



Exhibition Park - Growth Area

Mobility Analysis - Final Draft Report

May 28, 2025

Fathom

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Introduction & Context

Exhibition Park Growth Area

Banc Developments has proposed the redevelopment of Exhibition Park and surrounding lands to accommodate a high-density, residential mixed-use development of about 5,900 residential units, in an effort to directly address HRM's ongoing housing crisis. As part of the initiation process currently underway (see Fathom's original Initiation Report - November 2023, and updated report - April 2025), HRM requires preparation of a Mobility Analysis to understand how the site integrates with and supports local, adjacent and regional transportation initiatives in HRM.

Exhibition Park is located approximately 4.5 kilometres southwest of the Halifax Peninsula, positioned along Route 333 (Prospect Road). The existing development fronts the east side of Prospect Road and is entirely surrounded by a mix of provincial and municipal parkland. To the north, east, and south, the site borders Long Lake Provincial Park — a popular natural destination offering a range of recreational opportunities including multi-use trails, swimming areas, and fishing spots. Although most formal access points to Long Lake Provincial Park are situated along Dunbrack Street, visitors and residents at Exhibition Park can conveniently reach the park either via the Exhibition Park Trail system or by driving roughly 2 kilometres north to the designated parking area located along Route 3 (St. Margaret's Bay Road).

Exhibition Park's western boundary is abutted by the Western Common, a 7,900-acre municipal park with a series of trails and lakes as well as the Ragged Lake Business Park, and a solid waste management facility (Otter Lake). The management and development of the park is subject to the 2010 Western Common Wilderness Common Master Plan as well as the Western Common Advisory Committee.

Within the boundaries of Exhibition Park, two main uses can be observed. In the north of the site, there is a recently constructed gas bar and restaurant development. Completed in 2019, the 16-pump gas bar was the result of a 2017 development agreement. The southern portion of Exhibition Park features the primary use of the site: The Halifax Exhibition Centre (HEC).

The HEC hosts a wide range of events and conventions throughout the year, including trade shows, exhibitions, and a weekly flea market. During the summer months, the site also occasionally features a carnival. In May 2023, a new outdoor go-kart track opened on-site. Across its four buildings, the HEC provides over 100,000 square feet of event space and accommodates parking for more than 2,000 vehicles.

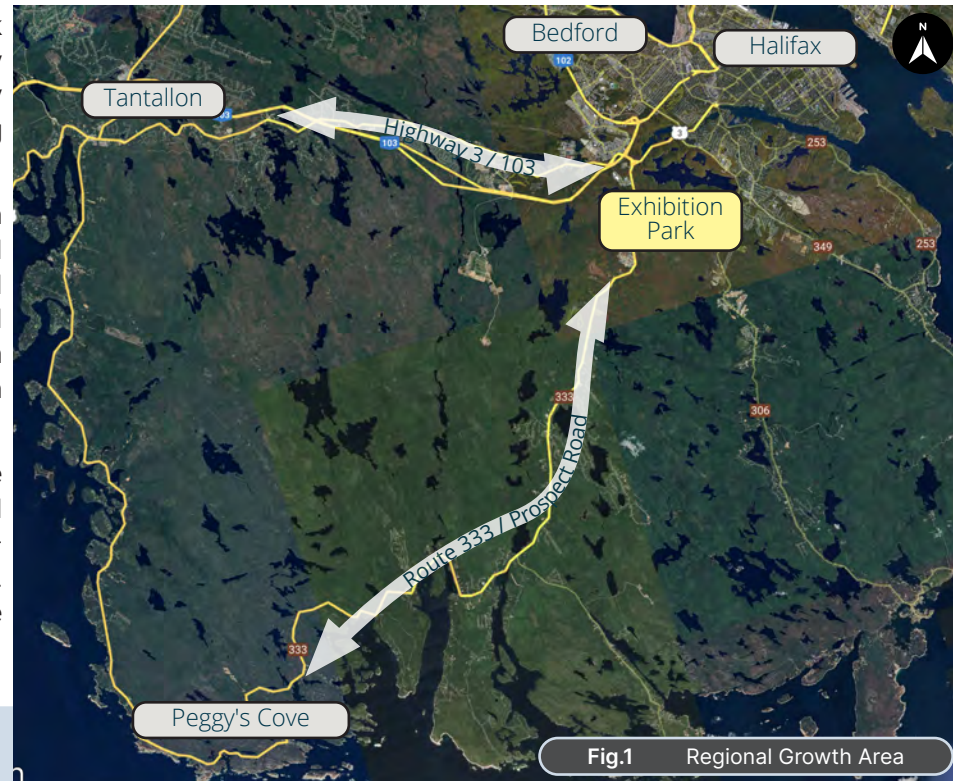


Fig.1 Regional Growth Area

Study Preparation

This Mobility Analysis closely follows the content and principles contained in HRM's Integrated Mobility Plan (IMP), released in 2017. The plan provided a new vision for moving people and goods. As noted on HRM's web page, the plan focuses on:

- Prioritizing the movement of people over vehicles,
- Improving accessibility,
- Creating links between people and communities,
- Strengthening the relationship between transportation and land use decisions, and
- Rethinking and redesigning our transportation system and communities.



Complete Communities

Clustering communities around public transit, employment, shops and services.



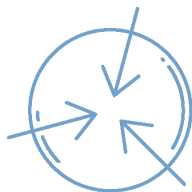
Move People

Move people and goods, instead of focusing solely on vehicles.



Manage Congestion

Manage congestion instead of trying to eliminate it.



Integrate Solutions

There is no one solution to solve mobility problems.

To achieve the goals set out in the IMP, the strategy emphasizes four core principles, illustrated in the figure below sourced from the IMP. These guiding principles shape the future direction of Halifax Regional Municipality's transportation network, influencing the development and integration of active transportation infrastructure, transit services, transportation demand management strategies, goods movement systems, and the overall roadway network.

This Exhibition Park Study has been prepared as a site specific application of the Integrated Mobility Plan principles and therefore frequently borrows information, terminology and principles from the IMP.

Connected

Connects people, places, goods, and services.



CONNECTED

Connects people, places, goods and services

Healthy

Safe, comfortable and convenient for all ages and abilities.



HEALTHY

Safe, comfortable and convenient for all ages and abilities

Affordable

Investment is strategic and travel is affordable.



AFFORDABLE

Investment is strategic and travel is affordable

Sustainable

Environmentally, socially and economically responsible.



SUSTAINABLE

Environmentally, socially and economically responsible

Regional Context

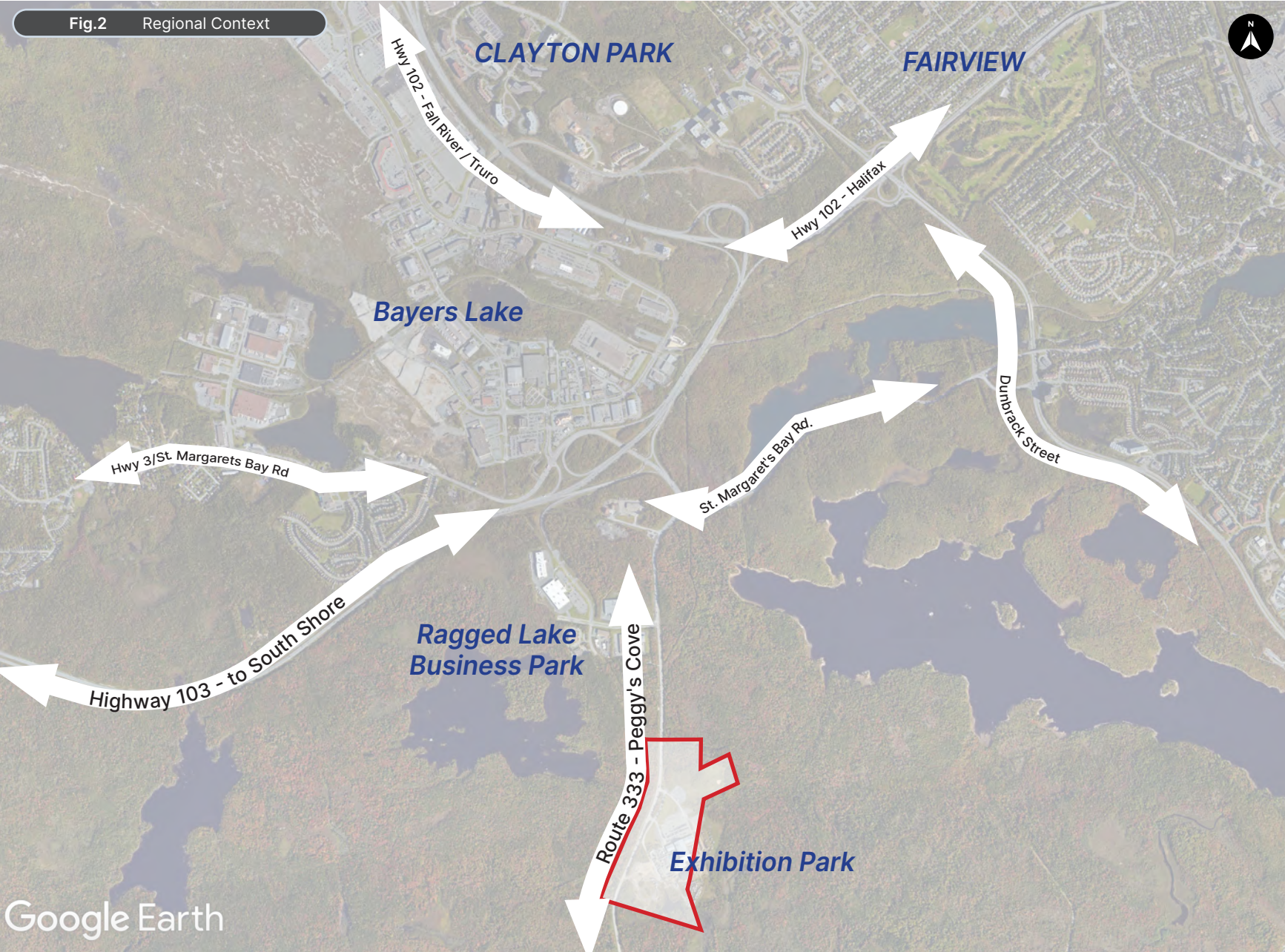
The Exhibition Park lands are located just south of the Bayers Lake and Ragged Lake Business Parks and along the southern limits of the core developed areas of Halifax. In essence, it is in the transition zone from the high density and mature communities of Clayton Park West and Fairview, and the more rural communities found along the Route 333 corridor that extends down to Peggy's Cove, and then north again connecting to Highway 3 at Tantallon. Immediately north the development is a robust, though complex, existing transportation road network where major highways and arterial roadways intersect. Direct regional connections include:

- **Highway 103** - the primary 4-lane divided 100-series highway servicing the South Shore of Nova Scotia with connections to Timberlea, Tantallon, Hubbards, Bridgewater, Lunenburg and extending to Yarmouth about 260 kilometers south of the development. About 1.8 kilometers to the north, Highway 103 connects to Route 3 / St. Margaret's Bay Road, and 3 kilometers north, Highway 103 connects with Highway 102.
- **Highway 102** - a 4-lane divided provincial highway that connects north to Halifax, Bedford, Sackville, Fall River, the Stanfield International Airport, Truro, and to Highway 104 about 100 kilometers to the north. To the east, Highway 102 connects into the core areas of Halifax via Bayers Road.
- **Highway 3 / St. Margaret's Bay Road** - a 2-lane undivided roadway connecting to the Armdale Roundabout at it's east end, and extending southwest to Bridgewater where it recombines with Highway 103.

