Transportation & Infrastructure

Background Report
Plan Review



reVISION Plan Review
Some Community Assembly Required

Affordable and appropriate transportation is a huge part of a healthy, prosperous community. Transportation options affect where people will live, work and how they can get to services. Planning is now putting more emphasis on providing transportation choices such as transit, walking and cycling which are less expensive and encourage healthy physical activity. Infrastructre is essential to providing clean water and to protect the environment. Planning must take into account the future infrastructure needs of the community.

Active Transportation

Active Transportation (often written as AT) is any human powered form of movement. The most common forms of active transportation are walking and cycling. Rollerblading and skateboarding are other examples of active transportation.

Planning is becoming more interested in active transportation. AT has several potential benefits for communities and residents. First, active transportation provides recreation opportunities. Many communities have focused on building hiking trails and multi-use trails. These investments have proven popular and provide a free and easy way for residents to exercise and socialize. Supporting active, healthy lifestyles is an important way to help combat inactivity and obesity.



Second, active transportation provides an emissions free travel option. Motorized transportation in Nova Scotia is a large source of greenhouse gas emissions, which are responsible for global warming and climate change. A 2006 assessment by the Genuine Progress Institute showed that transportation consumed 38% of Nova Scotia's total energy use.

Third, active transportation provides more travel options to residents without regular access to a car. This often includes seniors, youth and residents with a low income. Being able to safely walk or cycle to school, work, appointments or shopping provides residents with independence and choice.

Active Transportation Policy

The AT Policy was an idea that came from the Municipality's Active Living Strategy and the Integrated Community Sustainability Plan. The Municipality has committeed to take steps to:

- Improve sidewalks and trails
- Pave road shoulders and encourage walking and biking
- Take measures to control road speed and promote sharing the road
- Plan less auto-dependent communities

To implement the AT Policy, the Recreation and Parks Department created an Active Transportation Playbook that sets out 51 specific active transportation projects. Over 20 years, this would create 48 km of infrastructure. The priority projects are those needed to fix a current safety concern, have a high profile or are easy to implement. Projects are designed to connect together into a large network in the future, while still being useful on their own. The Chester Rail Trail is the major route between communities, while a variety of other routes are planned to connect destinations within communities.

Roads and Highways

There are three types of roads in the Municipality: provincial; local; and private. The numbered routes (e.g. 103, 12, 14, 3 and 329) are all provincial roads. Most other roads in the Municipality are provincial roads, which can be identified by the green street signs. The province owns, designs and maintains these roads. There are seven local roads in the Municipality: Captains Way and Commodore Drive in Aspotogan; Foxwood Drive and Lake Road in Mill Cove; Landings Drive West in East River; Millenium Drive in Chester; and Parkwood Drive in Mill Cove. Local roads are maintained by the Municipality. Private roads have white street signs, and are maintained by the owners or by a homeowner's association. They are neither a provincial nor a municipal responsibility.

Since most roads are provincial, the Municipality has little influence on street design. Street widths, on-street parking, sidewalks, bike lanes, paved shoulders, turning lanes and road alignment are all decided by the province. The Union of Nova Scotia Municipalities (UNSM) has recommended that municipalities begin funding many more roads. It is unclear, however, when these changes might take place and how it could affect the design of local roads. Trunk highways and provincial routes would remain provincial responsibilities.

Twinning Highway 103 between Tantallon and Hubbards is a potential provincial project. More than 10,000 vehicles a day use the road, the volume that triggers the province to consider twinning. In 2011, a provincial study suggested this project could take place in three phases. Phase 1 is the construction of Exit 5A near Ingramport, which is under way. Phase 2 would be twinning the highway between Tantallon and the new exit, at an estimated cost of $48 million. Phase 3 would be twinning between the new exit and Hubbards, at an estimated cost of $43 million. The provincial five year capital plan has not provided funding for either phase, although money for major projects may be available from the federal Building Canada fund. Twinning Highway 103 appears to be a priority project for the next round of highway construction.

Twinning Highway 103 could result in more housing demand in Hubbards. The new exit 5A, however, could make Ingramport more attractive, lessening the number of residents moving to Hubbards. In addition, congestion along Highways 103 and 102 closer to Halifax increases travel times. HRM's Road Network Plan suggests road upgrades will mostly add capacity for transit and carpoolers. The cost and disruption of large road widenings means capacity increases are unlikely. Congestion will continue to slow commuters. Several factors will continue to affect commuting times to HRM, including potential road upgrades, twinning and increased congestion. In general, the provincial government is expected to focus more on maintaining infrastructure than on major new projects, although Highway 103 twinning appears to be a priority because of the number of collisions.

Tancook Ferry

The Tancook passenger ferry runs from Chester Village to Little Tancook Island and Big Tancook Island. There are four round trips from Monday to Thursday, six round trips on Fridays and 2 round trips on weekends and holidays. Trips take 50 minutes and can accommodate 45 passengers. Parking is across the street from the wharf and also on Water Street near the Rope Loft. Overflow parking sometimes spills onto other streets.

