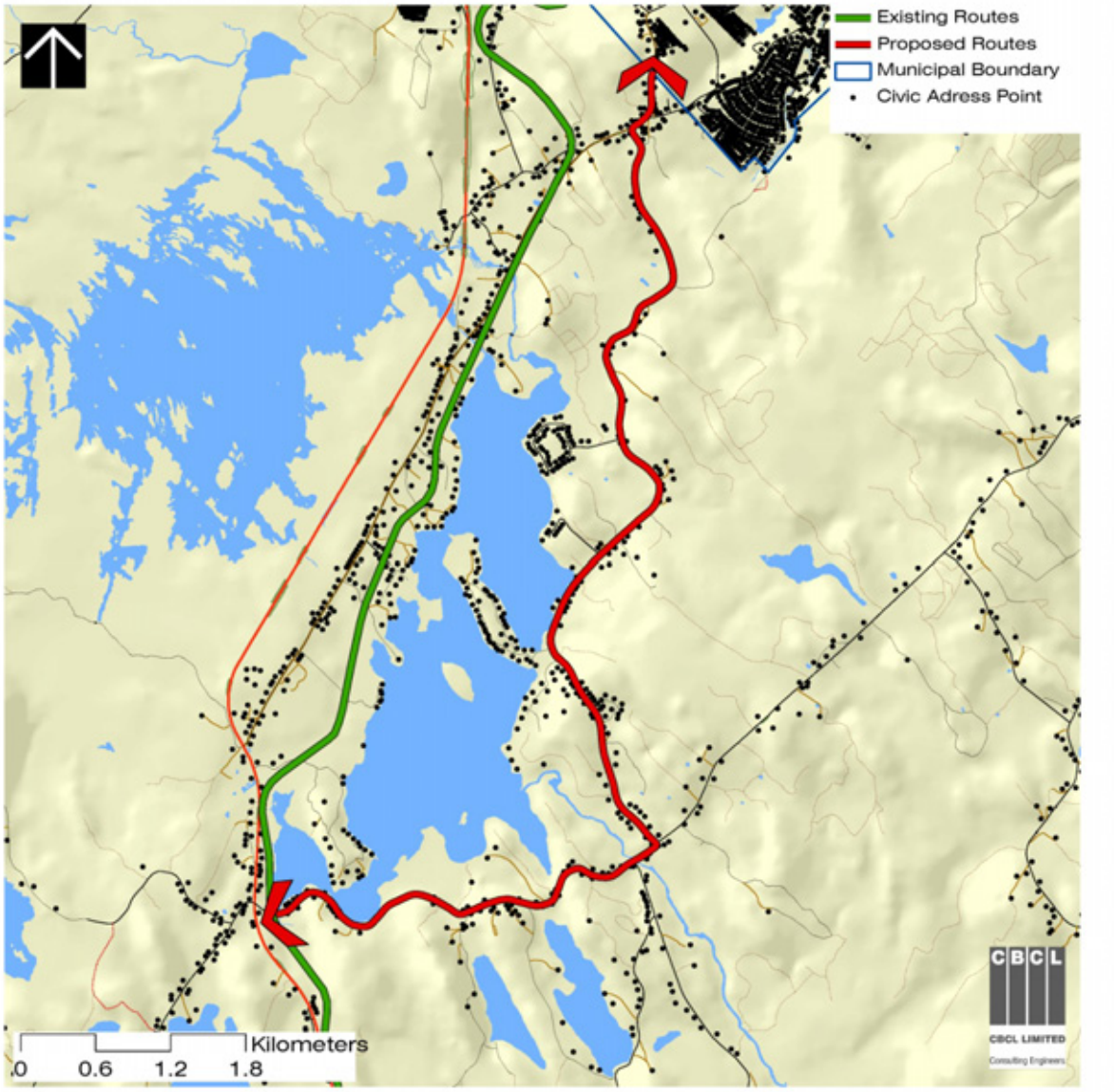


Figure 5.5: Hebbville / Conquerall Connector

Middlewood Improvements

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave shoulders along Hirtle Road from Route 103 south to approximately 600 m south of

the spot where the Bull Run Trail crosses Hirtle Road. Over the longer term, the Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to consider paving Hirtle Road south to Llewellyn Road and Llewellyn Road from Hirtle road to the Bull Run Trail intersection; and with the Department of Natural Resources to improve the surfacing of the Bull Run Trail from Llewellyn Road to Hirtle Road.

Petite Riviere

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave shoulders and improve safety along Route 331 from the convenience store in Petite Riviere to the convenience store in Crescent Beach. This will provide improved access for people staying at Rissers Beach Provincial Park as well as users of Crescent Beach and local residents.

Figure 5.6: Petite Riviere

LaHave Loop

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to create paved shoulders and other improvements on Routes 331 and 332 from Bridgewater to the LaHave Ferry. This will create improved access for residents from these areas into Bridgewater and will also create a very desirable recreational loop.

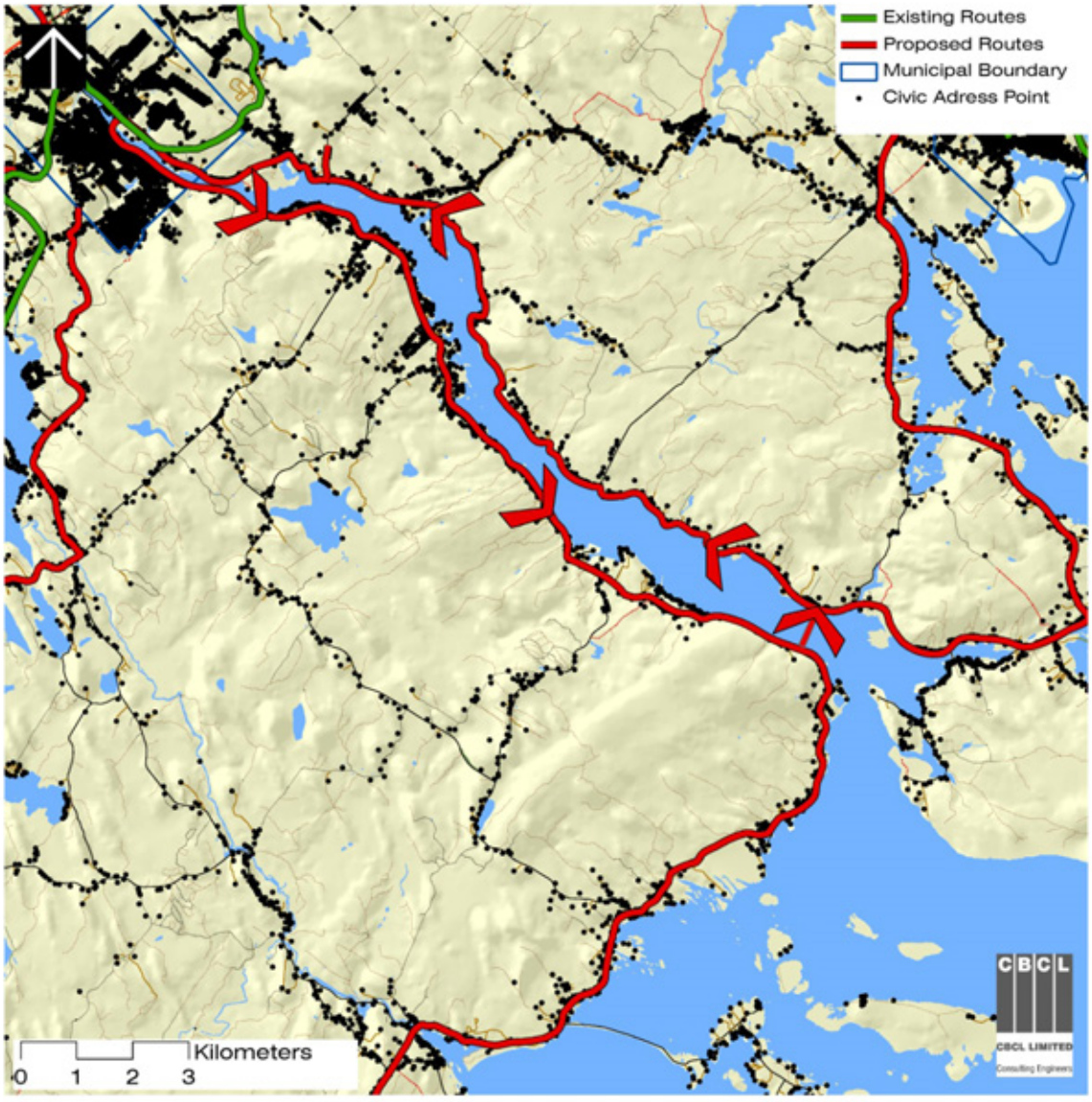


Figure 5.7: LaHave Loop

Dayspring Connector

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to make improvements to connect from the sidewalk in Bridgewater along LaHave Street (Trunk 3) to the Miller Point Peace Park and on to the MARC in Dayspring, both of which are major recreation facilities in the area.