Adjacent to the site is Route 333 (discussed in the next sections) which also serves regional functions including:

1. Primary commuter route connecting the communities along Route 333 south of Exhibition Park to employment and business nodes north, east, and west via the various major transportation routes noted above.
2. Access to tourist oriented areas such as Peggy's Cove, which can generate increased seasonal traffic volumes including tour buses and other recreational vehicles.
3. Access to Ragged Lake Business Park and Exhibition Park, which serve various business, industrial and event based activities throughout the year.





Adjacent Context

The Exhibition Park lands are directly serviced by Route 333 / Prospect Road as the single access route to, and through the area. The existing Exhibition Park site has three main access points connecting to Prospect Road and includes a service road style driveway running parallel to Prospect Road.

The figure on the following page also shows the location of a current application to HRM for the development of a Nova Scotia Sound Stage located immediately south of Exhibition Park as shown by the green box. A transportation impact study was prepared for this development in late 2023 (by Fathom Studio), showing that the number of trips to and from the site are expected to be relatively low and have minimal impact to traffic operations on Prospect Road.

Other key roads immediately adjacent to development include:

- **Route 333 / Prospect Road** - a 2-lane rural undivided Provincial highway that connects to St. Margaret's Bay Road at it's northeast end and forms a 60 km loop to the west traveling along the ocean and reconnecting to Highway 3 at Tantallon. The roadway is rural in nature for most of its length and includes a 2 meter wide paved asphalt shoulder for much of the eastern part of the route nearest Exhibition Park.
- **Ragged Lake Boulevard / Ragged Lake Business Park** - is a wide local access roadway extending about 500 meters into the Business Park and features a grassed median, roadway signage on Prospect Road, and connects to Long Lake Drive and Grassy Lake Drive just west of Prospect Road. Grassy Lake Drive extends to the north and provides a transit access to the Highway 103 off-ramp at Exit 2.
- **Long Lake Drive** - located south of Ragged Lake Boulevard has been identified as a future extension through the Business Park parallel to Route 333 on the opposite side of Exhibition Park. Establishing a connection between Exhibition Park to this extension appears to be a logical consideration in the future.
- **Evergreen Place** - is a 750 long industrial roadway about 13 meters in width with painted median and gravel shoulders. It provides access to a number of industrial properties in the industrial areas just south of Exhibition Park.

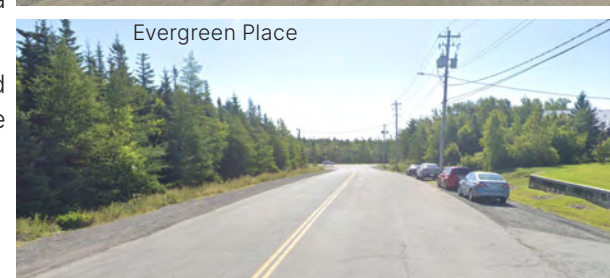
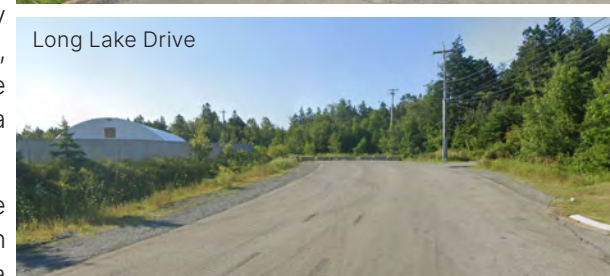
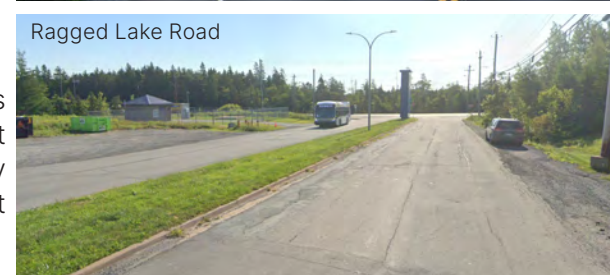
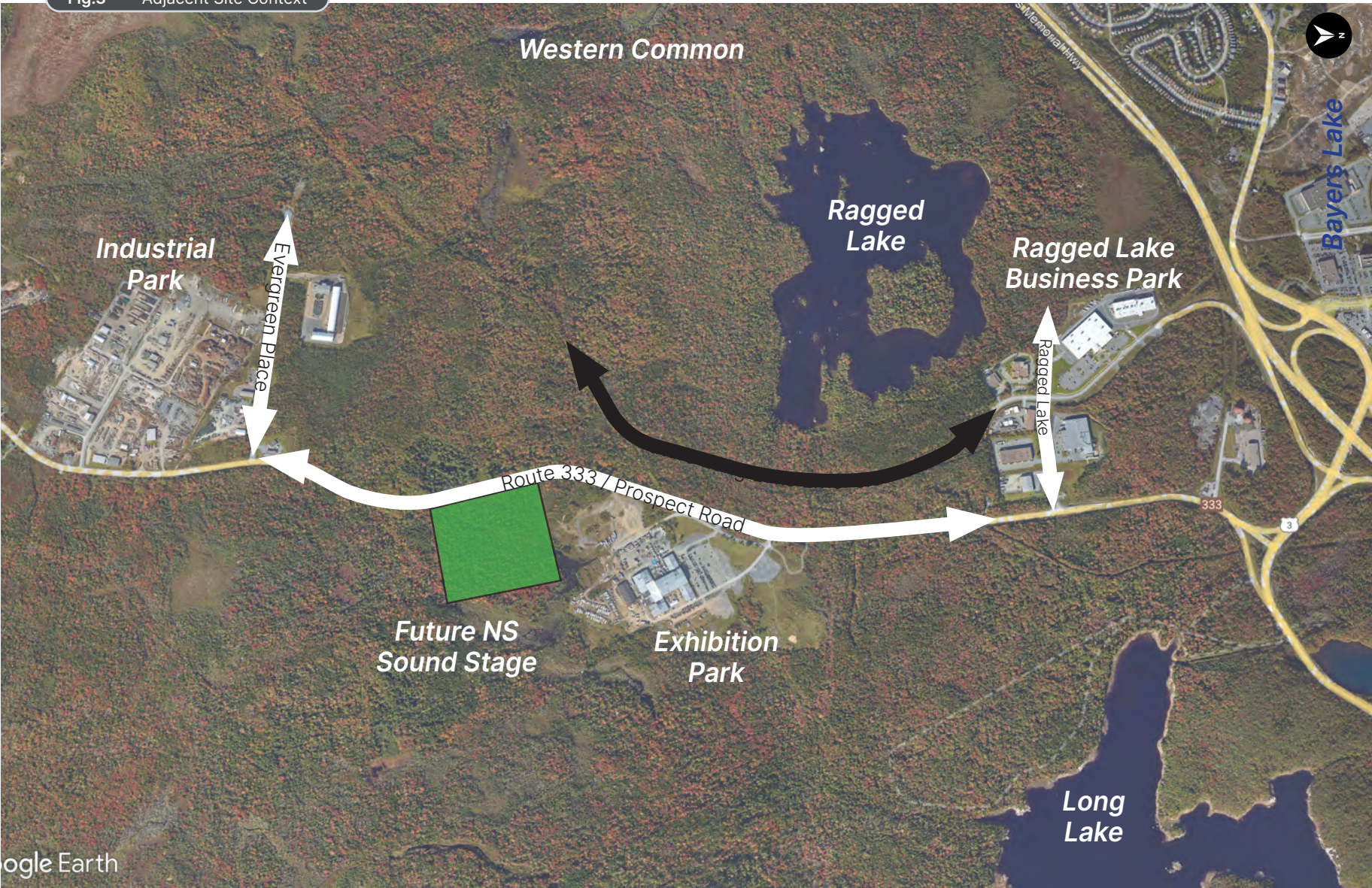


Fig.3 Adjacent Site Context



Internal Context - Proposed

The **figure on the following page** shows the proposed development layout including internal roadway and active transportation network within the development boundaries. This includes key connections to existing external mobility infrastructure. Critical elements of the developments network include the following items.

Access to the Development

The proposed 109 acre development site is serviced by three main roadway access points along Prospect Road as well as two other smaller driveways. These accesses includes a roadway immediately north of the existing gas station, where the current driveway is located, and provides access to lower density housing along the north side of the development. This roadway allows for two future connection points to Provincial lands located immediately north of the development.

Two additional access points are provided further south along Prospect Road creating a looped roadway around the higher density urban core and central urban square. The urban square is located approximately where the existing Exhibition Center is and would potentially allow the Center to continue to operate for some period of time, depending on the implementation phasing of the project.

The roadway around this urban square provides an appealing transit route through the development, capturing a significant portion of the development's residential population in the adjacent high density buildings. This route is also likely to provide direct transit access to buildings with commercial development.

These buildings surrounding the village square are expected to provide some ground floor commercial services to people within the development, and the to the surrounding communities of Goodwood, Hatchet Lake and other. With higher volumes of traffic passing the development on Prospect Road, it is expected that some of these commercial services will draw additional "pass-by" trips for people passing by the site during trips to and from the core areas of HRM.

The looped collector road that encircles the village square is planned to include on-street parking and sidewalks on both sides of the street and could potentially accommodate a multi-use pathway parallel to the roadway.

The anticipated build-out for this development will include:

- 5867 units including 146 townhomes, and 5721 multi-units
- A total park area of 6.52 areas (6% parkland)
- Approximately 4,000 m² of ground floor commercial
- 17 acres of conservation land
- An overall density of 44 units per acre.

Fig.4 Proposed Site Plan



EXHIBITION PARK DEVELOPMENT
BEECHVILLE, NOVA SCOTIA

SEPTEMBER 2024



Exhibition Park - Pro Forma

Plot Efficiency 60%
Avg Unit Size 80 sq

Building	Comm GFA	Sched Height Max (ft)	Total Storeys	Ground Floor			Midrise (5-10 storeys)			Tower (11-20 storeys)			Total Res GFA (sq ft)	Units	Height (ft)
				Lower GFA	Storeys	Midrise GFA	Storeys	Midrise GFA	Storeys	Tower 1 GFA	Storeys	Tower 2 GFA			
A	25	25	8	1160	8	1160	8	1160	8				16,000	160	25.5
B	25	25	8	1224	8	1224	8	1224	8				16,972	169	25.5
C	19	19	6	1055	6	1055	6	1055	6				8,796	88	19.5
D	19	19	6	1028	6	1028	6	1028	6				10,998	110	19.5
E	19	19	6	1028	6	1028	6	1028	6				10,998	110	19.5
F	19	19	6	1028	6	1028	6	1028	6				10,998	110	19.5
G	25	25	8	1228	8	1228	8	1228	8				19,984	199	25.5
H	25	25	8	1028	8	1028	8	1028	8				14,284	143	25.5
I	19	19	6	1050	6	1050	6	1050	6				10,200	102	19.5
J	25	25	8	1028	8	1028	8	1028	8				14,284	143	25.5
K	25	25	8	1028	8	1028	8	1028	8				14,284	143	25.5
L	50	50	14	2473	14	2473	14	2473	14	900	6	900	21,026	210	43.5
M	1154 m2	50	14	4615	14	4615	14	4615	14	900	6	900	38,574	386	43.5
N	706 m2	50	14	2825	14	2825	14	2825	14	900	6	900	21,150	212	43.5
O	99	99	20	2650	20	2650	20	2650	20	900	14	900	25,000	250	61.5
P	99	99	20	1500	20	1500	20	1500	20	900	14	900	15,900	159	43.5
Q	50	50	14	2658	14	2658	14	2658	14	900	14	900	22,912	229	43.5
R	99	99	20	2610	20	2610	20	2610	20	900	14	900	21,460	215	43.5
S	99	99	20	2610	20	2610	20	2610	20	900	14	900	21,460	215	43.5
T	706 m2	99	20	2825	20	2825	20	2825	20	900	14	900	28,550	286	61.5
U	706 m2	99	20	2825	20	2825	20	2825	20	900	14	900	28,550	286	61.5
V	706 m2	99	20	2825	20	2825	20	2825	20	900	14	900	28,550	286	61.5
W	99	99	20	2650	20	2650	20	2650	20	900	14	900	25,000	250	61.5
X	50	50	14	2658	14	2658	14	2658	14	900	14	900	22,912	229	43.5
Y	25	25	8	1228	8	1228	8	1228	8				13,014	130	25.5
Z	25	25	8	1028	8	1028	8	1028	8				14,284	143	25.5
AA	25	25	8	2728	8	2728	8	2728	8				17,264	173	25.5
BB	50	50	14	2157	14	2157	14	2157	14	900	14	900	21,220	213	49.5
Townhomes													4,560	38	
Stacked Townhomes													10,800	108	
Total	3979 m2												687,190	6,867	