Transit

There is no scheduled bus service within the Municipality. There is also no scheduled bus service from the Municipality to Halifax, Mahone Bay, Bridgewater or Lunenburg. Private shuttles will stop in Chester and Mahone Bay for people who have reserved seats.

There are, however, some transit options. Chester Community Wheels began in 2008. It provides travel from across the District. It is a community operated service. Funding is provided by grants from the Provincial government, the Municipality and the Aspotogan Heritage Trust. The United Way and Lunenburg County Health and Wellness have also provided funding in the past.

Three vehicles and paid drivers provide door to door trips from anywhere in the Municipality on an as-needed basis. Riders must book their seats for each trip. Trips go from across the Municipality to Chester Village and medical offices. Trips also go to hospitals in Halifax, Bridgewater and Kentville. Longer medical trips are becoming more common.

In 2013/2014, Community Wheels provided 3,569 one way trips. The service logged just over 56,000 kilometres last year. 2013/2014 was the busiest year ever. Their latest annual report is attached as an Appendix.

Community Wheels is an important social service. It allows residents who cannot drive or do not own a car to travel. It is primarily used for residents going to medical appointments or running errands. Transit consultant and author Jarrett Walker describes this type of service as a coverage service. The goal of the service is to meet a clear social need for travel. Coverage services provide a basic level of service to as many residents as possible. They often have infrequent service and long travel times. They may require trips to be booked several days in advance. This type of transit is not intended to provide regular commutes to school or work.

Sewer Systems

The Municipality operates central sewer systems in Chester, Chester Acres, Chester Basin, Western Shore, Mill Cove and New Ross. Property owners pay to connect the full cost of connecting to a central sewer system. An area tax rate is applied to all property owners connected to these systems, which covers maintenance and operating costs. The sewer rate is the same for all sewer users, and is set at $529.63 per year for each dwelling unit. Properties that use more water – for example restaurants or care homes – have higher rates.

A collection system (sewer pipes) and a treatment plant are the major parts of these sanitary sewer systems. Sewage must be treated to remove human waste, bacteria and viruses. Sewage can also contain household chemicals. After the sewage has been treated, the effluent is the treated water released into receiving water bodies.

Raw sewage is an environmental and health hazard. In 2009, Canada created a national strategy to improve sewage treatment. The strategy's goals are to improve human health and environmental protection. The strategy also provides clarity about the way municipal wastewater effluent is managed and regulated. In response, the federal government created new wastewater effluent standards. The regulations will require phased upgrades to existing treatment plants. New plants will be built to higher standards. In 2009, the estimate for needed upgrades was between $10 billion and $13 billion across Canada. The upgrades will take place over the next two decades.

Eventually, wastewater systems will have to meet phase two treatment standards. There are three phases to wastewater treatment: primary treatment, secondary treatment and tertiary treatment. Primary treatment mechanically removes solid waste. It often removes 20-30% of biodegradable organic compounds and 50-60% of solids. Secondary treatment is a biological process that happens after primary treatment. Microbes consume organic compounds as food, removing it from the wastewater. These systems often need significant space for tanks and lagoons where digestion can take place and where sediments settle. They remove up to 85% of solids and organics. Tertiary treatment is a final stage, using advanced

technologies to remove up to 99% of pollutants. It is often expensive and energy intensive.

Not all treatment plants provide all three stages. Some only provide primary, while others provide primary and secondary. Existing Municipal plants provide only primary treatment. Chlorine is then added to remove harmful bacteria like fecal coliforms. Chlorine can harm waterways, and will have to be removed from effluent by 2021.

Existing treatment plants are:

Mill Cove treatment plant was built in 1967 and serves 63 homes. A recent study found the plant is difficult to maintain and needs to meet higher treatment standards. A new plant was recommended, estimated to cost $450,000. The Aspotogan Ridge development, which could add hundreds of units, would have required a multi-million dollar treatment plant; however the developer is building smaller on-site systems to reduce upfront costs.

Otter Point system was built in 1976. It serves 22 houses. The treatment plant would need upgrading if the 19 vacant lots are built on.

Chester Basin's system serves five properties: the Seaside Shanty Restaurant; Bayview Apartments; the pharmacy; the former grocery store; and the gas station. The plant is currently over capacity. No further development can happen on any of these properties because there is no sewer capacity. A new treatment plant at the existing location is estimated to cost $432,000. A new plant would provide new capacity for 10-12 more units. The existing site is small, limiting potential treatment capacity. A new plant at a different location would cost roughly $680,000 but could provide more capacity.

Western Shore's system was built in 1975. It serves 270 homes and a 105 room hotel. Although it has had some problems meeting effluent standards, better operating standards should fix this issue. Western Shore could have some additional capacity with improved operations.

A new treatmsystem for 16 properties was built in **New Ross** in 2011. The treatment plant cost $142,000 and $25,000 was spent on the collection system. An older system had been malfunctioning, and the Municipality was ordered by the Department of Environment to fix the system.