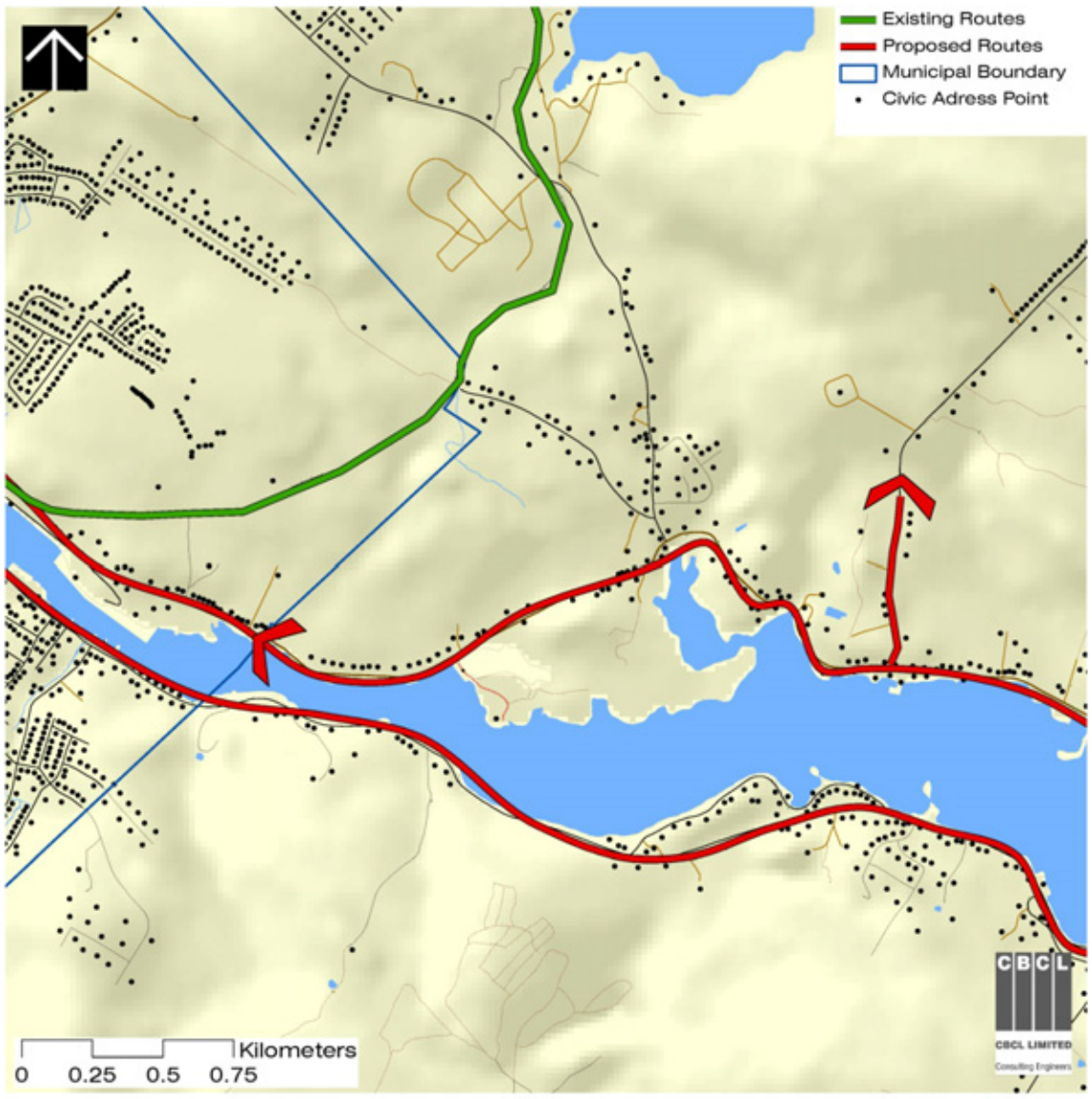


Figure 5.8: Dayspring Connector

Blue Rocks Connector

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave shoulders and make safety improvements to Route 331 and Blue Rocks Road from Sawpit Park to Blue Rocks.

Figure 5.9: Blue Rocks Connector

Blockhouse Connector

The Municipality should continue to assist the local trail group to obtain funding and implement improvements to the trail surface on the Adventure Trail from Blockhouse Mines Road to Mahone Bay.

The Town of Mahone Bay has a sidewalk along Main Street (Route 325) almost to the town boundary at Blockhouse. The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave the shoulder of Route 325 from Blockhouse Mines Road to the Mahone Bay town boundary. The Municipality of the District of Lunenburg should encourage the Town of Mahone Bay to complete the sidewalk along Main Street to the town boundary to connect to the paved shoulder.

Clearland Road / Bayview School Connector

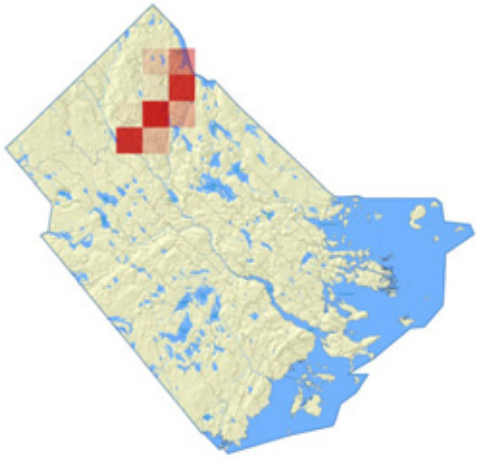
The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to provide shoulder improvements along the Clearland Road, Clearway Street, and Woodstock Road in the vicinity of Bayview Community School connection to improve walking conditions. The Municipality of the District of Lunenburg should encourage the Town of Mahone Bay to extend the sidewalk from the school to the town boundary. This route intersects with the Dynamite Trail; several school kids use it to get to school, and many others use it to walk into town.

Oakland Improvements

The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to improve shoulders along Trunk 3 at Oakland, up the hill to the trail connection at the overpass near Oakland Lake. Over the longer terms the Districts and NSTIR should consider improvements south along the Oakland Road, which has many walkers and bicyclists. The Municipality of the District of Lunenburg should encourage the Town of Mahone Bay to make shoulder improvements on its side of the boundary to connect to the improved infrastructure in the District.

Wentzell's Lake to Bridgewater Link

The Municipality should assist the local trail group to determine a preferred route to reinstate the LaHave River Trail paralleling Trunk 10 from just north of the North Kings Street bridge to Salmon Run Road. This could require a combination of purchase of rights of way or easements on which to create an off-road trail and paving of shoulders along Trunk 10. The funding of a detailed outing study is suggested.



Maplewood Connector

The Municipality should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to pave the shoulders of the Barss Corner Road from New Germany to the intersection of the Farmington Road north of Parkdale. This will provide an improved connection for year-round and seasonal residents in the Parkdale / Maplewood area to the commercial facilities in New Germany.

Figure 5.10: Maplewood Connector

Riverport Improvements
The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to determine improvements that can be made along Kingsburg Road from Rose Bay to Hirtles Beach. While this is an especially challenging area as the existing roads and rights of way are extremely narrow, enhancements would improve conditions for the many summer residents and visitors who would be inclined to use active transportation.

Parkdale / Maplewood Improvements
The Municipality should work with residents and landowners in the area to create a walking route using existing roads and some new trail connections to create a loop route.

Osprey Village / Pine Grove Connector
The Municipality should work with landowners and businesses in the area to implement the proposed trail link from the Centennial Trail up to and over Trunk 10 to the Osprey Village Mall. This is a major retail destination in the area and workers and shoppers will be able to use the trail to access it. A good connection from the hotel will also allow guests at the hotel to access the trail to partake of other activities in the District. The new trail should be flat enough to enable relatively easy cycling and should be designed to directly link with the traffic lights at the Trunk 10 and New Pine Grove Road intersection.

Over the longer term the Municipality of the District of Lunenburg should consider working with the Nova Scotia Department of Transportation and Infrastructure Renewal and the Town of Bridgewater to provide active transportation infrastructure to connect with Bridgewater's proposed active transportation infrastructure along North St. heading north from LaHave Street.

King Street Connector
The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal and the Town of Bridgewater to pave shoulders along King Street heading north to link with the LaHave River Trail. This will improve connections to Park View Education Centre and into the Town of Bridgewater active transportation infrastructure.

Upper Branch Road Connector
The Municipality of the District of Lunenburg should work with the Nova Scotia Department of Transportation and Infrastructure Renewal to St. Phillips Street and Upper Branch Road to enable a better connection into Bridgewater from this direction.

5.1.3 Inter-Modal Conncetions
Intermodal connections are points throughout a network where various transportation modes connect, and where it is convenient to transfer between modes. Combining walking, cycling and public transit in a complementary manner, promotes the increased efficiency of each.

As the development of a public transit service progresses over the next years, the Municipality should ensure that routes and bus stops provide convenient access to both pedestrians and cyclists. Bus stops along the chosen route should be located not only in communities but also remote recreational destinations and trail heads. Recreational biking and walking benefits greatly if the option to choose a bus for the return trip is available. Other initiatives that should be considered when implementing a public transit system are:

- bus-mounted bike racks;
- bus shelters with bicycle parking;
- park and ride facilities on selected bus stops; and
- park/ride/walk lots – developed near the edges of town boundaries to permit residents of the Municipality to walk/bike a portion of their commute.

Figure 5.11: Trail Head at Parking Lot

5.2 Cross Section Design

Since 99.5% of public roads in the Municipality are owned and maintained by the Province of Nova Scotia, any new active transportation infrastructure within the street right-of-ways can only be implemented in conjunction with the Province. However, in some cases, there will be insufficient right of way width to accommodate new active transportation infrastructure. Where the issue is only related to a lack of right of way width and not physical constraints, the District and NSTIR should see if there are opportunities to purchase additional land to increase the right of way.

In most rural areas, curbed sidewalks or separate bike paths are not a feasible option. Rather, minimal cost-effective road-side improvements such as paved shoulders can provide safe passage for non-motorized transportation.

There are conditions such as extremely narrow rights of ways, areas restricted by buildings or embankments very close to the road, or narrow carriageways on bridges, where the addition of a paved shoulder is not possible or is prohibitively expensive. Another possible interim solution for these spots where routes are being created along roadways could be the introduction of “respite areas” at either end of these more difficult stretches of the route. These “respite areas” could consist of an area where active transportation users could stop and gather their breath in a small pull-off area prior to or just after traversing a difficult part of the route. These areas could be signed indicating that a difficult patch is coming up, make some suggestions for safely navigating the area, and suggesting that people stop and prepare before entering the difficult section.

5.2.1 Cycling Facilities

Given the important role that cycling plays in reducing emissions of air pollutants and greenhouse gases, and fostering good health directly, it is important to create bicycle connectivity that has the

potential to create a desirable cycling environment. The number of beginner or infrequent cyclists increases when:

- Neighbourhoods and communities accommodate a cycling network that includes bike lanes and off-road cycling or multi-use trails;
- Roads with speeds over 60 km/h have separated lanes or wider paved shoulders that are part of the road, not sidewalk, infrastructure;
- Roads with speeds between 50-60 km/h have marked bicycle lanes;
- Roads with speeds under 40 km/h are shared;
- Priority is given to cyclists in intersections;
- Residents have access to trip end facilities such as secure long-term bicycle parking (e.g. lockers), secure short-term bicycle parking (e.g. bicycle racks), and showers in commercial buildings; and
- All streets, roadways, and designated bike routes are maintained to be free of deterrents to bicycling (such as potholes, debris, and overgrown landscaping).

5.2.1.1 On-Road Cycling Facilities

Bike lanes on paved shoulders (Figure 5.13), defined by a painted line on the pavement are the most common on-road bikeway facilities in rural areas. Cyclists and cars travel in the same direction. The clearly demarked travel ways allow cars to travel fast. However, shoulders should be paved on both sides to avoid cyclists traveling against the flow of traffic. In areas where the right of way or ability to widen the paved road surface is limited by physical constraints such as encroaching houses or steep slopes, respite areas as described at the beginning of section 5.2 could be developed to improve conditions.

Depending on design speed and car volumes, paved shoulder widths range from 1.0 m to 1.75 m (Table 5.1). Wider shoulders are not suggested, because to motorist they might appear as another travel way. Bikeways on paved shoulders should be identified by signs on the edge of the road.