Total Lot Area	4,752,396 m2	109.08 acres		
Density	442 UPA			
Conservation	69,636 m2	17.21 acres	Value of Development	
Linear Park	2,600 m2	0.64 acres	Buildings @ \$1500/sqm	\$ 2,055,165,000.00
Village Square	23,000 m2	5.88 acres	Roads @ \$1000/sqm	\$ 15,000,000.00
Total Park Area	26,400 m2	6.52 acres	Underground parking garages	\$ 154,000,750.00
			Parks	\$ 6,000,000.00
			Total	\$ 2,280,175,750.00

Review of Relevant Plans / Strategies

Additional and more comprehensive information on these relevant plans and studies is provided in Fathom's "Initiation Report". This section is intended to highlight the key elements of the reports and plans relevant to the Mobility Analysis.

Regional Municipal Planning Strategy (Regional Plan)

The Regional Plan established growth targets 25% of new housing starts are to be located within rural communities (where Exhibition Park is located). Exhibition Park has also been identified as an Opportunity Site in the Regional Plan, which ultimately aims to improve the quality of life for those in HRM by *"fostering the growth of healthy and vibrant communities, a strong and diverse economy, and sustainable environment."*

Exhibition Park lies directly south of the Clayton Park West and West End Mall centres, indicating the desire of the municipality to concentrate development in this portion of the municipality. Further, Exhibition Park lies just north of a series of communities (Goodwood, Hatchet Lake, Brookside, Whites Lake, Shad Bay, etc.), that could significantly benefit from the extension of the primary developed areas of Halifax towards these areas.

The area is serviced by Halifax Water and is in close proximity to the Urban Transit Service Boundary (UTSB) suggesting that the area meets many of the criteria required under the UTSB. It is therefore logical that these areas are candidates for expansion of the Boundary, which may also coordinate with community based transit service that may integrate with Halifax Transit.

Planning District 4 Municipal Planning Strategy

Key points extracted from the District 4 Municipal Planning Strategy include:

- The MPS acknowledges that a more suburban style of development has been occurring gradually.
- The Residential B designation (Exhibition Park area) is to

support the continuation of residential development while providing support for the traditional mix of land use activities.

- The MPS expresses the desire for more affordable and mixed housing types within the Residential designation.

Integrated Mobility Plan

In 2017, Halifax Regional Council passed the Integrated Mobility Plan (IMP) which guides development and investment in active transportation, transit, transportation demand management, goods movement and the roadway network in Halifax. A Phase 2 updated to the original 147 action items is currently underway.



Transit and AT Connectivity

Exhibition Park is not currently serviced by public transit, though past service included a local bus route with a stop at Exhibition Park and associated park-and-ride lot. It appears there remains a significant demand for transit service as well as cycling infrastructure along Prospect Road. With the current demand levels, the magnitude of the proposed Exhibition Park development, and the close proximity of existing services to the Ragged Lake Business Park (1.1 km), it appears logical that extending transit service to and through the development would be regionally beneficial.

Section 1.2.4 of the IMP discusses planning for improved mobility in rural areas and recommends clustering development into denser rural centres in order to improve opportunities for active transportation, enable easier service from dial-a-ride vans, and make car- and ride-sharing easier. The development of Exhibition Park would result in a dense, clustered rural community that would be able to utilize many of these transportation alternatives.

Prospect Road is included in the Halifax bicycle network, featuring bi-directional paved shoulders that link Exhibition Park to the rest of Halifax's cycling network. Additionally, sections 3.1.5 c) and 3.1.5 d) of the IMP describe the need to expedite the planning, design and construction of the regional network of multi-use pathways and the need to expand active transit connections in rural communities. The existing infrastructure as well as the clear policy intent to improve rural transportation mean that the development of Exhibition Park could act as a catalyst to improve mobility in and around the communities along Prospect Road.

Transportation Demand Management

The IMP outlines a series of Transportation Demand Management (TDM) strategies to reduce peak-hour congestion by providing people with choices in how and when they commute. Exhibition Park stands out as a potential rural community with an array of TDM options not present in other rural areas. These include:

- Previous park-and-ride options should be revisited in the context of the Exhibition Park and Ragged Lake Business Park development,
- Nearby cycling infrastructure,
- Exhibition Park is one of the few rural areas of HRM still serviced by the ride-hailing app Uber,
- Coordination of trips further south of Exhibition Park with new demand from the development,
- Commercial parts of Exhibition Park will help reduce vehicle trips by providing daily commercial services for people on site, and passing by the site.

Rapid Transit Strategy

In May 2020, Halifax Regional Council unanimously endorsed the Rapid Transit Strategy (RTS) which was designed to bring rapid transit to Halifax in the form of increased ferry service and new Bus Rapid Transit (BRT) routes. Currently, the nearest BRT stop is approximately 5 kilometers, therefore BRT services is not expected to factor into the short term planning for the Exhibition Park development. Longer term options may exist as the area matures and BRT services expand in the future.

Moving Forward Together Plan

Approved by council in 2016, the Moving Forward Together Plan (MFTP) was created to kickstart the restructuring of the transit network and act as a guide for future service improvements. Exhibition Park used to have a stop from the local Route 22, but service was cut in the 2017/18 annual service plan. This was following an earlier service cut that saw Exhibition Park excluded from evening bus service in the 2013/14 annual service plan.

The service cut was directly mentioned in the MFTP's section on reallocating resources to high-ridership routes. It appears that low ridership was the driving force behind Exhibition Park's exclusion from the 22 bus route, not surprising given the nature of the development.

The MFTP affirms the stance of HRM to keep all transit investment within the Urban Transit Service Boundary (UTSB). Since Exhibition Park lies outside of this boundary, it would not be possible to reinstate or expand service to the site without expanding the boundary to include the subject properties. Since its creation, the UTSB has not been expanded.

Additionally, the few existing routes that lie outside the UTSB were all established before its creation. The MFTP also stipulates that upgrades to routes that extend beyond the UTSB can only occur in the portions of these routes that are within the boundary. Along with the IMP, the MFTP also advocates for the use of transit priority measures to provide transit vehicles with competitive time advantages over private vehicles. Since the development of Exhibition Park would also likely see the construction of new roads on-site, future road and intersection construction could see transit priority measures implemented to improve transit service in the area should it ever be expanded to cover the site.

While these points all remain relevant, it is unlikely that the UTSB envisioned a 6000 person development so close to it's boundary, therefore, renewed consideration of service makes sense as density and population increase in this area.



Past / Ongoing Technical Studies

Ragged Lake Industrial Park

A number of past and present studies are underway addressing the future development of the Ragged Lake Business Park. The park was originally developed by the former City of Halifax Industrial Commission in the late 1980's and includes a mixed use, commercial/business area of approximately 84 acres of serviced lands zoned I-3 (General Industrial). The remaining 1,350 acres at Ragged Lake have been identified and are intended for future build out to support HRM's Economic Strategy. These lands are currently zoned UR (Urban Reserve) to help ensure that a supply of land is available for serviced development over a longer-term horizon.



The HRM Business Parks Functional Plan (2008) undertook a strategic review of HRM's role in business park development and a rationalization of uses and development standards. It covered 16 public and private business parks including Ragged Lake where it noted that the park has never "taken off" due to relatively poor accessibility, poor visibility, limited servicing

capacity, and competition with Burnside Business Park. It further suggested significant infrastructure improvements and access to Highway 103 will need to be improved before the park could be expanded. Conceptual land use plan for this area included a collector road through this park, connecting the Otter lake interchange with Highway 333.

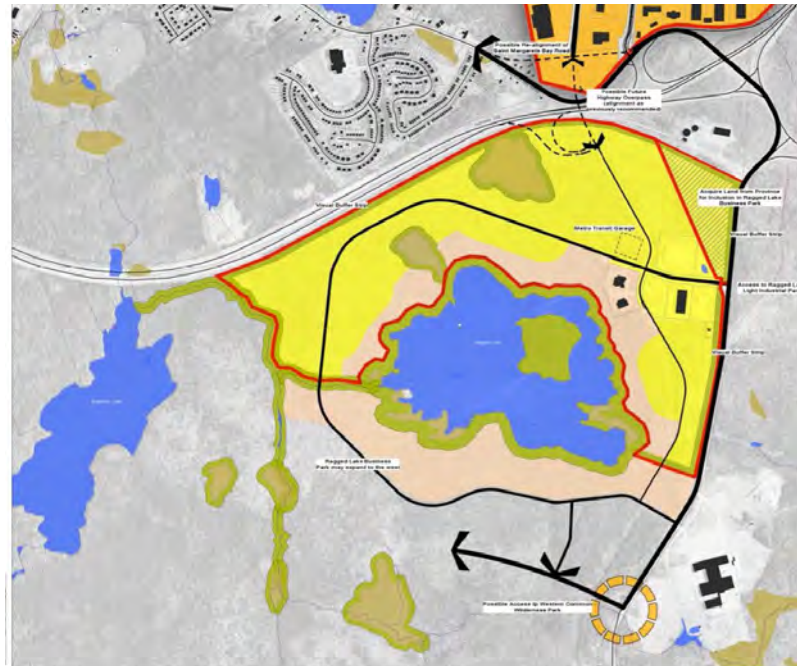
The study also referenced the 1999 Western Common Master plan that identified a vision for a "work, live and play" environment on the lands surrounding and including the

Ragged Lake Business Park. The 2008 report also made the following recommendations as options:

- Selling the park lands for development as a master planned community and use the proceeds to purchase light industrial lands in Halifax.
- Keeping the Business Park lands as a future reserve for commercial and residential uses, with some allocation for light industrial development.

A number of other relevant points can be extracted from these past studies that are relevant to considering increase residential density in this area, including:

- The planning for the industrial/employment lands at Ragged Lake and how it relates and integrates with the Western Commons will provide HRM



HRM BUSINESS PARKS FUNCTIONAL PLAN
Bayers Lake / Ragged Lake Business Parks - Generalized Future Land Use

with a leading opportunity to comprehensively plan for employment lands that incorporate open space, active transportation, trail head, parkland access and connectivity, and environmentally sustainable development.