Chester Village has no additional sewage treatment capacity. The plant was constructed in 1974, and upgraded in 1988 and 1997. An engineering report suggest $470,000 in work is needed. The plant currently does not remove chlorine from the effluent. Chlorine will have to be removed from effluent by 2021.

There may be additional costs to upgrade sewage treatment plants to meet stricter regulations that are being phased in.

Municipal policy is to acquire all central sewer systems for more than four lots. Several systems are planned, including Ten Beaches mini-home park in Simms Settlement. This system will not be taken over, because Ten Beaches is one large lot. Cluster systems are also planned in Regan Shores (Simms Settlement) and Aspotogan Ridge (Mill Cove).

Water Supply

Private wells provide drinking water to residents. There are no central water systems in the Municipality. Several studies have looked at creating a central water supply for Chester Village.

There are several parts that make up a central water supply, including:

- Water Source
- Transmission Lines
- Water Treatment Plant
- Storage
- Distribution Lines

The water source can be either an underground well or surface water from lakes or rivers. The transmission lines move water from the source to the treatment plant. After water is treated, it is stored in tanks or water towers. Storage is needed to maintain water pressure, protect from lack of water and provide fire protection. Large water systems may require many storage tanks to maintain supply and balance water pressure across large areas. Distribution pipes transport the water to customers. After water is used, it is collected by the sanitary sewer system for treatment and disposal.

The earliest study on a water system for Chester is from 1967. It identified Spectacle Lake as a water source, and recommended creating a reservoir pond downstream. A pumphouse and treamtment plant near Chester Commons was recommended, along with distribution pipes along north/ south streets in the Village. The cost was estimated at just over $1 million dollars (equivalent to $7.5 million in 2014 dollars).

A 1987 study also recommended Spectacle Lake as a water source. This study suggested Stanford Lake (which is closer to the Village) was not an appropriate water source. Development near Stanford Lake threatened water quality. Using Standford Lake as a water source would require a costlier treatment plant. The 1987 study estimated a treatment system would cost $2.1 million, or $3.3 million if it included two hour fire flows. ($4.4 million to $6.9 million in 2014 dollars)

The most recent study is from 2011. It also recommends Spectacle Lake as a water supply. Building the entire system - transmission lines, treatment plant, storage and distribution - was estimated at over $12 million, with a variety of possible designs. The treatment plant and storage would cost between $5.7 million and $7 million, depending on which option was chosen. There are different options for where storage tanks could be located, or where water mains could be located. These choices would affect how many people outside the core Village could be connected to the water supply.

The low quality and quantity of drinking water in the Village is a longstanding problem. A study in 1982 concluded that communities around the Village had more than enough groundwater, but the Village had low water quantities. A 1990 study found that almost 20% of dug wells ran dry at times, and many wells had some salt contamination. Corrosive water and elevated levels of iron, manganese or nitrates were also issues. A 1993 survey found only 41% of residents favoured a central water system and only 5% would pay the annual fees for that system. A lack of public support has been one barrier to creating a central water supply for Chester Village.

Council did create land use controls to protect Spectacle Lake. In 1992 the watershed feeding the lake was designated a protected water supply. There is a Protected Watershed Zone. Industrial, commerical, residential and new roads are permitted. These restrictions are to ensure the lake remains uncontaminated and a potential water supply.

Conclusions

Transportation and infrastructre are basic services that are often taken for granted. Roads, trails, sidewalks and sewers are expensive to build and maintain. Some desireable services, like transit, are very expensive to operate.

The Municipality has committed to providing better trails and sidewalks. These investments promote physical activity and make our community a more desireable place to live. The long distances in rural areas, however, make it hard to provide better active travel options. Some options include clustering services (schools, seniors housing, stores) in hamlets like New Ross, Chester Basin, or Hubbards. When services and homes are close together walking and cycling is easier, and fewer sidewalks and bike lanes are needed.

Clustering services can help lower travel needs for some residents. It can also lower the need for infrastructure, but many rural residents will remain without an alternative to driving. Residents who do not own a car have trouble reaching work and school or running basic errands. Getting around is especially problematic for seniors, youth, low-income residents and people with disabilities. There are some ways to help with this issue. Wide paved shoulders would let more people safely walk, although distances would still be a barrier. Online ride share programs could help, as could more transit service, like Community Wheels. There are few inexpensive solutions, and better transportation options will likely require working with the province and neigbhouring communities.

Basic services like sewage treatment are needed to protect human health and water quality. There are three major challenges to providing these services. First, the systems are old and need maintenance. Second, newer regulations could mean expensive upgrades over the coming decades. Third, the scale of Municipal systems are small. This means the cost per unit to provide treatment is often very high.

Encouraging new development in serviced areas could lower the per unit costs, but many of the systems have no extra capacity. Chester Village's sewage treatment system has no capacity and Chester Basin's system is over capacity.

Maps of the Municipality's sanityary sewers are attached to this report. Service capacity and service costs are clearly a critical issue to consider through the Plan Review.