Table 5.1: Width of Paved Shoulders (Source: Velo Quebec, Standards from the Ministere des Transports du Quebec)

Authorized speed	ASDT < 2,000	ASDT > 2,000
50 km/h or less	1.0 m	1.0 m
50 km/h to 70 km/h	1.0 m	1.5 m
> 70 km/h	1.5 m	1.75 m

ASDT = average summer daily traffic

Figure 5.12: Pavement Signage on Paved Shoulder

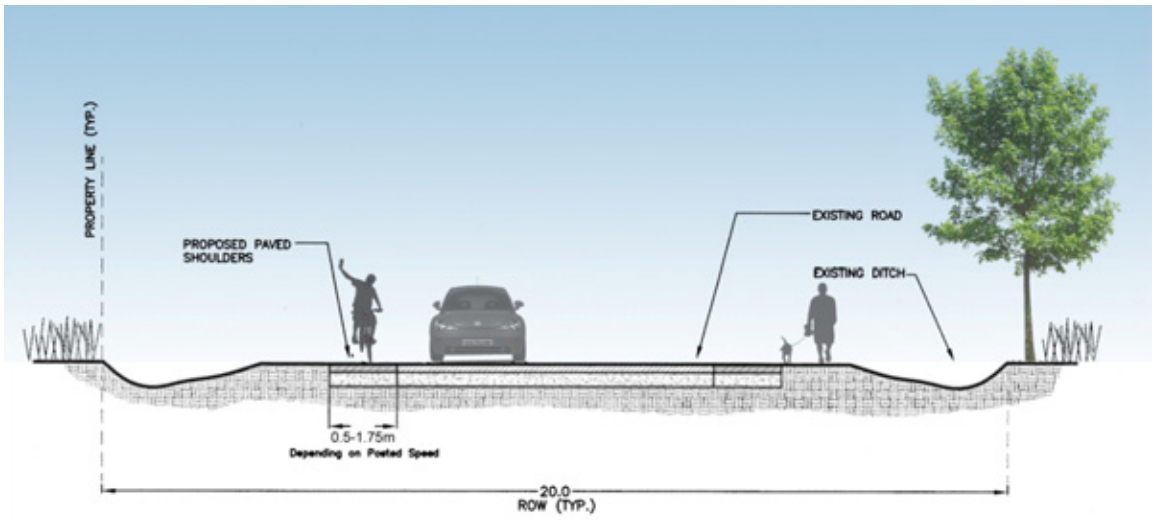


Figure 5.13: Cross Section of Rural Road with Paved Shoulders

5.2.1.2 Off-Road Cycling Facilities

Under certain circumstance, separate bikeways should be considered (Figure 5.14). For instance in areas where a clear separation between cars and cyclists is desired, where bike paths should allow access to amenities along the road, or were bike paths are linked to other sections of a bike network. Pending on land ownership, these trails can also meander in and out of the street right-of-way to allow for scenic views or to avoid obstacles in the road right-of-way. Typically, these bike paths should be constructed outside the drainage ditch and should allow for an adequate lateral clearance distance between the road and the path. The minimum required width for a one-way bike path is 1.5 m.

If the effort of constructing a separate path is undertaken, it would be advisable to also accommodate pedestrians and possibly other non-motorized travel modes on the same path. Depending on the targeted user groups, the design criteria for multi-use trails outlined in section 5.2.3 apply.

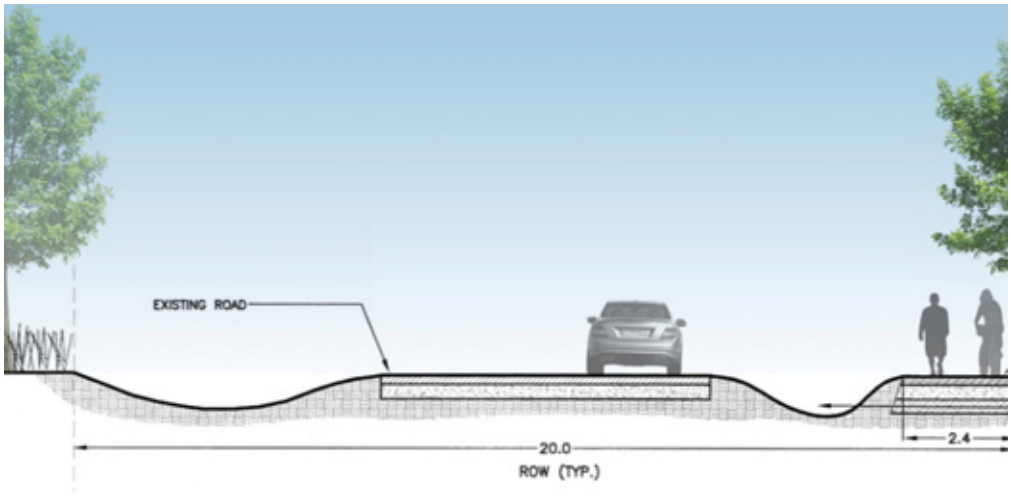


Figure 5.14: Cross Section of Rural Road with Separate Bike Path or Multi-Use Trail

5.2.1.3 Designated Shared Roadways

In certain denser rural areas, where significant cycling traffic occurs or increased use of bicycles could be facilitated because of nearby schools, designated shared roadways are a cost-effective alternative to other infrastructure solutions (Figure 5.16). These roads are officially recognized as bikeways and used by both cyclists and motorists. Large painted markings on the road indicate a greater presence of cyclists on the road (Figure 5.15). Vehicle traffic on designated shared roads must be light, fewer than 1,000 cars daily in rural areas and 3,000 cars daily in urban areas. It is not recommended to introduce shared roads where truck traffic is greater than 250 vehicles a day.

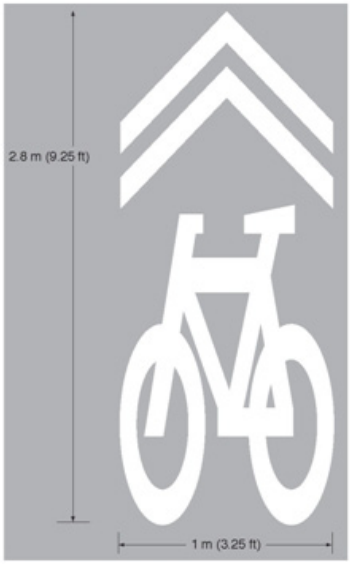


Figure 5.15: Typical Pavement Marking on Designated Shared Road

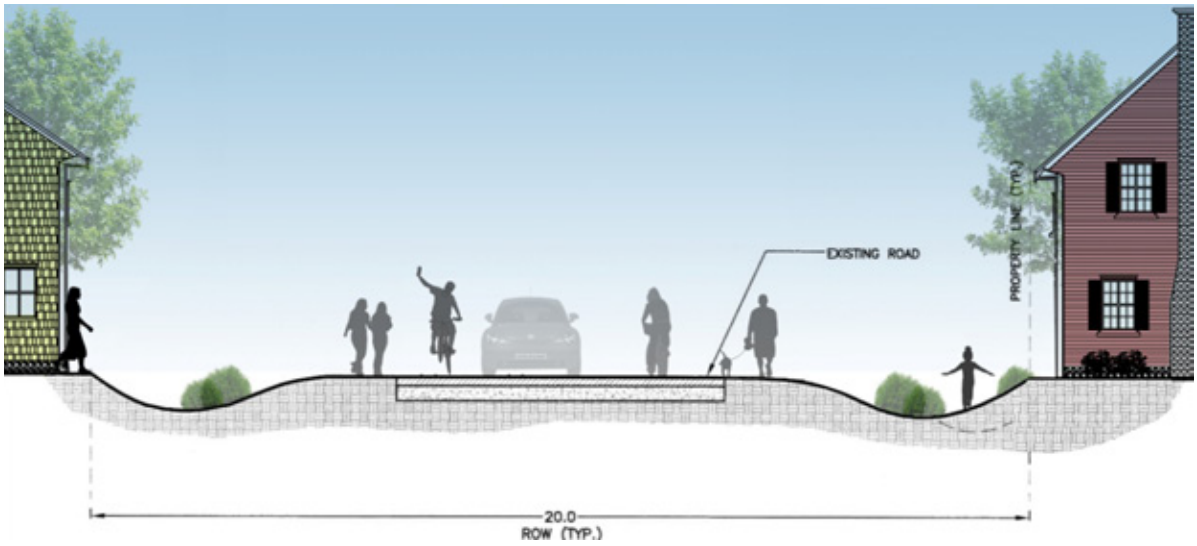


Figure 5.16: Cross Section of Designated Shared Road in Rural Area

5.2.2 Pedestrian Facilities

5.2.2.1 Road-Shoulder walkways

In many rural situations, the most feasible solutions for accommodating pedestrian traffic are paved or gravel shoulders (Figure 5.17). Typical pedestrian paths must be at least 1.2 m wide; in cases with heavier pedestrian volumes, a width of 1.8 m is recommended. Paved shoulders can also accommodate cyclists, giving pedestrians the option to veer onto the gravel shoulder (Figure 5.13).

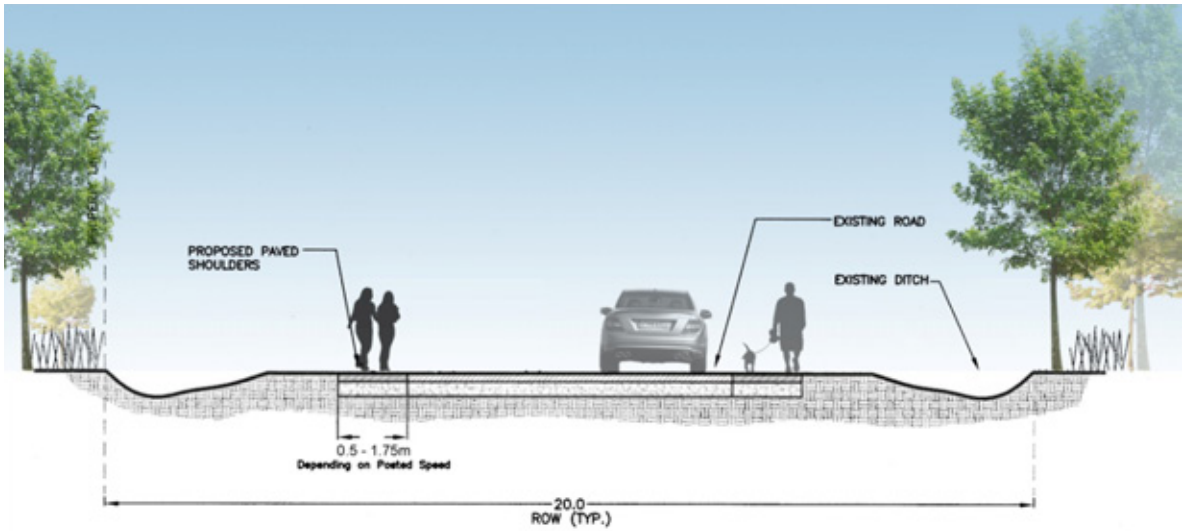


Figure 5.17: Cross Section of Road Shoulder Walkway in Rural Area

5.2.2.2 Sidewalk walkways

In urban or suburban situations, particularly in new commercial developments or residential subdivisions, the installation of curbed sidewalks should be considered where densities and traffic volumes justify such expenses (Figure 5.18). Sidewalks are the safest and most convenient way for pedestrians to move around. They also play an important role in community building and social cohesion, as they can double as gathering spaces for children and neighbours and can accommodate street furniture such as benches, trash cans or bus shelters. The recommended sidewalk width ranges from 1.5 m to 1.8 m. Near schools, where large numbers of students flock to the sidewalks at school dismissal time, sidewalks should be wider. To accommodate three youths walking side-by-side, a minimum width of 2.25 m is required.