- Suitable land for industrial use is in limited supply. In 2017, and for the better part of the past decade, HRM has relied on one industrial park (Burnside) with land available for immediate industrial development.
- Supply of industrial land on the Halifax mainland is in limited supply with demand exceeding supply. New industrial lot inventory at Ragged Lake will meet demand and bring balance to the market.
- The BFPF – Part II focused in more detail on Bayers Lake and Ragged Lake Industrial Parks and was approved-in-principle by Regional Council in June 2009. Major recommendations of the BFPF – Part II included:
 - » That the Ragged Lake area is well located to provide a supply of light industrial land over the long term, as supported by the land suitability analysis. Ragged Lake remains the last significant location on the western side of HRM close to the central core for small, locally owned industries, such as service industries, manufacturers and distributors.
 - » Ragged Lake is well located along established major transportation infrastructure and in close proximity to the urban core. This will allow HRM to reduce duplicating major infrastructure elsewhere in the Region and instead invest in the existing infrastructure for maximum benefit.
 - » Providing employees and businesses the option to work closer to where they live or where their customers are located will reduce the load on the existing transportation infrastructure and increase options for active transportation and transit alternatives.
 - » The proposed transportation improvements/additional access points to and from the Highway 103 and Bayers Lake, would also benefit the immediate community which currently commutes through the single access point of Prospect Road at St. Margaret's Bay Road.
 - » Transit and Active Transportation: The ability for residents to work closer to where they live increases the feasibility of transit and active transportation options. Being able to plan and design a complete employment center from the outset would provide

the opportunity to maximize the potential for effective transit and active transportation connections.

- » Higher density land uses can be planned to be in clustered locations incorporating supporting services/amenities in the same area such as restaurants, coffee shops etc. that typically support large employment areas and which generate significant traffic.
- » The report was generally in keeping with the concept as included in the Western Common Wilderness Common Master Plan which determined the proposed expansion of Ragged Lake is financially feasible in terms of achieving full cost recovery to the Municipality.

Route 333 (Prospect Road) Transportation Study

This study was issued by the Nova Scotia Department of Public Works and awarded to CBCL. The study is nearing completion and is currently in draft format and proceeding through the final review processes.

The primary focus of the study was to evaluate current and future operational conditions on Route 333, and identify feasible options for modifying or upgrading transportation infrastructure to accommodate future growth. The study included growth scenarios for the Ragged Lake Business Park, and included consideration of the proposed Exhibition Park development.

It is our understanding that the report evaluated a wide variety of connectivity options, extending from the existing Exit 2 interchanges just north of Exhibition Park, connections to the existing Exit 3 interchange at Otter Lake, and intermediate interchanges locations between Exit 2 and 3.

It is anticipated that the preferred future connection options will have a significant impact on traffic volumes on Route 333, helping support growth of the Ragged Lake Business Park, add capacity for developments like Exhibition Park and the Nova Scotia Sound Stage, and other local development opportunities. Specific details are not available at this time, though the completion of the Route 33 study is on a very similar time line to this study, therefore coordination between the findings of the two studies should be pursued as each gets finalized.

Mobility Definitions

Accessible: Planning, design, and programming that enables access by people with a variety of physical and mental abilities.

Active Transportation: Human-powered, personal travel chosen as an alternative to motorized travel and includes: walking, running, hiking, the use of a wheelchair, bicycling, cross-country skiing, skateboarding, canoeing, rowing, or kayaking.

All Ages and Abilities (AAA): Planning, design and programming that enables use by people of all ages and with a variety of physical abilities.

Barrier-free: Design that enables access by people with or without a variety of physical and mental abilities.

Bikeway: Routes or paths used for bicycling.

Bus Rapid Transit (BRT): A high-quality bus system that provides transit riders with fast, frequent, comfortable, higher capacity service. Where possible, it uses transit priority lanes. Off-board fare collection and level boarding improve accessibility and reduce time spent at stops. They often form part of an overall transit system with strategic connection terminals between the conventional and BRT network. Buses typically get priorities at intersections, and route amenities often have upgraded technologies to minimize delays (vehicular or passenger).

Commuter Rail: Local train service oriented to peak-hour trips to work or school, usually using existing tracks.

Complete Communities: Communities that include a range of uses and housing options to accommodate people in all stages of life and at a variety of income levels. Complete communities provide a place for residents to live, work, shop, learn, and play. These communities contain mixed uses and compact development that enables people to safely and conveniently access the goods and services they need in their daily lives, all within a short journey and without the need to depend on a personal vehicle.

Complete Streets: An approach to planning, design, operations, and maintenance of roads, sidewalks, landscaping and rights of way that

enables safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of transportation mode (e.g. on foot, on a bicycle, using transit, in a private vehicle). It recognizes that public streets are also places that can serve a social, economic, and ecological function.

Congestion: A condition characterized by slower speeds, longer trip times, and increased vehicular queueing.

Curb Extensions: A treatment that increases the width of a sidewalk while also reducing the width of a street to shorten pedestrian crossing distance, improve visibility, reduce traffic speeds, and improve off-street amenities. Curb extensions, which can be located on intersection corners as well as at mid-block, are commonly referred to as 'bump-outs' or 'neck downs'.

Density: A measure of the number of people or housing units occupying a given area of land. The measure may reflect the general character of the housing types in a neighbourhood.

Employment Centre: Concentrated areas of offices and businesses that result in a large number of workers relative to surrounding areas. Ideally, employment centres should resemble traditional downtowns or town centres which are compact and walkable and offer a mix of activities. However, many business parks are also employment centres due to the large number of jobs compared with their surroundings.

Goods Movement: The transportation of freight by road, rail, ship or air, between communities (regional/national/international) or within communities (local/pick-ups/deliveries).

Greenhouse Gasses (GHG): Any gaseous compound in the atmosphere (e.g. carbon dioxide CO₂) that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere.

Induced demand (on roads): As road capacity is increased to accommodate more vehicles (through widening and expanding roads), additional drivers choose to use the road, creating more traffic and eventually heavier congestion.

Land Use: The classification of the natural and built environment, as it exists or as prescribed by policy or regulation.

Exhibition Park - Mobility Analysis

Light Rail Transit (LRT): An electric railway system characterized by its ability to operate single vehicles or short trains along exclusive rights of way at ground level, on aerial structures, in subways, roadway medians, or in segregated street lanes. Unlike commuter trains, LRT trains have more frequent stops and normally must be segregated from conventional railway vehicles.

Mixed-use: Different activities and building occupancies that are arranged close to one another. These different uses may be located on the same site, in the same building or along the same street.

Mobility: The ability to travel and move around easily and efficiently.

Mode Share: The proportion of people using a given type of transportation, such as private vehicles or transit.

Mode Shift: A measurement of how many people (usually as a proportion) change their mode of daily travel

Park & Ride: Parking lot located at a transit terminal or stop, enabling people to leave their private vehicles there and continue their journey using transit.

Peak Hours: The times during a weekday when traffic is highest as many people travel to and from work. For transportation modeling and transit service purposes, the AM peak is 6–9am, and the PM peak is 3–6pm.

Rapid Transit (RT): Transit service separated partially or completely from general road traffic and therefore able to maintain higher levels of speed, reliability, and vehicle productivity than can be achieved by transit vehicles operating in mixed traffic.

Right of way: A strip of public land including and bordering a street, road, pathway, or railway.

Shared Street: Streets where the formal distinctions between spaces dedicated to pedestrians, cyclists, and motorized vehicles have been removed, and which is shared by everyone.

Strategic Corridor: Transportation corridors that are important based on their role in the surrounding communities and to traffic operations, transit, goods movement, or active transportation.

Targets: Established and well defined goals to be achieved through the implementation and pursuing of strategic initiatives.

Transit-Oriented Development / Transit-Oriented Community: An approach to development that focuses a complete community around a transit terminal or within a transit corridor, with emphasis on higher residential densities, walking distance and a mix of uses, facilities, and activities.

Transit Priority Corridor: A street in the transportation network that features measures to give increased priority to transit vehicles, such as dedicated bus lanes.

Transit Priority Measures (TPM): Tools that municipalities and transit agencies use to reduce delays, improve reliability and increase the average operating speed. There are many different types of TPMs and, in many cases, they are used together to create a city-wide network. Some of the most common TPMs include: traffic signal priority, queue jumps, bus lanes and transit-ways that are separated from motor vehicles (e.g. bus-ways, railways).

Transportation Demand Management (TDM) : A strategy aimed at reducing peak hour congestion by providing people with choice in how, when, and whether they commute to work.

Transportation Network: All routes and modes of travel throughout the region and how they are connected.

Transportation Reserve Zones: Lands, typically abutting transportation corridors, that are designated in a Municipal Planning Strategy and zoned for long-term street or pathway needs. Reserve zones can enable the establishment and enforcement of development restrictions that avoid encroachment on lands that may be used for future transportation projects.

Walkable: Refers to a single route or a network of routes, between points, that is relatively short, barrier-free, interesting, safe, well-lit, comfortable, and inviting to pedestrian travel.

Walkshed: The area within a short walk or roll of a transit stop, station, or terminal. For conventional bus routes, areas within a 400 or 500 metre walk or roll of a stop are generally considered within the walkshed. For Rapid Transit stations, walksheds include areas within 800 metres.

02
02
02

Existing Conditions Review

Existing Data

This section provides a summary of the existing conditions data available as a foundation to the development's Mobility Analysis.

Site information was collected through a variety of sources including detailed site visits and investigations, aerial photography, site photos and video, traffic counts using the Miovision automated count technologies, topographic and legal survey, review of historical HRM data, discussions with HRM staff, and other sources as available.

The data was used to build an accurate understanding of how the existing network operated, and what infrastructure is needed to service the development and surrounding areas over the long term.



Hwy 3 and Hwy 333 - PM Peak - TMC
 Mon Oct 16, 2023
 PM Peak (4 PM - 5 PM) - Overall Peak Hour
 All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
 All Movements
 ID: 1177306, Location: 44.632638, -63.661253

Trans4m
 Group Trans4m.ca
 Provided by: Trans4m Development Group
 59 Craighurn Drive, Dartmouth, NS, B2X 3E6, CA

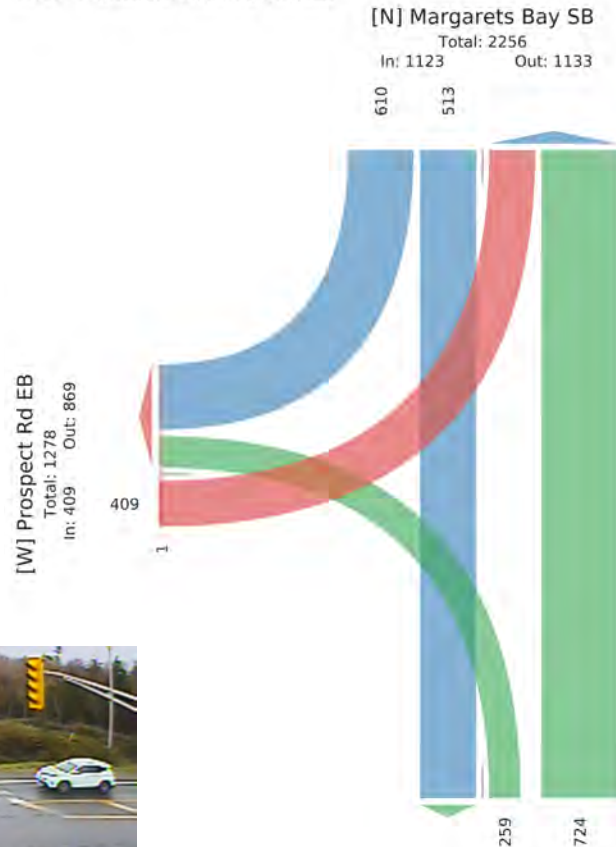


Fig.5 Traffic Counts

Traffic Counts

To understand traffic operations in the area, existing traffic counts were carried out at 7 different locations as shown in the figure to the right including:

1. Highway 333/ Prospect Road at Tim Horton's / Gas Station Driveway
2. Highway 333/ Prospect Road at Ragged Lake Road
3. Highway 333/ Prospect Road at St. Margaret's Bay Road
4. St. Margaret's Bay Road at Highway 103 Northbound Ramps
5. St. Margaret's Bay Road / Route 3 at Lakelands Drive
6. St. Margaret's Bay Road at Albert Walker Drive
7. Albert Walker Drive at Dunbrack Street

The counts were performed using the Miovision automated traffic count technologies. All counts included the following classifications:

- Lights (cars, light trucks, motor cycles, etc.)
- Buses and Single Unit Trucks
- Articulated Trucks
- Pedestrians
- Cyclists

To better understand daily variations daily traffic, the count at Prospect Road with the Tim Horton's / Gas Station was counted for a 24-hour period.

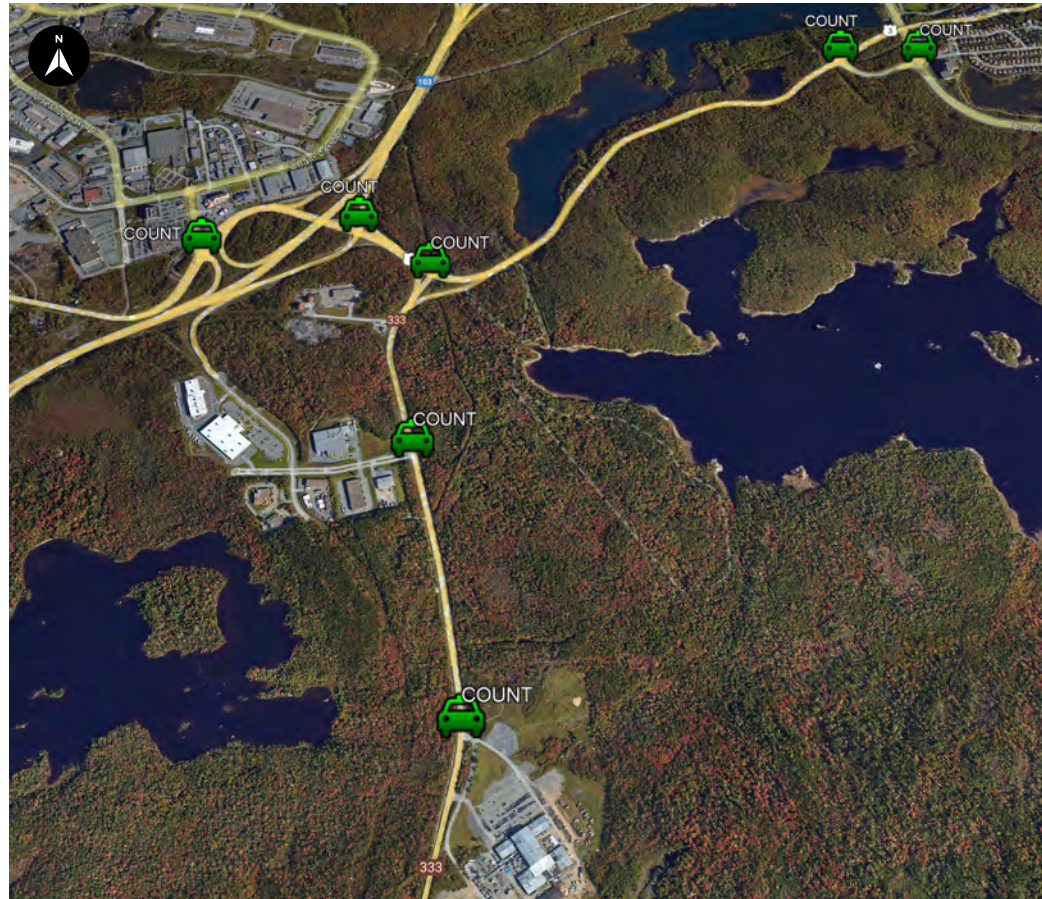


Fig.6 Traffic Count Locations

A summary of all traffic data collected including count sheets are provided in **Appendix A** of this report with a higher order summary provided in the table below.

The highest volume intersections are the Dunbrack / Albert Walker intersection, the St. Margaret's Bay intersections with Lakelands, and the Highway 103 off ramps. Each has over 3,000 vehicles per hour passing through the intersection during the PM peak hour though are larger intersections generally designed for higher traffic loading.

Overall, PM peak volumes are significantly higher than AM peak volumes. Where noon counts were performed, the noon peak was typically less than the AM peak hour volumes at those intersections.

Truck percentages of articulated and single unit trucks were consistent throughout most counts with slightly higher percentages being noted in the vicinity of the Ragged Lake Business Park. Higher percentages of truck movements typically tended to favour the AM peak hours, which is common in most areas.

Pedestrian volumes were negligible for all counts and is somewhat based on the more rural and suburban nature of the areas surrounding the intersections.

Intersection	Total Volume		Truck %		Bus/Sngl.Unit %		Pedestrians		Cyclists	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Prospect / Gas Station	1147	1400	1.7%	1.0%	4.4%	2.6%	0	0	-	-
Prospect / Ragged Lake	1338	1535	1.4%	1.1%	5.2%	2.5%	0	0	-	-
Prospect / St. Margaret's Bay	1853	2515	1.3%	0.8%	3.7%	3.0%	0	1	-	-
St. Margarets Bay/Hwy 103 Ramps	2293	3216	1.4%	0.8%	4.4%	3.1%	1	4	-	-
St. Margarets Bay / Lakelands	2220	3484	1.2%	0.4%	3.4%	1.8%	0	1	-	-
St. Margarets Bay / Albert Walker	1431	2217	0.3%	0.4%	2.8%	1.2%	0	1	-	-
Albert Walker / Dunbrack	2303	3068	0.4%	0.4%	2.9%	1.7%	0	0	-	-

Table 1. Traffic Counts

Collisions

HRMs Open Data portal was used to identify reported collisions in the study area as shown in the figure to the right. The table below shows between 44 and 61 collisions per year for the years between 2018 and 2023. The figure to the right shows the frequency of collisions at each of the major intersection in the study, which is focused on the intersections where traffic counts were performed plus the intersection of Prospect Road with Evergreen Place.

Year	Collisions
2018	58
2019	55
2020	44
2021	49
2022	61
2023	52
TOTAL	319

Table 2. Collisions - Year

- The highest collision locations include collisions in the vicinity of:
- Albert Walker and Dunbrack = 74
 - Prospect and St. Margaret's Bay = 63
 - St. Margaret's Bay and Lakelands =50

Collision Configuration	#
Approaching Sideswipe	3
Head On	8
Hit Parked Vehicle	5
Left Turn Across Opposing Traffic	10
Left Turn Against Traffic	2
Left Turn Into Traffic	4
One Crossing Path of Other to the Left	41
One Crossing Path of Other to the Right	6
Rear End	105
Right Angle	13
Right Turn	1
Same Direction Sideswipe	24
Hit an Object on Road Surface	21
Off Road to the Left	21
Off Road to the Right	57
Rollover	6
Grand Total	327

These 3 locations account for close to 60% of all collisions identified in this area.

The table to the left shows a summary of the various collision configurations, with the most common configuration being rear end collisions which accounted for 105 (33%) of the collisions followed by "Off-Road to the Right" collisions with at 57 (18%) total, and "One Crossing Path of Other to the Left" with 41 (13%).

Beyond this there was a relatively wide distribution of collision types among the other general collision configurations.