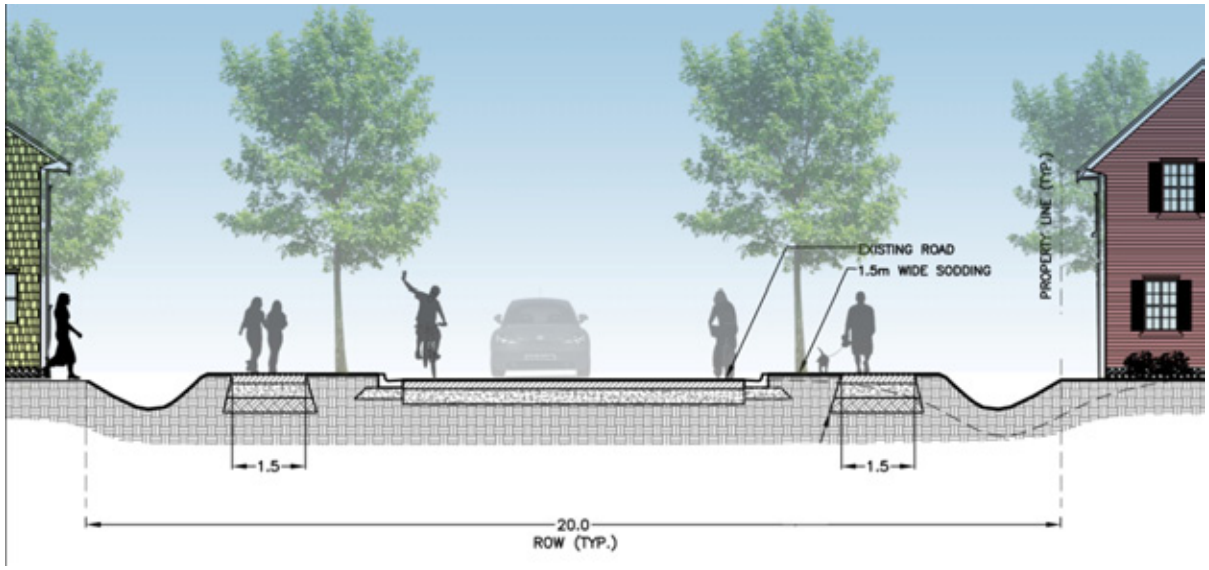


Figure 5.18: Cross Section of Curbed Road with Sidewalk

5.2.3 Multi-Use Trail Facilities

Multi-use trails are the predominant active transportation facility in the District of Lunenburg (Figure 5.19). These trails accommodate a variety of users either simultaneously or on a seasonal basis. During the summer months and shoulder seasons, multi-use trails are primarily used by cyclists and pedestrians. The design requirements for cycle paths set the minimum standard for trails widths - two-way multi use trails should be at least 3.0 m wide. Typical trail surfaces include crusher dust, concrete or asphalt.

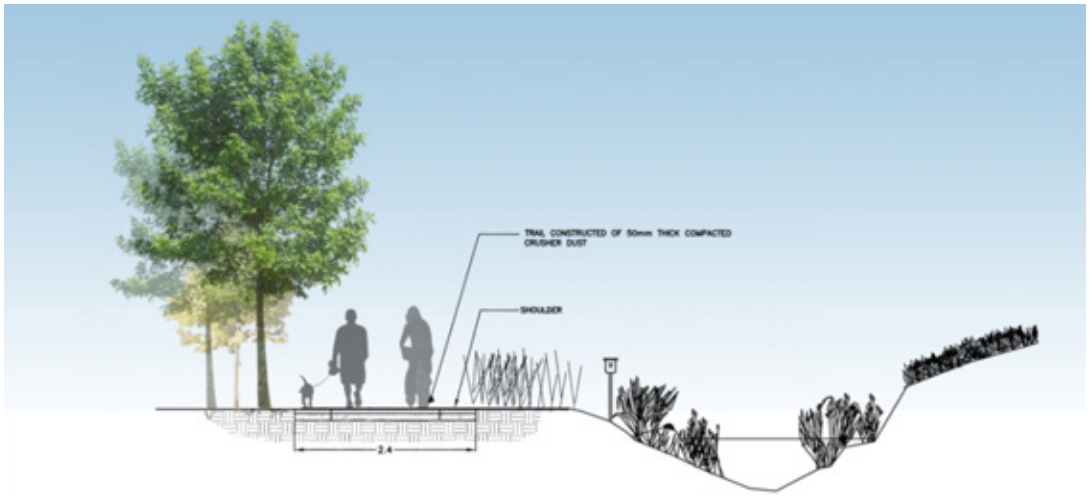


Figure 5.19: Cross Section of Multi-Use Trail

5.3 Land Use and Development

The quality of the built environment has the biggest impact on transportation choices people make. Looking at how people get from place to place makes it apparent what conditions either do or don't facilitate active transportation. Conditions conducive to walking and biking can be either provided by implementing certain development standards in new neighbourhoods or by retrofitting existing communities. Here, over the mid- and long-term, the Municipality can take significant influence through policies and by-laws that mandate active transportation friendly neighbourhoods. The environmental characteristics that favour active transportation are often referred to as the 3 Ds: density, diversity and design.[9]

5.3.1 Density

Density is the characteristic that is most closely associated with active transportation. It is also the characteristic that appears to be the most detrimental to active transportation in a rural environment, simply because densities appear too low. However, density is not just a function of a certain number of people living on a defined area of land. Relatively higher densities in rural communities, when compared to surrounding areas, often imply well-serviced, cohesive service centres where daily destinations can be conveniently accessed by different modes of transportation.

In the Municipality of the District of Lunenburg, small communities established centuries before the dawn of the automobile, still feature densities at their core that allow for walking to schools, churches or grocery stores. These traditional finer-grain development patterns and higher densities in rural centers should be protected and further fostered. New suburban neighbourhoods on the outskirts of the three towns in the District should be planned to comply with active transportation friendly development standards. For new developments, concepts known as cluster development or conservation subdivisions, could be applied to ensure active transportation conducive densities. These developments could be achieved by including provisions for planned unit developments (PUDs) in the Municipality's zoning by-law[10].

5.3.2 Diversity

Diversity refers to the number and balance of different land uses available in a given area. Unlike the segregation of land uses that is evident in many post-war developments, the mixing of workplaces, schools, housing and retail creates comprehensive living environments. Diversity and density combined can provide living environments that accommodate a range of activities and services within a small area accessible by biking or walking. This close proximity of uses is critical since the likelihood to use active transportation is heavily influenced by travel distance.

The Municipality of the District of Lunenburg should encourage a healthy mix of uses in the denser communities throughout the district.

---

[9] Vélo Québec. 2010. *Planning and design for pedestrians and cyclists. A Technical Guide.*

[10] Northwest Vermont Project. 2007. *A Guide to Transportation and Land Use Connections - Experiences from Northwest Vermont.*

5.3.3 Design

Design refers to a number of features that influence how the public realm is perceived by people walking or biking. It includes such concepts as the size and shape of street blocks, street connectivity, the type and orientation of buildings and the existence of sidewalks, public squares, landscape architecture, pedestrian facilities, light fixtures and other elements. In particular the connectivity of the street system is an important characteristic influencing transportation choices. In particular, spread-out networks with closed loops and dead-ends, create long distance that make traveling by bike or on foot inconvenient.

The Municipality of the District of Lunenburg should study and implement community design standards that foster walkable and bikeable neighbourhoods.

5.4 Education, Promotion and Advocacy

5.4.1 Education and Promotion

Education is one of the most important components of this plan. The barriers to Active Transportation are not simply inadequate infrastructure, they more importantly exist in the culture of a community and the attitudes of its population. Changing these attitudes will challenge municipal staff and politicians to engage the population in a continuous and effective program of education. The public needs to be educated on the many health benefits of participating in active transportation. Active transportation users need to be educated to understand on and off-road operating procedures to support a safe and inviting environment. Motorists must be educated on the need to share the road and the trails with walkers and cyclists and operate their vehicles more safely. Parents must be educated on the value of increasing the amount of walking and cycling undertaken by their children.

Given the plethora of educational opportunities, it is important to remember that the Municipality does not have to shoulder educational initiatives on its own.

> *"Municipalities shouldn't try to do it all by themselves, when partners offer much-needed energy, knowledge and skills. Non-profit organizations can run education programs and special events, employers can offer incentives for active transportation commuters, and associations can educate professionals about active transportation planning and implementation."*
> Communities in Motion: Bring Active Transportation to Life - FCM

Listed below are a number of programs that could be implemented in the Municipality of the District of Lunenburg:

- **Active and Safe Routes to School** is a school-based initiative that strives to create an environment that is conducive and supportive of safe walkable communities. It is a world-wide program that encourages children of all ages to utilize Active Transportation to travel to and from school, with a primary focus on walking.
  The program is comprised of several activities and initiatives that can be utilized by other schools including the Walking School Bus, Walking Wednesdays, iWalk (International Walk to School Week/Day), Walk a Block, Neighbourhood Walkabout, Walking Buddies, No Idling at School, and Classroom Mapping. Schools can be approached to conduct safety audits of their neighbourhoods. School boards could work with parents, students and teachers, organizing public meetings to review the situation around all of their schools. These meetings can determine both the safest routes and areas where improvements are required. Students should be asked to identify walkable/bikeable destinations from their schools.

- **"Share the Road"** program is an important education tool for all road and trail users including motorists, pedestrians and cyclists. *"Share the Road"* is an initiative that makes roadways safer and more efficient for both motorists and cyclists. One interesting adoption of the program occurs in Annapolis County, where bright yellow T-shirts with the "Share the Road" symbol are regularly given as draw prizes during municipal events.

- **Large highway signs** erected at locations where they would attract the most attention and provide feedback on the percentage of drivers yielding to pedestrians during the past week along with the record. The numbers on these signs were changed on a weekly basis.

- **Small signs** erected at a number of crosswalks instructing pedestrians how to safely cross the street. These signs instruct pedestrians to extend their arm while placing one foot in the street, wait until cars stop, and thank drivers with a wave and a smile.