Table 3. Collisions - Configurations

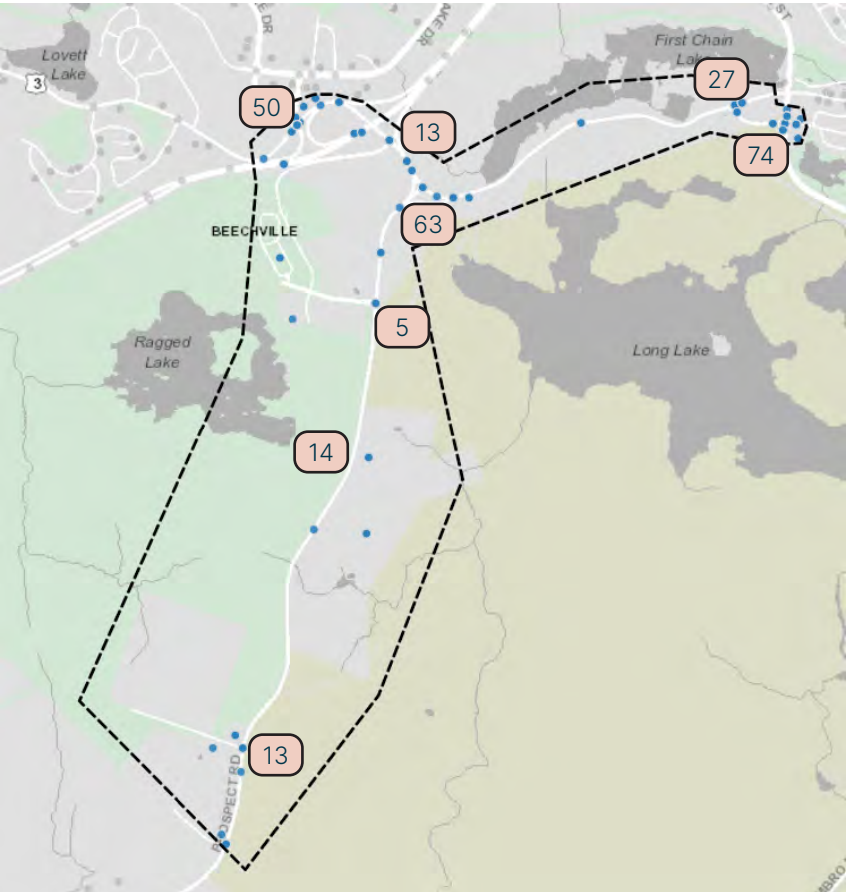


Fig.7 Collision Locations

Fig.8 Urban Transit Service Boundary

Transit

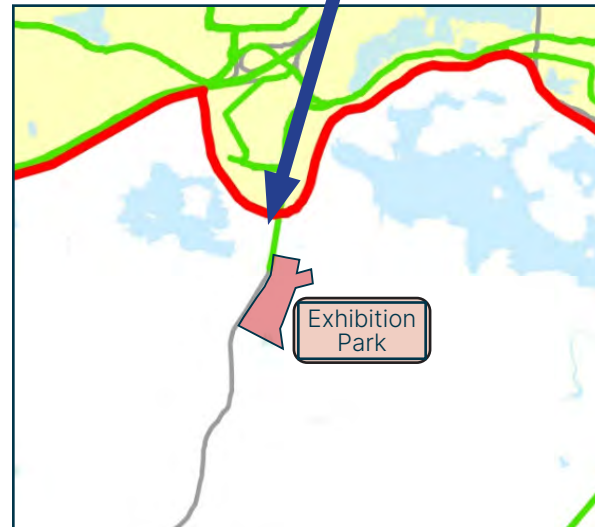
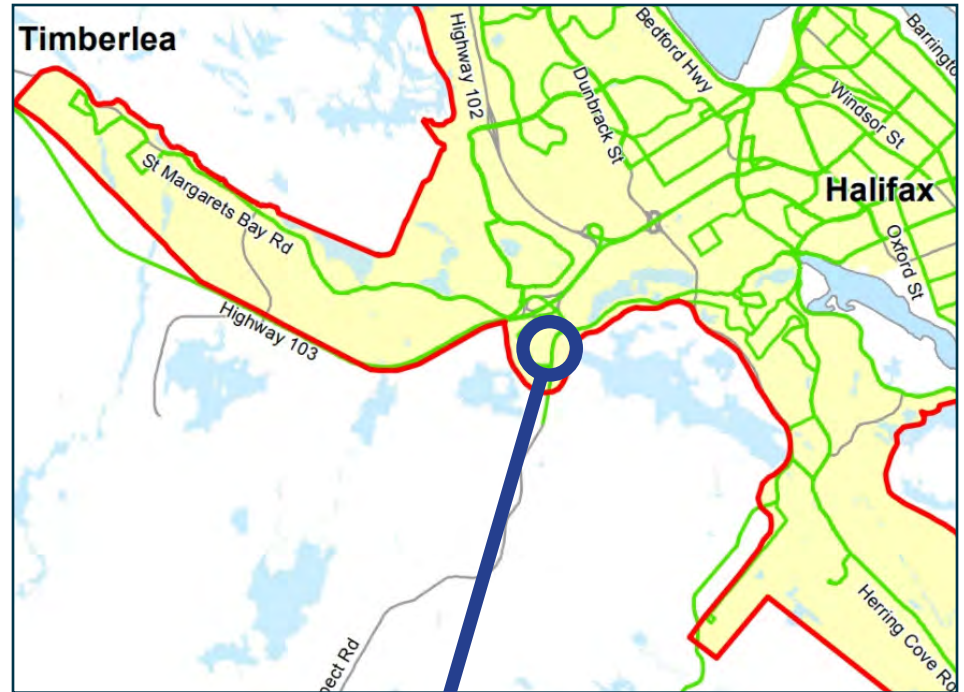
Urban Transit Service Boundary

The Urban Transit Service Boundary (UTSB) was defined (Policy T-7 of the 2014 Regional Plan) with the intent to direct resources to highest potential transit ridership areas within HRM, with focus on urban areas where development is more concentrated. The Urban Transit Service Boundary includes all contiguous communities in Halifax which currently have both municipal water and municipal sewer, where homes are generally closer together. The Policy helps focus investment, and also sets clear expectations for residents and businesses as to where new transit services can be considered.

As can be seen in the figures to the right, the UTSB (**red line**) includes the first portions of Prospect Road past Ragged Lake Road and terminates just north of Exhibition Park. The 2014 Transit Map indicates the presence of a transit route (**green line**) extending into Exhibition Park, suggesting that transit service was previously provided to the area despite it being beyond the transit boundary.

In the absence of a high density development area, it is understandable how the current definition for the boundary does not include areas south of Highway 103, though Ragged Lake would then arguably also not be included within the boundary by strict definition. With the additional of close to 6,000 residential units in the Exhibition Park area, it becomes apparent that the development area meets the criteria necessary to be included in the UTSB.

Initial discussions with Halifax Transit has suggested that there is interest in providing services to many of the new high density growth areas due to the potential ridership opportunities. It would seem logical on numerous fronts then that the Exhibition Park development area be considered for inclusion within the UTSB.



Existing Transit Service

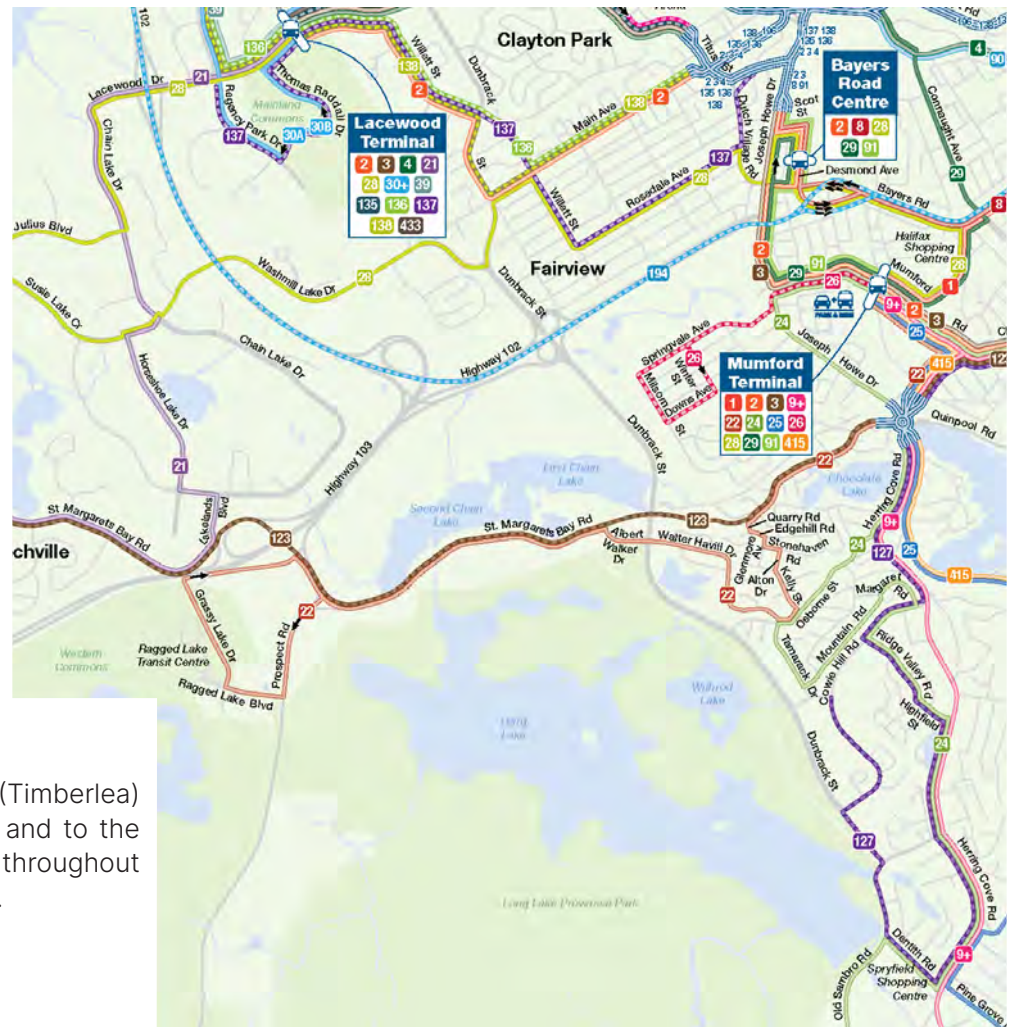
The figure to the right shows the existing layout of transit routes adjacent to the development. The nearest route to Exhibition Park is Route 22 (Armdale), which is restricted to a southbound movements along Prospect Road, to Ragged Lake Boulevard, then through the park on Grassy Lake Drive before exiting the Park onto the Highway 103 eastbound off-ramp at Exit 2.

This returns the bus to St. Margaret's Bay Road and ultimately to the Mumford Road Terminal about 5 kilometers to the north east of the development. Route 22 has half hour frequency throughout the weekday peak hours with hourly service mid-day.

Route 123 (Timberlea Express) also runs in close proximity to the Exhibition Park development and travels along St. Margaret's Bay Road connecting the Scotia Square Terminal to a number of low density residential developments in Timberlea. Route 123 is a peak hour route running inbound during the AM peak hour and outbound during the PM peak.

This Timberlea area is also serviced by Route 21 (Timberlea) that travels through the Bayers Lake Business Park and to the Lacewood terminal. Route 21 has half hour frequency throughout the weekday peak hours with hourly service mid-day.

Fig.9 Existing Transit Service



Active Transportation

The figure to the right shows the existing and desired active transportation infrastructure in the vicinity of the proposed development, as shown on HRM's active transportation web site. The existing infrastructure includes on-street bike lanes along St. Margaret's Bay Road ending at Prospect Road (orange lines) as well various routes through the Bayers Lake Business Park.

Desired bikeways are showing in purple lines increasing connectivity throughout the area. Just to the north, is the iconic Chain of Lakes Trail (Green line), which runs through the Bayers Lake Business Park. To the east, this greenway extends through north Halifax connecting to the Bedford Basin near the Windsor Exchange. To the west, the greenway transitions to the Beechville Lakeside Timberlea (BLT) Trailway, and eventually to the St. Margaret's Bay Trail well west of the development area. While Prospect Road is not currently designated as a bike route, it does include 2 meter paved shoulders on each side of the roadway and is frequently used by cyclists in the area.

The figure below is taken from the AllTrails app, and shows a variety of trails including Big Indian Lake Trail, Pipeline Trail/Loop, Foss Hill Road, Old St. Margaret Bay Road (Old Coach Road), and other connections.

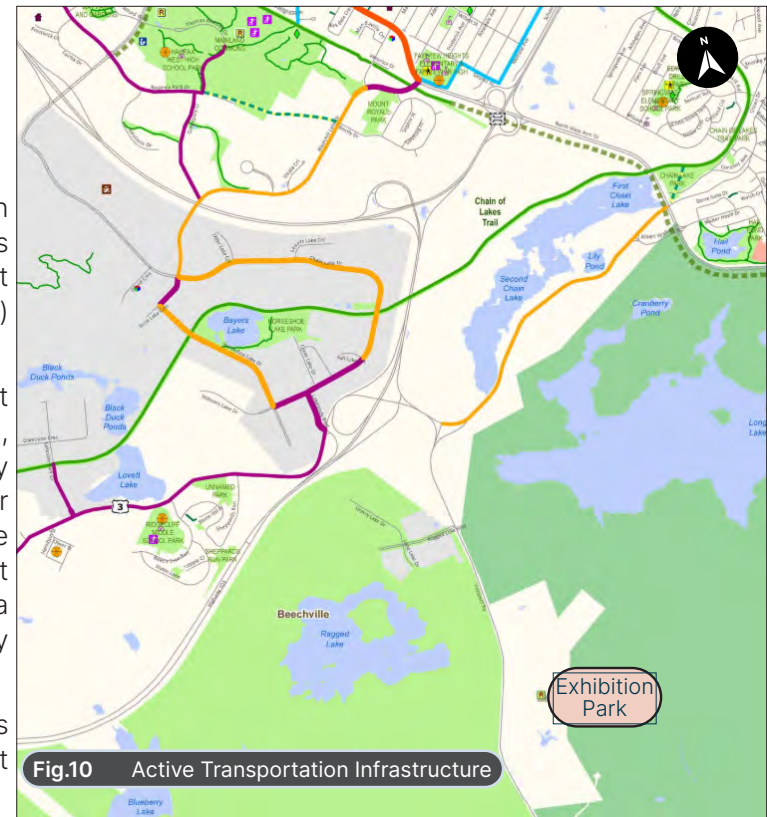


Fig.10 Active Transportation Infrastructure

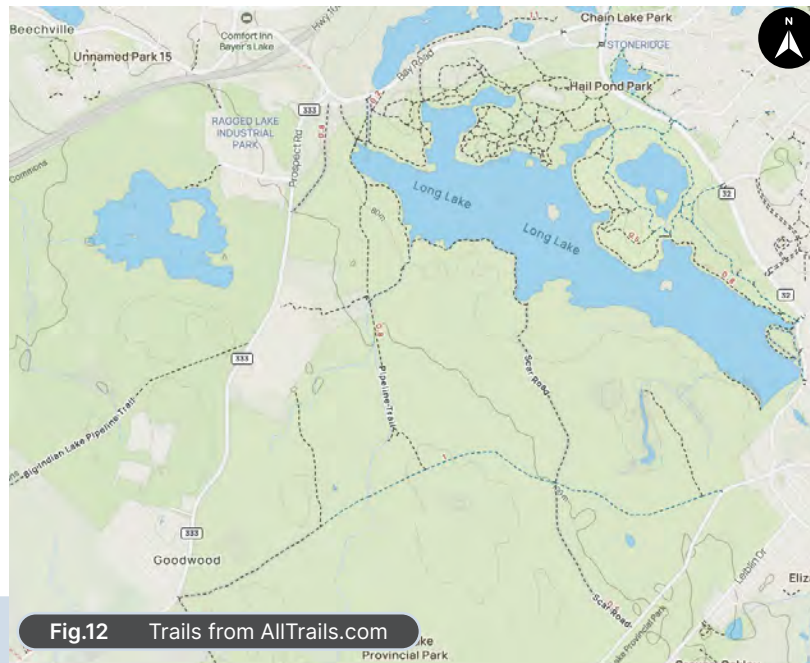


Fig.12 Trails from AllTrails.com

Fig.11 Bike Lanes - Prospect Road



Supporting Land Uses

Existing Commercial

The development includes existing internal commercial land uses, such as a Tim Hortons, a Needs Convenience Store, a Petro Canada gas station, and a touch-less car wash. These commercial facilities are situated off Prospect Road on the northern side of the development and are expected to remain as part of the overall site layout.

Nova Scotia Sound Stage

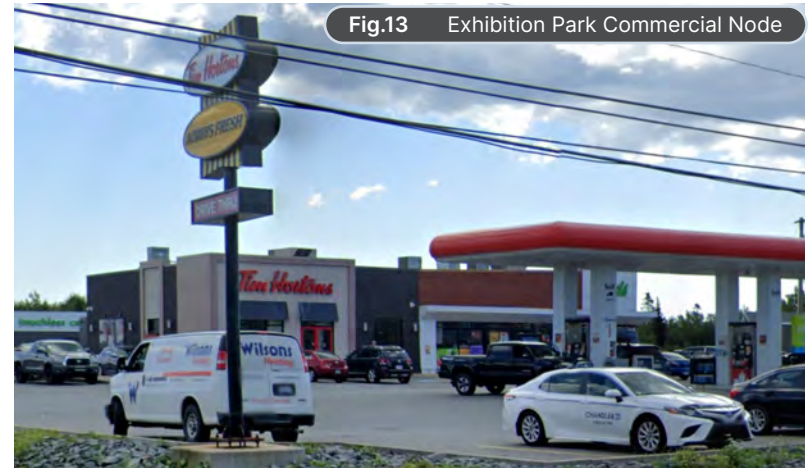
Screen Nova Scotia is set to acquire Crown land for the construction of Nova Scotia's first purpose-built film and television sound stage. This 25-acre development will be located just south of Exhibition Park, adjacent to Prospect Road, positioning it as a significant addition to the region's creative and economic landscape.

Future Ragged Lake Expansion

The Ragged Lake Industrial Park is strategically located along Highway 103 and Prospect Road, approximately a 15 minute walk from the Halifax Exhibition Centre. Developed in the late 1980s by the former City of Halifax Industrial Commission, it spans approximately 84 acres of serviced lands zoned I-3 (General Industrial), catering to mixed-use commercial and business purposes.

An additional 1,350 acres at Ragged Lake have been earmarked for future development to support Halifax Regional Municipality's (HRM) Economic Strategy. These lands are currently zoned UR (Urban Reserve), ensuring a reserve of land for serviced development to meet long-term needs.

In recent years, there have been discussions and planning initiatives aimed at expanding the park to accommodate future industrial growth. A 2018 report recommended conducting background studies to inform a secondary planning process for



the proposed expansion of the Ragged Lake Industrial Park.

To date, specific details regarding time-line associated the Parks expansion are limited, the Ragged Lake Business Park remains a significant area of interest for future industrial development in Halifax. It also appears that accelerated development discussions associated with the Exhibition Park development, other area developments and the overall growth of HRM are further pushing these discussions.

Potential Internal Land Uses

The Exhibition Park Development is expected to have various land uses including residential, commercial and office space. The potential need for a new school within, or near the development has been raised and is being further evaluated, including potential locations on the northern side of the development. This site offers convenient access and integration with the surrounding community, making it a practical choice for supporting educational, and other infrastructure / land uses for the area.

Existing Modal Share

Modal share information was extracted using HRM's Modal Share application for two primary areas, both situated adjacent to Prospect Road:

- 1. The Goodwood / Hatchet Lake area (Census Tract 0141.00) encompasses the majority of the Exhibition Park development as well as the southern region adjacent to Prospect Road as shown in the image below.
- 2. The Beechville area (Census Tract 0142.02) encompasses the northern and western regions adjacent to Exhibition Park, including Prospect Road and the Ragged Lake Business Park, as illustrated in the image below.

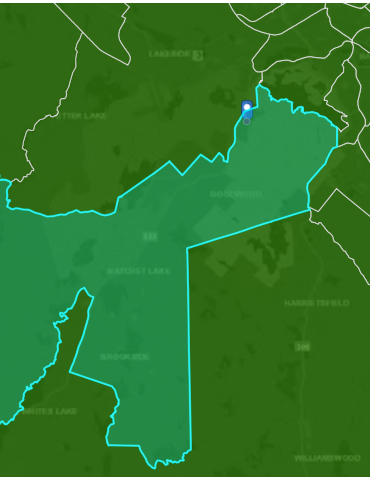
The 2016 census data obtained through the Modal Share application, was compiled and entered into the table below. The data reveals minimal to no transit usage in the Goodwood / Hatchet Lake area, while the Beechville area demonstrates a modest transit mode share of approximately 10-11%. This trend is consistent with existing service coverage, as transit routes currently do not extend beyond the Ragged Lake Business Park.

Neither area identifies cycling as a primary mode of transportation for commuting to and from work. However, both areas report a similar percentage of walking commuters, with walking mode share falling within the 2-6% range.

TRAVEL MODE	Goodwood / Hatchet Lake		Beechville	
	Origin	Destination	Origin	Destination
Driver	88%	81%	79%	77%
Passenger	9%	10%	9%	9%
Transit	-	1%	10%	11%
Walking	2%	6%	3%	2%
Cycling	-	-	-	-
Other	1%	1%	-	-

Table 4. 2016 Modal Share

Goodwood / Hatchet Lake



Beechville

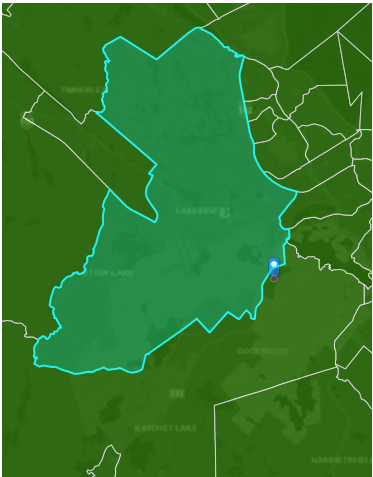


Fig.14 Modal Share Census Tracts

Existing Person Trips

Vehicle trip data combined with existing modal share data provides insight into the **number of people** currently moving to, from and past the Exhibition Park development. Understanding how people travel into and out of the development area, across all modes of transportation, offers a more comprehensive perspective on overall transportation demand and network performance. It also provides a baseline for estimating how people will move in the future across different modes of transportation given different modal share adjustment that may be reasonable to apply to this area.

The conversion of vehicle trips to person trips was completed using the methodology outlined in Section 5.4 of the ITE Generation Handbook. The following formula was applied for the conversion:

$$\text{Person Trips} = [(\text{Vehicle Occupancy}) \times (\text{Vehicle Trips})] + \text{Transit Trips} + \text{Walk Trips} + \text{Bicycle Trips}$$

The results of this conversion are summarized in the tables below, with the top table reflecting the current entry and exit trips to the site, and the bottom table focusing on Prospect Road through trips.

The total **Vehicle Trips** entering and exiting Exhibition Park were determined based on recent traffic counts conducted at the Tim Hortons and Prospect Road intersection. It's important to note that these counts were collected on a typical weekday with no events taking place at Exhibition Park, providing a representative snapshot of baseline, non-event traffic activity in the area.

Vehicle occupancy was determined using HRM's Modal Share application, referencing 2016 census data, which indicated an average vehicle occupancy rate of 1.10 persons per vehicle, or a 9% occupancy above a single occupant. There were no **Transit Trips** recorded, as transit service does not currently extend to Exhibition Park.

Person Trips - Existing Development						
Veh Occ. 1.10 / Transit 0 / Other 3%						
Modal Share	AM Peak			PM Peak		
	AM Enter	AM Exit	AM Total	PM Enter	PM Exit	PM Total
Vehicle Trips	43	135	178	64	66	130
Vehicle Occupancy	4	14	18	6	7	13
Transit Trips	0	0	0	0	0	0
Other Trips (3%)	1	4	5	2	2	4
Person Trips	49	153	201	72	75	147

Person Trips - Existing Hwy 333 (Through Trips)						
Veh Occ. 1.10 / Transit 0 / Other 3%						
Modal Share	AM Peak			PM Peak		
	AM - NB Through	AM - SB Through	AM Total	PM - NB Through	PM - SB Through	PM Total
Vehicle Trips	617	351	968	408	862	1,270
Vehicle Occupancy	62	35	97	41	86	127
Transit Trips	0	0	0	0	0	0
Other Trips (3%)	19	11	29	12	26	38
Person Trips	697	397	1,094	461	974	1,435

Table 5. Existing Person Trips

The 2016 census data shows approximately 2-6% **Walking Trips** and no recorded **Bicycle Trips** for the Goodwood area. Given the limited nearby residential development, it's assumed that both walking and cycling trips to Exhibition Park are minimal. To account for these modes — along with other single-person travel options like e-bikes — an **“Other Trips”** category has been incorporated into the calculation formula. This Other Trips category is assumed to represent 3% of the total trips.

The figure below provides a visual summary of the person trip data outlined in the previous tables, by turning movement offering a clearer understanding of how people move.