- **CAN-BIKE** – The Municipality should offer programs that provide education on bicycle safety, including the importance of wearing helmets, and etiquette for sharing trail and road space. These programs could be delivered to youth through school programs and to the general population. CAN-BIKE is operated by the Canadian Cycling Association.

- **Public Events** - should be developed that are specific to Active Transportation (e.g., bicycle safety day or festival) or this aspect could be built into other community events (e.g., bicycle derby). Existing programs, such as International Trails Day, Walk to School Week, etc., should be adopted to develop partnerships and utilize existing resources.

- The **weekly trails column** in the community newspaper should be expanded to include Active Transportation education and promotion.

- **Maps** help cyclists and pedestrians find safe and attractive routes. A series of recommended walking and cycling routes should be identified in each community and a map created on the municipal Website.

- Create a **mall/school display** to promote AT and educate in safety.

- **Flyers** could be sent to households along with utility bills or recycling information. The flyers provide safety tips for AT users and motorists and address some of the common causes of conflicts and how to avoid them.

- **RCMP** – have the RCMP conduct spot checks to inform motorists of bicycle use on key tourism routes.

- **Tourism Bike Route Signage** – Identify key bike tourism on road routes (i.e., LaHave River Loop, coastal road) and create distinctive signage to identify for motorists and cyclists.

- **Promote** the use of the **Active Transportation Self-Assessment Questionnaire** for people to determine the best improvements that can be made in their communities. Work with local interest groups including the existing trails organizations (see Appendix D).

- Support programs like the RCMP and **Michelin Bike Rodeos**, and the **Triathlon Club's Kids of Steel** program and distribute maps and itineraries.

- Support the development of a **Mountain Biking Club**.

- Organize **rides or walks** along facilities in certain areas.

- **Promote road safety** to educate drivers including truckers about sharing the road with cyclists, walkers and other active transportation users.

- Paint **symbols on road shoulders.**

- Work with NSTIR to **periodically close a road** (except for local traffic) in the area to promote cycling and other forms of active transportation, perhaps Grimm Road. Work with cycling clubs or other groups to assist with this activity.

- **Provide bike parking** at Municipal facilities including offices and other buildings, community centres, sports facilities, parks, etc. to make biking a convenient choice.

5.4.2 Advocacy

The Municipality should also play a role in advocating for active transportation investments within the District, the south shore area, the province as a whole, and nationally . Activities in this area are a "two-way street" that will cement the District's role as a leader in this area and will ensure that the Municipality is aware of funding and other opportunities. Sharing of ideas will provide access to information that could improve the Municipality's response to active transportation issues within the District. Potential activities include:

- **Continue the operation of the Active Transportation Steering Committee** comprised on municipal staff, related provincial government agencies such as the Department of Transportation of Infrastructure renewal and the Department of Health and Wellness, and interested stakeholders and public representatives. Have the group meet quarterly to review activities and compare notes.

- **Meet with the provincial Department of Tourism** to promote recreational and tourism cycling and hiking activities in the District.

- **Meet quarterly with active transportation coordinators** in the adjacent municipalities to compare notes, coordinate projects and seek mutually supportive activities.

- **Host an annual active transportation evening**, where groups interested in cycling, walking and other active transportation activities can get together with MODL and neighbouring municipal

departments and NSTIR to talk about accomplishments over the last year, look at possible improvements that can be made to infrastructure and programs in the coming year, discuss sharing of resources, exchange other information, and forge partnerships. Keeping / publishing a report card will assist in measuring progress.

- **Work with** groups such as **the Nova Scotia Department of Health and Wellness, the Atlantic Health Promotion Research Centre**, and other health services and promotion agencies to promote the health benefits of active transportation.

- **Liaise with RCMP** and conduct an annual review of bicycle and pedestrian accidents to determine if there are hot spots where improvements need to be made.

- **Work with NS Department of Tourism, NS Department of Transportation and Infrastructure Renewal and the Tourism Industry Association of Nova Scotia** to develop policy around provincial road improvements and to identify the required infrastructure such as paved shoulders and promotion required to promote cycling routes through the District. The District should encourage NSTIR to base its policy for road improvements to encourage active transportation on summer traffic automobile counts and pedestrian / cyclist desired routes as per the discussion at the beginning of this chapter.

- Obtain a place on the **Union of Nova Scotia Municipalities AT committee.**

- Raise the issue of Active Transportation at the **rural caucus level of UNSM and FCM.**

- Introduce **resolution on the creation of a provincial Active Transportation policy** for roads in NS.

- Identify priority locations for road improvements (i.e., paved shoulders) and obtain **commitments from NS Department of Transportation and Infrastructure Renewal** for implementation.

- Pass a community **Active Transportation/Policy** (see Appendix E).

5.5 Maintenance

Maintenance is key in providing an appropriate level of service and user-friendly, safe and efficient transportation solutions. **Preventative maintenance** includes road, sidewalk and shoulder sweeping and preventative tree pruning. **Corrective maintenance** includes sealing pavement cracks and potholes, repairing markings, pruning trees after a storm and grading crusher dust surfaces. **Replacement** is necessary when something has reached the end of its lifetime. **Winter maintenance** includes snow clearing from sidewalks and paths.

The level of required maintenance depends on the specific facility. Appropriate maintenance cycles should be put in place by the Municipality to ensure a minimum upkeep.

CHAPTER 6 IMPLEMENTATION

6.1 Additional Municipal Policies to Encourage Active Transportation

The implementation of the Active Transportation Plan will be an incremental process over a twenty year period. Even though the plan has a built-in degree of flexibility, which allows the Municipality to adapt to changes, it will be paramount for the success of this plan, that municipal policy is adopted to ensure that the long-term goal of providing alternatives to vehicular based transportation becomes a clear objective for future development of the Municipality. The proposed policy changes can be found in Appendix E.

6.2 Table of Phasing, Responsibilities and Costings

The priorities outlined in Table 6.1 identify the ideal sequence of improvements based on where efforts should be focused first to yield maximum active transportation benefits. However, should funding be made available from an unexpected source, or other pressures surface, opportunities to implement should be capitalized upon. This is of particular importance to road maintenance and improvement work that may have to be executed in the upcoming years, regardless of the phasing sequence of the Active Transportation Plan. Obligatory road improvements as a result of wear and tear, for example, should prompt street right-of-way improvements as set out in this Plan.

Table 6.2 collates the first priority items and further prioritizes them and provides order of magnitude opinions of probable cost and levels of effort. Given the highly varied nature of conditions, it is not possible to develop accurate estimates of cost without conceptual designs particular to the situation. As an example, the cost per kilometre for the proposed shoulder pavements varies from $50,000 to $300,000 depending on conditions such as the existing materials on the shoulder and adjacent slope[11]. Conceptual designs and costing for particular improvements should be developed by qualified professional landscape architects and engineers before committing to any construction. Estimates of staff efforts should be refined before committing to any program.

[11] The cost per kilometer for shoulder pavement are based on quantity estimates by CBCL Limited and are in line with NSTIR expenditures for shoulder pavement along the Cabot Trail. Cost for possible land purchase and extensive grading are not included in the estimate.

Regional Route Infrastructure

Recommendation	Description	Measure	Priority	Responsibility	Length
R1	Complete the link from Bridgewater to New Germany (includes Wentzell's Lake to Bridgewater Link)	New trail / paved shoulders	1	MODL, NSTIR	16.2 km
R2	Improve Venture, Bay to Bay and Dynamite Trails at Mahone Bay	Improved trail	2	MODL, Trails Groups	5 km
R3	Pave shoulders on Lighthouse Route	Paved shoulders on both sides	2	MODL, NSTIR	58.1 km
R4	Enhance surfacing to improve usability of the Bay to Bay Trail	Improved trail surfacing	1	MODL, Trails Groups	10.0 km
R5	Improve Princess Inlet Drive, Herman Island Road, Maders Cove Road, and Main Street (Highway 3) to create a more picturesque coastal route that would also pass by more residences.	Paved shoulders on both sides	3	MODL, NSTIR	9.1 km
R6	Improve surfacing of trails throughout District	Improved trail surfacing	2	MODL, Trails Groups	94.4 km

MODL = Municipality of the District of Lunenburg
MB = Town of Mahone Bay
NSHW = Nova Scotia Department of Health and Wellness
ERDT = Department of Economic and Rural Development and Tourism

Table 6.1: of Phasing, Responsibilities and Costings

Local Route Infrastructure

Recommendation	Description	Measure	Priority	Responsibility	Length
L1	New Germany Improvements	Sidewalk on one side	1	MODL, NSTIR	1.8 km
L2	Wileville / Newcombville Connector	Paved shoulders on both sides	3	MODL, NSTIR	7.5 km
L3	Hebbville / Conquerall Connector - Bull Run Trail	Improved trail surfacing	1	MODL, Trails Groups	9.2 km
L4	Hebbville / Conquerall Connector - Conquerall Road and Conquerall Mill Road	Paved shoulders on both sides	3	MODL, NSTIR	10.9 km
L5	Middlewood Improvements - Hirtle Road from Hwy 3 to Bull Run Trail	Paved shoulders on both sides	3	MODL, NSTIR	0.7 km
L6	Middlewood Improvements - Hirtle Road and Llewellyn Road	Paved shoulders on both sides	3	MODL, NSTIR	4.0 km
L7	Petite Riviere	Paved shoulders on both sides	1	MODL, NSTIR	4.8 km
L8	LaHave Loop	Paved shoulders on both sides	1	MODL, NSTIR	35.0 km
L9	Dayspring Connector	Paved shoulders on both sides	1	MODL, NSTIR	3.3 km
L10	Blue Rocks Connector	Paved shoulders on both sides	2	MODL, NSTIR	4.9 km
L11	Blockhouse Connector - Adventure Trail	Improved trail surfacing	2	MODL	2.0 km
L12	Blockhouse Connector - Highway 325 Improvements	Paved shoulders & sidewalk extension	3	MODL, NSTIR, MB	0.5 km sidewalk 0.9 km shoulder
L13	Clearland Road / Bayview School Connector	Paved shoulders & sidewalk extension	2	MODL, NSTIR, MB	0.2 km sidewalk 0.8 km shoulder
L14	Oakland Improvements - Mahone Bay to Dynamite Trail	Paved shoulders on both sides	3	MODL, NSTIR, MB	1.6 km
L15	Oakland Improvements - along Oakland Road	Paved shoulders on both sides	3	MODL, NSTIR, MB	2.9 km
L16	Maplewood Connector	Paved shoulders on both sides	3	MODL, NSTIR	17.1 km
L17	Riverport Improvements	Paved shoulders / other improvements	2	MODL, NSTIR	5.8 km
L18	Osprey Village / Pine Grove Connector	New trail	1	MODL	0.4 km
L19	Osprey Village / Pine Grove Connector - North Street	Paved shoulders on both sides	3	MODL, NSTIR	3.0 km
L20	King Street Connector	Paved shoulders on both sides	2	MODL, NSTIR	1.4 km
L21	Upper Branch Road Connector	Paved shoulders on both sides	3	MODL, NSTIR	2.5 km

MODL = Municipality of the District of Lunenburg
MB = Town of Mahone Bay
NSTIR = Nova Scotia Department of Transportation and Infrastructure Renewal
NSHW = Nova Scotia Department of Health and Wellness
ERDT = Department of Economic and Rural Development and Tourism

Table 6.1: of Phasing, Responsibilities and Costings

Education, Program and Policy

Recommendation	Description	Measure	Priority	Responsibility	Length
P1	Chelsea Improvements	Help organize residents	3	MODL	n/a
P2	MPS and land use by-law amendments		1	MODL	n/a
P3	Active and Safe Routes to School Initiative		2	MODL	n/a
P4	"Share the Road" program		1	MODL, NSTIR	n/a
P5	Large highway signs		3	MODL, NSTIR	n/a
P6	Small signs		1	MODL, NSTIR	n/a
P7	CAN-BIKE program		2	MODL	n/a
P8	Park/Ride/Walk Lots		2	MODL	n/a
P9	Public Events		2	MODL	n/a
P10	Weekly trails column in the community newspaper		2	MODL	n/a
P11	Maps on municipal website		2	MODL	n/a
P12	Mall/school display		3	MODL	n/a
P13	Flyers in utility bills		2	MODL	n/a
P14	RCMP spot checks		3	MODL, RCMP	n/a
P15	Tourism bike route signage		2	MODL, NSTIR, ERDT	n/a
P16	Promote the use of the Active Transportation Self-Assessment Questionnaire		1	MODL	n/a
P17	Support programs like Michelin Bike Rodeos, Triathlon Club's Kids of Steel		1	MODL	n/a
P18	Support the development of a Mountain Biking Club		1	MODL	n/a
P19	Organize rides or walks		2	MODL	n/a
P20	Promote road safety		1	MODL, NSTIR, NSHW	n/a
P21	Paint symbols on road shoulders		2	MODL, NSTIR	n/a
P22	Periodically close a road		1	MODL, NSTIR	n/a
P23	Provide bike parking		1	MODL	n/a

MODL = Municipality of the District of Lunenburg
MB = Town of Mahone Bay
NSTIR = Nova Scotia Department of Transportation and Infrastructure Renewal
NSHW = Nova Scotia Department of Health and Wellness
ERDT = Department of Economic and Rural Development and Tourism

Table 6.1: of Phasing, Responsibilities and Costings

Advocacy

Recommendation	Description	Measure	Priority	Responsibility	Length
A1	Continue the operation of the Active Transportation Steering Committee		1	MODL	n/a
A2	Meet annually with AT coordinators in adjacent municipalities		1	MODL	n/a
A3	Host an annual active transportation evening		2	MODL	n/a
A4	Work with NSHW and the Atlantic Health Promotion Research Centre		1	MODL	n/a
A5	Liaise with RCMP		1	MODL	n/a
A6	Work with ERDT, NSTIR, and the Tourism Industry Association of Nova Scotia		1	MODL	n/a
A7	Obtain a place on the Union of Nova Scotia Municipalities AT committee		2	MODL	n/a
A8	Raise the issue of AT at the rural caucus level of UNSM and FCM		2	MODL	n/a
A9	Introduce resolution on the creation of a provincial AT policy for roads in NS		2	MODL	n/a
A10	Identify priority locations for road improvements (i.e. paved shoulders) and obtain commitments from NSTIR for implementation.		1	MODL	n/a
A11	Pass a community Active Transportation/Physical Activity Charter		1	MODL	n/a
A12	Provide a self-assessment tool for communities		1	MODL	n/a

MODL = Municipality of the District of Lunenburg
MB = Town of Mahone Bay
NSTIR = Nova Scotia Department of Transportation and Infrastructure Renewal
NSHW = Nova Scotia Department of Health and Wellness
ERDT = Department of Economic and Rural Development and Tourism

Table 6.1: of Phasing, Responsibilities and Costings

Prioritized List of Phase One Activities
(including opinion of probable cost and required staff inputs)
MODL Active Transportation Plan (CBCL Limited Project No. 101265)

Date: 4 May 2011

Policy and Planning
Infrastructure
Awareness and Education

Note: Items are listed in proposed priority order

Recommendation	Description	Measure	Responsibility	Length	Opinion of Probable Cost / Required Staff Inputs
P2	MPS and land use by-law amendments		MODL	n/a	30 hours staff time in conjunction with A11
A11	Pass a community Active Transportation Policy		MODL	n/a	10 hours staff time in conjunction with P2
P16	Promote the use of the Active Transportation Self-Assessment Questionnaire		MODL	n/a	40 hours staff time per annum
A1	Continue the operation of the Active Transportation Steering Committee		MODL	n/a	16 hours staff time per annum
P22	Periodically close a road		MODL, NSTIR	n/a	60 hours staff time per annum
A10	Identify priority locations for road improvements (i.e. paved shoulders) and obtain commitments from NSTIR for implementation.		MODL	n/a	8 hours staff time per annum
A2	Meet annually with AT coordinators in adjacent municipalities		MODL	n/a	4 hours staff time per annum
L18	Osprey Village / Pine Grove Connector	New trail	MODL	0.6 km	$66,000
L9	Dayspring Connector	Paved shoulders on both sides	MODL, NSTIR	3.3 km	$990,000
L1	New Germany Improvements	Sidewalk on one side	MODL, NSTIR	1.8 km	$1,404,000
L7	Petite Riviere	Paved shoulders on both sides	MODL, NSTIR	4.8 km	$1,440,000
A6	Work with ERDT, NSTIR, and the Tourism Industry Association of Nova Scotia		MODL	n/a	16 hours staff time per annum
R4	Enhance surfacing to improve usability of the Bay to Bay Trail	Improved trail surfacing	MODL, Trails Groups	10.0 km	$100,000
P20	Promote road safety		MODL, NSTIR, NSHW	n/a	40 hours staff time and $2,500 per annum
L8	LaHave Loop	Paved shoulders on both sides	MODL, NSTIR	35.0 km	$10,500,000
R1	Complete the link from Bridgewater to New Germany (includes Wentzell's Lake to Bridgewater Link)	New trail / paved shoulders	MODL, NSTIR	16.2 km	$4,860,000
L3	Hebbville / Conquerall Connector - Bull Run Trail	Improved trail surfacing	MODL, Trails Groups	9.2 km	$92,000
P4	"Share the Road" program		MODL, NSTIR	n/a	40 hours staff time and $2,500 per annum
P6	Small signs		MODL, NSTIR	n/a	20 hours staff time and $5,000 per annum
P17	Support programs like Michelin Bike Rodeos, Triathlon Club's Kids of Steel		MODL	n/a	10 hours staff time and $2,000 per annum
P18	Support the development of a Mountain Biking Club		MODL	n/a	80 hours staff time
P23	Provide bike parking		MODL	n/a	$2,000 per annum
A4	Work with NSHW and the Atlantic Health Promotion Research Centre		MODL	n/a	16 hours staff time per annum
A5	Liaise with RCMP		MODL	n/a	4 hours staff time per annum

MODL = Municipality of the District of Lunenburg
MB = Town of Mahone Bay
NSTIR = Nova Scotia Department of Transportation and Infrastructure Renewal
NSHW = Nova Scotia Department of Health and Wellness
ERDT = Department of Economic and Rural Development and Tourism

Table 6.2: Prioritized List of Phase One Activities

6.3 Funding Opportunities

The District of Lunenburg Active Transportation Plan can only be successful if funding and staff resources are committed by the Municipality and the Province on an annual basis. Virtually all of the on-road improvements require investment by the Nova Scotia Department of Transportation and Infrastructure Renewal who control 99.5% of the roads in the District. However, new subdivisions should be developed under a capital cost contribution model, in which a portion of the cost related to new active transportation infrastructure is borne by the developer. Other sources for infrastructure and non-infrastructure costs such as for programming, education and advocacy should include Provincial and Federal programs such as Transport Canada's MOST (Moving on Sustainable Transportation) and ecoMobility (TDM) grant programs, Federation of Canadian Municipalities Green Municipal Fund, Federal / Provincial infrastructure stimulus funding. Provincial departments such as the Department of Health and Wellness, the Department of Tourism and Culture and Sport Nova Scotia could also be interested in funding infrastructure and activities related to health, fitness, recreation and tourism. Corporate and private citizen donations may also contribute to fund smaller projects. It is important to tailor the message when funding and other requests are being made to these groups. For example, requests for funding of upgrades for the same route, for example the Lighthouse Route, could be directed as follows:

- Nova Scotia Department of Transportation and Infrastructure Renewal – messaging should be about road safety;
- Nova Scotia Department of Health and Wellness – messaging should be around health, fitness, quality of life, reduction of childhood obesity;
- Nova Scotia Department of Tourism and Culture – messaging should be about increased tourism opportunities;
- Sport Nova Scotia – messaging could be about improved facilities for marathons and bike races, fitness in general, etc.; and
- Federation of Canadian Municipalities Green Municipal Fund – messaging could be about greenhouse gas reduction and transportation alternatives.

All requests for funding over the next few years should promote the fact that this is one of the first completely rural active transportation plans and that the efforts are developing knowledge that can be transferred to other areas throughout the Province and Canada.

APPENDIX A

Key Components of Rural Active Transportation Plans

The Active Living Community Vision for Dakota County, Minnesota provided a good summary of the key components of many rural active transportation plans we reviewed with their Five "P"s approach to active transportation planning. Below is an overview of these "P"s with insights incorporated from other rural active transportation plans as well.

- **Preparation;**
  - Preparation of AT plans and strategies should include public involvement and local buy-in and creative ideas from the outset.
- **Policy;**
  - Municipal policies and bylaws may need to be added or changed to allow and promote AT uses. For example, cycling should be allowed, and certain required setbacks and road right of ways may need to be required. New subdivision developments can be required to integrate sidewalks and connecting trails to other parts of town.
- **Physical Projects;**
  - ***Safety*** is a key component of designing for physical projects like trails, bike lanes, etc. Designers must remember that people of different abilities and ages use AT infrastructure, and it needs to be safe for all users from children and parents with strollers, to seniors.
  - AT projects should be integrated with other types/modes of transportation and should build on existing street and trail networks to make the most of financial investments.
- **Programs;** and
  - Programming for multiple activities and age groups (i.e., safe walks to school programs, walking clubs, etc.) encourages safe and appropriate use of AT infrastructure
- **Promotion**
  - Promoting and making residents aware of AT opportunities is key for success. Word of mouth is a powerful promotion tool in rural communities. Providing online maps of routes and printed brochures at local service areas (libraries, town hall), shops (local grocery store) and tourism (bike rental stores, cafes, B&Bs) can help promote AT opportunities. Promotion can help counter the car-oriented culture of rural areas.

In addition to these five “p”s, a review of other plans also indicates that two more “p’s” should be added:

- **Places To Go;** and
    - The built form of communities matters for the success of AT. Planning and urban design for small communities and rural areas should consider improving proximity and connectivity of uses to make it easier for residents to travel between origins and destinations. Planning based on smart growth principles in general can be important for enabling active transportation. AT development can be both a part of and benefit from “place making” and building up the aesthetics of rural communities.
- **Partnerships**
    - Partnerships are especially important in rural communities where the resources and skills of different people, organizations, tourism operators, schools and businesses are necessary to make AT work, particularly in places where financial support is limited. Efforts to promote physical activity, active transportation to work and school, and recreational trail use and outdoor activities for residents and tourists should be coordinated as much as possible in the AT planning process.

APPENDIX B

Online Survey Results

1. How often do you participate in active transportation activities?

	daily	1-2 days/week	1-2 days/month	1-2 days/year	never	Response Count
Walk	**56.0% (224)**	31.5% (126)	8.0% (32)	1.5% (6)	3.0% (12)	400
Cycle	7.3% (26)	20.6% (73)	21.7% (77)	23.4% (83)	**27.0% (96)**	355
Skateboard	2.0% (6)	3.6% (11)	0.7% (2)	3.9% (12)	**89.9% (276)**	307
Inline skate	0.3% (1)	1.0% (3)	3.0% (9)	6.0% (18)	**89.7% (270)**	301
Canoeing / kayaking	1.2% (4)	8.0% (27)	22.1% (75)	**38.9% (132)**	29.8% (101)	339
Other	12.8% (21)	26.8% (44)	7.3% (12)	10.4% (17)	**42.7% (70)**	164
					(please specify type of activity and frequency)	120
					answered question	**411**
					skipped question	**5**

2. What are the most important active transportation types that should be considered in the development of a comprehensive active transportation plan for the Municipality of the District of Lunenburg? Choose up to THREE

	Response Percent	Response Count
Walking/hiking	**92.4%**	**377**
Cycling	87.3%	356
Skateboarding	17.4%	71
Canoeing/kayaking	39.5%	161
Inline skating	5.6%	23
Other (please specify)	10.5%	43
answered question		**408**
skipped question		**8**

3. What are the most important reasons why you participate in active transportation activities (e.g. walking, cycling, skateboarding, and inline skating, canoeing and kayaking)? Choose up to FIVE

	Response Percent	Response Count
Don't have access to a car	5.1%	21
To go to work	17.3%	71
To go to school	3.2%	13
To go shopping / run errands	24.6%	101
To visit community facility (pool, arena, park, etc.)	16.1%	66
To visit friends, family or neighbours	32.1%	132
To get exercise / improve health	**91.2%**	**375**
To save money	13.4%	55
To be environmentally conscious	46.0%	189
For recreation / fun	76.2%	313
I do not participate in active transportation activities like walking, cycling, skateboarding or inline skating	2.9%	12
Other (please specify)	5.1%	21
	answered question	**411**
	skipped question	**5**

4. What are the most important infrastructure improvements that might encourage you to use active transportation (e.g. walking or biking) to work, school, or other locations more often? Choose up to FIVE

	Response Percent	Response Count
More sidewalks	37.6%	145
More bike and pedestrian trails (off-road)	67.1%	259
More bike lanes/paved shoulders on selected rural roads	**74.1%**	**286**
Improved signing of pedestrian and bike routes and other active transportation facilities	33.4%	129
Better maintenance of sidewalks and pathways	37.6%	145
Better road maintenance	45.1%	174
Better lighting at night	29.3%	113
Secure bicycle parking at work/school	14.2%	55
Shower/change facilities at work/school	7.8%	30
Nothing, I am not likely to bike or walk more often	1.6%	6
No improvements are necessary, I am happy with things the way they are	2.6%	10
Other (please specify)	9.3%	36
	answered question	**386**
	skipped question	**30**

5. What are the most important improvements beyond infrastructure that might encourage you to use active transportation (e.g. walking or biking) to work, school, or other locations more often? Choose up to FIVE

	Response Percent	Response Count
Better education for cyclists and pedestrians	28.0%	107
Better education for motorists	**52.4%**	**200**
Community-based family promotional events (bike fest, etc.)	25.7%	98
School awareness and training campaigns	15.7%	60
Work with the school board to enable children and youth to walk to school (at least part way)	21.5%	82
Encourage walking clubs	34.3%	131
Encourage cycling clubs	30.1%	115
A bike skills clinic	9.2%	35
Route maps for cyclists and pedestrians	51.6%	197
Municipal active transportation coordination office	10.5%	40
Work with trails groups to continue to make improvements to the rails to trails network in the District	45.3%	173
Reduced traffic speeds	17.5%	67
Nothing, I am not likely to bike or walk more often	2.9%	11
No improvements are necessary, I am happy with things the way they are	2.6%	10
Other (please specify)	9.2%	35
	answered question	**382**

skipped question	**34**

6. In general, how safe and comfortable do you feel using active transportation (e.g. cycling, walking, inline skating skateboarding) on our sidewalks, trails and roads?

	Completely safe and comfortable	Fairly Safe and comfortable	Fairly Unsafe and uncomfortable	Completely unsafe and uncomfortable	Unsure / not applicable, since I do not do these activities	Resp Co
Sidewalks	32.3% (120)	**51.9% (193)**	8.6% (32)	3.2% (12)	4.0% (15)	
Trails	25.8% (96)	**55.6% (207)**	10.8% (40)	3.5% (13)	4.3% (16)	
Roads	1.1% (4)	25.7% (97)	**45.8% (173)**	25.1% (95)	2.4% (9)	
					answered question	
					skipped question	

7. Please provide suggestions for places where specific improvements can be made in the District to improve safety and/or encourage active transportation. Please specify the location and the type of improvement that could be made.

	Response Count
	203
answered question	**203**
skipped question	**213**

8. What are the most important reasons why an active transportation system should be developed for the Municipality of the District of Lunenburg? Choose up to THREE

	Response Percent	Response Count
To provide places to walk/cycle/skateboard/inline skate within communities	49.0%	187
To improve walking and cycling as transportation options	65.4%	250
To connect communities to each other	25.4%	97
To provide access to parks and natural areas	28.0%	107
To provide access to historic /cultural destinations	3.1%	12
To support tourism	22.0%	84
To provide access to community facilities	6.5%	25
To improve quality of life and health of residents	**81.9%**	**313**
I do not think an active transportation system is important	0.0%	0
Other (please specify)	3.7%	14
	answered question	**382**
	skipped question	**34**

9. What are the most appropriate ways to pay for active transportation related infrastructure improvements? Choose up to THREE

	Response Percent	Response Count
community group fundraising	29.5%	112
special grants	39.7%	151
increased area rates	9.5%	36
municipal funding	56.6%	215
provincial funding	**69.7%**	**265**
federal funding	52.1%	198
Other (please specify a funding source)	7.6%	29
	answered question	**380**
	skipped question	**36**

10. Where do you live?

	Response Percent	Response Count
Blockhouse	2.6%	10
Blue Rocks	0.3%	1
Broad Cove	2.9%	11
Cherry Hill	0.8%	3
Crescent Beach	1.3%	5
Crousetown	0.3%	1
Feltzen South	0.8%	3
Front Centre	0.3%	1
Garden Lots	1.6%	6
Hebbville	1.6%	6
Hebbs Cross	0.5%	2
Hemford	0.0%	0
Italy Cross	0.3%	1
Kingsburg/ Upper Kingsburg	4.7%	18
La Have	4.7%	18
Lower / Middle / Upper Cornwall	0.5%	2
Lower Rose Bay	1.1%	4
Maders Cove	1.1%	4
Martins River	1.3%	5
Middle Cornwall	0.0%	0
New Germany	1.8%	7
Oakland	2.1%	8
Petite Riviere	3.2%	12

Pleasantville		1.3%	5
Riverport		2.1%	8
Spectacle Lakes		0.5%	2
Sunnybrook		0.3%	1
Sweetland		0.8%	3
Voglers Cove		1.1%	4
West Dublin		1.6%	6
Town of Lunenburg		8.7%	33
Town of Mahone Bay		2.6%	10
Town of Bridgewater		12.7%	48
Other (please name a community)		**34.6%**	**131**
		answered question	**379**
		skipped question	**37**

Responses for Other Communties

Name	Responses
Auburndale	2
Barss Corner	1
Bayport	5
Blandford	1
Branch Lahave	1
Town of Bridgewater	1
Centre	1
Chelsea	3
Chester Basin	1
Chester	1
Clearland	4
Conquerall Bank	5
Conquerall Mills	6
Cookville	3
Crouses Settlement	3
Dartmouth	2
Dayspring	5
Dean's Corner	1
East LaHave	1
Fall River	1
First Peninsula	2
First South	5
Formerly Bridgewater, presently in England	1
Halifax	3
Hubbards	1
Oakland	1
Crescent Beach	1
Indian Point	4
Laconia	1
LaHave Islands	1
Lilydale	1
Liverpool	2
Lower Branch	1
Lunenburg	1
Mahone Bay	1
Maitland	2
Martins Brook	2
Middle LaHave	6
Mount Pleasant	1
New Ross	1
Newburne	1
Newcombville	2
Nineveh	1
Northwest	2

Oakland Road	1
Pine Grove	6
Pinehurst	1
Rhodes Corner	4
Rose Bay	5
Second Peninsula	3
Shubenacadie	1
Simpsons Corner	1
Timmins	1
Truro	1
Union Square	1
Upper Chelsea	1
Upper La Have	3
Upper Northfield	1
Wentzell Lake	2
West Clifford	1
west LaHave	2
West Northfield	1
Wileville	3

11. Please state your gender.

	Response Percent	Response Count
Male	40.9%	155
Female	**59.1%**	**224**
	answered question	**379**
	skipped question	**37**

12. Please select your age category.

	Response Percent	Response Count
11 years or younger	0.3%	1
12 to 18 years old	1.3%	5
19 to 24 years old	2.4%	9
25 to 34 years old	15.8%	60
35 to 44 years old	13.9%	53
45 to 54 years old	23.2%	88
55 to 64 years old	**27.6%**	**105**
65 to 74 years old	13.7%	52
75 years or older	1.8%	7
	answered question	**380**
	skipped question	**36**

13. Name:

	Response Count
	157
answered question	**157**
skipped question	**259**

APPENDIX C

Active Transportation Suitability Analysis

	Best: 9	Middle: 6	Worst: 1
1. Density (civic address points per square kilometre)	> 27.7	8.1 – 27.7	< 8.1

	Best: 6	Middle: 4	Worst: 1
2. Distance from school	< 2.5km	2.5 - 8km	> 8km

	Best: 3	Middle: 2	Worst: 1
3. Distance from post office	< 2.5km	2.5 - 8km	> 8km
4. Distance from community centre	< 2.5km	2.5 - 8km	> 8km
5. Distance from sports field	< 2.5km	2.5 - 8km	> 8km
6. Distance from library	< 2.5km	2.5 - 8km	> 8km

No go areas (white): Water Bodies			

In the absence of data indicating residential dwellings, all civic address points are considered relevant indicators for a combined density of uses (residential, commercial, institutional, etc.) This combined density is useful in assessing the suitability for active transportation infrastructure.

1. Density is a fundamental dimension of land use and is strongly correlated to walking and cycling. The higher the density, the more likely residents are to use active transportation.

2.-5. Distance is the primary barrier to active transportation. Knowing how many dwellings (or civic address points) are within walking (2.5 km) and cycling (8 km) distance to different destinations provides a snap-shot of current potential demand for active transportation. The location of institutions such as schools, libraries and community centres in rural areas is typically an indicator for other adjacent destinations such as convenience stores, grocery stores, general merchandise or other businesses and offices.

APPENDIX D

Self-Assessment Toolkit

Mu7nicipality of the District of Lunenburg
Active Transportation Self Assessment Toolkit

1. Get a topographical map or air photo of your community. Blow it up on a photocopier to 11x17.

2. On the map or photo, mark:
    - the destinations in your community, such as schools, community centres, stores, parks, sports facilities or other places that people like to go to, and
    - the location of clusters or strips of housing in your community.

3. Are there any:
    - sidewalks
    - paved shoulders
    - existing formal trails
    - existing informal trails

    in your community? Mark these facilities on the map or air photo.

4. Looking at your map or air photo, do the facilities you marked down in question 3 create links between the places you marked down in question 2?

5. Are there places where people such as schoolchildren or others tend to cross the road often? Mark these areas on your map or air photo. Are these crossing safe? Make notes about what could be done to improve the safety of these areas.

6. Are there groups of people who often walk or ride their bikes in your area? Where do they do these activities? If they are on your map or air photo, mark them down. If not, write them down on another sheet of paper and list the reasons why people go there for these activities. Can they reach these areas easily by walking, riding their bike or using another form of active transportation? Could these activities be accommodated close to your community with some improvements?

7. Where else do you think people would like to walk, ride or use active transportation in your community? What could be done to make these areas suitable for these activities or more easily reached by using active transportation?

8. If relevant, mark on your map or air photo where some of the following enhancements would improve your community for active transportation.
    - Paved shoulders
    - Improved signage (e.g. share the road, trailhead, parking area)
    - Reduced speed limits
    - Improved surface (crusher dust or paving of some sort)
    - Better snow clearing
    - Filling of potholes
    - More access points
    - Other facilities such as stairs
    - Better education of drivers or ATV'ers
    - Wider paths
    - Improved policing

9. Are there people in your community who would be interested in setting up a walking or a cycling group? Write down their names. What things could be done to encourage these people to get together on a regular basis?

10. Once you have answered the above questions, think about the things that would make the largest improvements and would best enable people to use active transportation to get around your community. Put these in order of priority. Think about the costs of making the improvements – are there things that could be done inexpensively that would make improvements? Can your community do these things on their own, or do you need some assistance or permission to do them?

11. Are there things you could do with neighbouring communities to encourage active transportation?

12. Are there sources of support or funding you can access to help you develop some of the ideas you have listed?

13. Contact your municipal councilor to discuss the ideas you have developed here and see if the Municipality can assist you.

APPENDIX E

Policy Recommendation

Municipality of the District of Lunenburg
POLICY

Title **Active Transportation**	
Policy No. **MDL-#**	
Effective Date:	Amended Date:

1.0 Policy Statement

The Council of the Municipality of the District of Lunenburg hereby adopts the following Policy respecting Active transportation within the Municipality.

2.0 Purpose

To improve the health of residents and providing alternatives to vehicular based transportation.

3.0 Definition of Active Transportation

Active transportation includes any form of human powered movement such as walking and biking, but also in-line skating, jogging, skateboarding, canoeing / kayaking, and the use of motorized personal mobility devices such as powered wheelchairs or medical scooters. While in many other jurisdictions, active transportation focuses on commuter or utilitarian activities, given the rural nature of the area, within the Municipality it also includes a significant recreational and tourism function.

4.0 Application

4.1 Recognizes that active transportation is a combination of the development of facilities and the implementation of programs, promotion, and advocacy activities.

4.2 Council will institute annual funding and staff time to the improvement of the active transportation network and activities within the District.

4.3 The Active Transportation Plan adopted on _____ 2011, is the policy document that will direct the District's decision making as well as funding and staffing of active transportation projects within the Municipality.

4.4 Will encourage communities to self-assess to determine local active transportation opportunities.

4.5 All new development in the District will include the provision of active transportation infrastructure where feasible. The District will encourage the development of compact mixed use communities which are more likely to suit the active transportation needs of youth and seniors.

4.6 Existing development will be retrofitted to promote active transportation as per the priorities established in the Active Transportation Plan. However, Council recognizes that some flexibility is required in order to take advantage of opportunities that present themselves.

Clerk's Annotation for Official Policy Book

Date of Adoption

Date of Notice to Council Members
of Intent to Consider

Date of Passage of Amendments:

I certify that this "Active Transportation Policy" was adopted by Council as indicated above.

_____ _____

Municipal Clerk Date

APPENDIX F

Subdivision By-Law Revision

Proposed Revisions to Schedule H of a By-Law Respecting the Subdivision of Land in the Municipality of the District of Lunenburg

In section 5.2: Minimum Cross-Section Criteria replace the description of Rural Local Undivided Road (RLU) roads with:

RLU Minimum criteria to be determined by Municipal Engineer, but at least equal to Rural Collector Undivided (RCU). The paved surface shall include paved shoulders appropriately striped to allow for the provision of active transportation infrastructure.

APPENDIX G

Bibliography

Active Living By Design. 2008. *Camden County Fit Together Partnership Increases Access to Physical Activity in Rural North Carolina.* Online: http://www.activelivingbydesign.org

Bergeron, K. & S. Cragg. 2009. *Making the Case for Active Transportation: Bulletin #2 – Barriers.* Canadian Fitness and Lifestyle Research Institute, Ottawa, Ontario.

BicyclingInfo.org. 2011. *Creating Active Rural Communities: Haliburton County, Ontario.* Pedestrian and bicycle information centre. Online: http://www.bicyclinginfo.org/library/details.cfm?id=4279

Canadian Fitness and Lifestyle Research Institute (CFLRI). 2005. *Making the Case for Active Transportation.* Online: http://www.cflri.ca/eng/active_transportation/index.php

Canadian Fitness and Lifestyle Research Institute (CFLRI). 2004. *Physical Activity and Sport Monitor: Local Opportunities for Physical Activity and Sport: Trends from 1999-2004.*

City of Vancouver. nd. *Backgrounder: Active Transportation in the Canadian Context.*

Curran, A. 2005. *Taking the Pulse of Active Transportation: Measuring the Built Environment for Healthy Communities.* Prepared for Community Counts, NS Dept of Finance, Action for Neighbourhood Change, United Way of Halifax Region.

Dakota County, Minnesota. 2011. *Active Living Community Vision*. And Kraft, K., H. Mahan, and M. Dessauer. 2006. *You are Where You Live: Active Living Community Vision Presentation.* Online: http://activelivingcommunityvision.org/communities/dakota-region/

Eastwind Cycling Consulting. 2009. *Nova Scotia Bikeways: Scoping the Blue Route. Infrastructure Inventory, Route Mapping and Feasibility of Implementation for a Provincial Bikeways Network*.

Ecology Action Centre (TRAX) & Cities and Environment Unit. 2009. *Municipalities for Green Mobility: Municipality of the District of Lunenburg Green Mobility Community Workshop Outcomes and Recommendations.*

FCM. *District of Saanich, BC: Municipality Changing Staff Commuting Habits.*

Gardner Pinfold. 1999. *A Survey of Nova Scotia Hiking Trail Users.* Prepared for: Nova Scotia Department of Economic Development and Tourism Nova Scotia Sport and Recreation Commission Human Resource Development Canada.

Hartleib, R. 2006. *Nova Scotia Pathways for People Framework for Action*. Prepared for NS Dept of Health Promotion and Protection.

HDR, iTrans, SNC-Lavalin. 2009. *Municipality of the District on Lunenburg: Public Transportation Feasibility Study Final Report.*

IBI Group. 2008. *Cape Breton Regional Municipality Active Transportation Plan.*

ICLEI. 2011. *Active Transportation Quantification Tool.* Online: http://att.ccp.iclei.org/more/about

Katzmarzyk P.T. and C. Mason. *Prevalence of class I, II and III obesity in Canada*. Canadian Medical Association Journal 2006; 174:156-157.

MMM Group, Stantec and Transactive Solutions. 2009. *Town of Oakville Active Transportation Master Plan (Cycling and Walking Master Plan).*

MMM Group, ESG. 2003. *Regional Niagra Bikways Master Plan.*

Municipality of The District of Lunenburg. 2010. *Integrated Community Sustainability Plan. ICSP*.

Municipality of The District of Lunenburg. 1999. *Municipal Planning Strategy.*

Municipality of The District of Lunenburg. *Open Space Strategic Planning Process 2002-03 Amendment 2010.*

Northwest Vermont Project. 2007. *A Guide to Transportation and Land Use Connections - Experiences from Northwest Vermont.*

Nova Insights. 2010. *Bridgewater Active Transportation Community Survey Final Report.*

Nova Scotia Department of Health Promotion and Protection. 2006. *Nova Scotia Pathways for People Framework for Action.*

Recreation Nova Scotia. 2007. *Active Transportation in Nova Scotia*. Pathways for People. Online: http://www.pathwaysforpeople.ca/ns

Rubin J. *Heading for the Exit Lane*. CIBC World Markets StrategEcon Report, June 2006: 1.

Schasberber, M.G., et al. 2009. Promoting and Developing a Trail Network Across Suburban, Rural, and Urban Communities. *American Journal of Preventative Medicine.* 37(6S2):S336-S344.

SGE Acres Ltd & Marshall Macklin Monaghan Go For Green. 2006. *Halifax Regional Municipality Active Transportation Plan.*

Smart Growth BC. 2009. *Creating Healthy Communities: Tools and Actions to Foster Environments for Healthy Living.*

Statistics Canada. 2006 Census Data. *Community Profile Data* for the Municipality of The District of Lunenburg

Terrain. 2008. *Town of Bridgewater Active Transportation and Connectivity Plan.*

Transport Canada. 2010. *The Links between Public Health and Sustainable and Active Transportation.*

Vélo Québec. 2010. *Planning and design for pedestrians and cyclists. A Technical Guide.*

Young. P. 2008. *An Active Transportation Plan for Minden.* Prepared for the Communities in Action Committee.