Prospect Road - Southbound						
Modal Share	AM Thru	AM Left	Total AM	PM Thru	PM Left	Total PM
Vehicle Trips	351	42	393	862	64	926
Vehicle Occupancy	35	4	39	86	6	93
Transit Trips	0	0	0	0	0	0
Other Trips (3%)	11	1	12	26	2	28
Total Person Trips	397	47	444	974	72	1,046

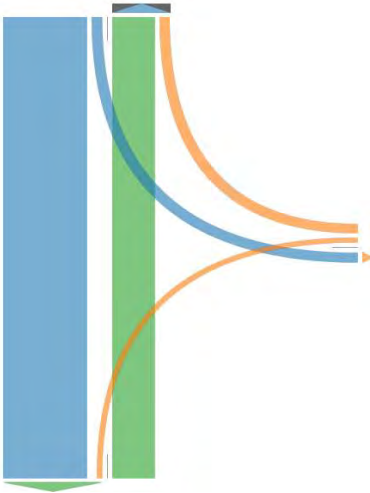


Fig.15 Existing Person Movements

Exhibition Park						
Modal Share	AM Left	AM Right	Total AM	PM Left	PM Right	Total PM
Vehicle Trips	16	119	135	7	59	66
Vehicle Occupancy	2	12	14	1	6	7
Transit Trips	0	0	0	0	0	0
Other Trips (3%)	0	4	4	0	2	2
Total Person Trips	18	134	153	8	67	75

Prospect Road - North Bound						
Modal Share	AM Thru	AM Right	Total AM	PM Thru	PM Right	Total PM
Vehicle Trips	617	1	618	408	0	408
Vehicle Occupancy	62	0	62	41	0	41
Transit Trips	0	0	0	0	0	0
Other Trips (3%)	19	0	19	12	0	12
Total Person Trips	697	1	698	461	0	461



Planned Conditions Review

A Brief Summary of the Neighbourhood

Further development details are provided in the Initiation Report, with key highlights including:

1. 109 acres of land with just under 5,900 units of residential development and strategic ground floor commercial space (density of 44.2 UPA including parkland area).
2. A range of unit types including townhomes, stacked townhomes, cluster development, multi-unit housing and about 4,000 m² of ground floor commercial space.
3. Low density uses are found toward the north end of the site with 2 road connections to the Provincially owned land to the north. These connections could be used for trailheads into the Provincial Park, or they could extend to additional residential development at some point in the future.
4. A modern 5.25 acre 'village square' located in the geographic centre of the development surrounded by mixed use towers ranging in height from 12-storeys to 24-storeys. This parkland represents 5% of the overall property size, though almost 20 acres of the 109 acre site will be reserved for conservation.
5. The north eastern "leg" of the development has been reserved as a gateway into the Long Lake Provincial Reserve.
6. Linear trail network connecting all parks and conservation areas within the development.
7. A variety of recreational amenities in the Urban Square area including the potential for tennis, basket ball, volleyball and pickle-ball courts.
8. On-street parking would be provided on the streets surrounding the urban square.
9. Anticipated that all roads and services will be constructed in a single phase with an expected build-out of about 10-15 years.

From the IMP

"Halifax residents require a choice of affordable, healthy, sustainable, and connected travel options for moving people and goods through integrated transportation and land use planning."

"Comprehensive planning presents a generational opportunity to create new neighbourhoods that showcase sustainable approaches to urban design, mobility, and land use planning. The real changes that development can bring to the area are significant opportunities to improve connectivity and shift from the car-focused design to a more sustainable, active, and transit-oriented network."

Exhibition Park is to be planned and designed as a Complete and Transit-Oriented Community – one that prioritizes sustainable transportation modes (walking/rolling, cycling, and transit) as the primary choices for residents, visitors, shoppers, and employees; one that connects to existing and future sustainable transportation networks; eliminates existing barriers to movement by sustainable modes, connects to surrounding neighbourhoods and the region; and one that provides the things needed for daily life.



EXHIBITION PARK DEVELOPMENT
BEECHVILLE, NOVA SCOTIA

SEPTEMBER 2024

0 60 120m

Exhibition Park - Pro Forma

Plot Efficiency 80%

Avg Unit Size 80 m2

Building	Comm GFA	Sched Height Max (m)	Total Storeys	Lofties GFA	Midrise GFA	Tower 1 Storeys	Tower 2 Storeys	Total Res GFA (m2)	Units
A		25	8	4	2166	4		16,018	160
B		25	8	4	2224	4		38,972	390
C		19	6	3	1052	3		5,796	58
D		19	6	4	1528	2		10,998	110
E		19	6	4	1928	2		10,998	110
F		19	6	4	1928	2		10,998	110
G		25	8	4	2728	4		19,884	199
H		25	8	4	1928	4		14,254	143
I		19	6	3	1850	3		18,200	182
J		25	8	4	1928	4		14,254	143
K		25	8	4	2028	4		15,424	154
L		50	14	4	2473	2	8	21,026	210
M	1154 m2	50	14	4	4615	2	7757	38,574	386
N	706 m2	50	14	4	2825	2	2325	23,150	232
O		99	20	4	2650	2	900	25,000	250
P		50	14	4	1500	2	1300	15,800	158
Q		50	14	4	2658	2	2480	22,912	229
R		99	24	4	2610	2	2410	31,460	315
S		99	24	4	2610	2	2410	31,460	315
T	706 m2	99	20	4	2825	2	2325	28,550	286
U	706 m2	99	20	4	2825	2	2325	28,550	286
V	706 m2	99	14	4	2825	2	2325	23,150	232
W		99	20	4	2650	2	900	25,000	250
X		50	14	4	2658	2	2480	22,912	229
Y		25	8	4	1728	4	1528	15,024	150
Z		25	8	4	1928	4	1643	14,254	143
AA		25	8	4	2728	4	1588	17,464	173
BB		50	16	4	2157	4	1500	21,256	218
Townhomes								4,560	46
Stacked Townhomes								10,800	108
Total								687,190	6,867
								3079 m2	

Total Lot Area	4,752,396 m2	109.08 acres	Value of Development	
Density	442 UPA		Buildings @ \$35000/sq	\$ 2,055,165,000.00
Conservation	49,636 m2	17.21 acres	Roads @ 3.18/m	\$ 15,000,000.00
Linear Park	2,600 m2	0.64 acres	Underground parking garages	\$ 154,000,750.00
Village Square	23,800 m2	5.88 acres	Parks	\$ 6,000,000.00
Total Park Area	26,400 m2	6.52	Total	\$ 2,230,173,750.00

Mobility Objectives

The Master Plan for Exhibition Park has been developed to:

- Create a "Complete Community" development where most of the needs of residents are met with services, facilities and employment within walking distance or a short commute. This will require synergies with the Ragged Lake Business Park as it expands and the nearby Bayers Lake Business Park. This includes sidewalks on all new streets, new AT shared use trails, connections to conservation and parkland areas, transit stops and connections, and more.
- Preserve a large active parkland component in the urban square and numerous connections to surrounding parkland areas and trail networks.
- Create a central urban square encircled by higher density mixed use towers where passive recreation and events can be hosted for residents of the local community and indeed for all residents of HRM.
- Create mixed forms of housing including single family homes, clusters, semis/duplexes, town-homes and multi family housing.
- Minimize surface parking in favour of below grade parking where possible. The plan should also reduce the parking requirements to foster use of transit and active transportation. Parking accommodation must find a balance between the cost of underground parking versus surface parking to optimize financial implications to the development.
- Provide a range of affordable housing options.
- Ensure that all roads follow the Red Book standards and other Complete Streets best practices.
- Provide opportunities for new office type uses in coordination with adjacent development to service this new population.
- Provide private green spaces and amenity spaces for each new building on the ground-floor and on the rooftops of the new development.
- Ensure the plan is phased to create recreational amenities in the early phases of the development for early residents.
- Promote interaction between the commercial and residential areas of Exhibition Park including the potential to intermix land uses to create wider synergies within the development area.
- Provide transit options that allow greater local connectivity to Ragged Lake and Bayers Lake as well as connectivity to the core areas of Bedford, Dartmouth and Halifax.
- Provide a connection point to communities south of the development along Route 333. These may include employment opportunities, park-and-ride facilities for further commuting options.
- Explore opportunities with future roadway connections to the Ragged Lake Business Park recognizing that some redundancy in the road networks is required for the area in general.

This an area of HRM that can accommodate significant density provided that adequate transportation connectivity immediately north of the development is provided. It is unlikely that Prospect Road in its current form can accommodate this growth alone, therefore there are a number of potential connections and synergies with the Ragged Lake Industrial Park further explored in this report. As with many urban and suburban areas, growth often comes from the strategic combination of residential development and employment and commercial opportunities.

General Roadway Layout

The Initiation Report indicates a 24-meter difference between the highest point (111m) and the lowest point (87m) on the site. The lowest point is located along the northeast "leg" of the development, which is designated as conservation areas. Overall, the site slopes from Prospect Road to the east, towards Beaver Dam Brook and the various wetlands and watercourses located just east of the development area. In most areas, site slopes—and therefore the feasible roadway slopes—can be maintained within the 2-4% range, with select areas showing slopes of 5-6% in some cases. These grades are all considered reasonable and fall within the recommended roadway slopes as per the Red Book guidelines.

Transit Services

Transit service is particularly sensitive to steeper grades. In consultation with Halifax Transit, the preferred maximum grade for roadways serving transit is 4%. However, grades of 5% or 6% may be considered under special circumstances.

As shown in the following sections, site grading is generally consistent and relatively flat, with most grades meeting the 4% or less criterion for transit services. In areas where existing grades are slightly steeper, there are feasible opportunities to design roadway grades that either meet or come very close to the 4% criterion outlined above, which will be discussed in greater detail later in this report.

Active Transportation

HRM guidelines recommend a maximum sidewalk grade of 8% for roadways with similar slopes; however, sidewalks with grades exceeding 6% are considered inaccessible. To ensure accessibility, grades of 6% or less should be applied. Preliminary grade designs indicate that this 6% accessible grade requirement can be met throughout the site.



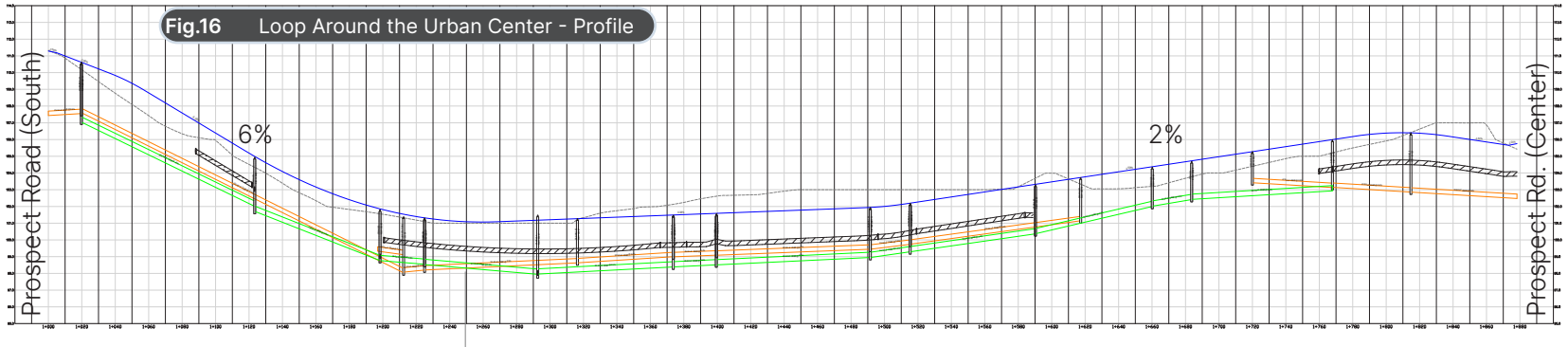
Natural Barriers

Exhibition Park includes, and is surrounded by a variety of natural barriers, including wooded areas and water bodies such as ponds, wetlands, and the Beaver Dam Brook. The dense tree coverage offers privacy, helps reduce noise from nearby future urban developments, and creates a natural green buffer. The water bodies not only serve as boundaries but also enhance the area by providing scenic views and a tranquil atmosphere, contributing to the overall appeal and livability of the development.

Natural barriers and natural site features are discussed in detail in **Fathoms Initiation Report** submitted under separate cover.

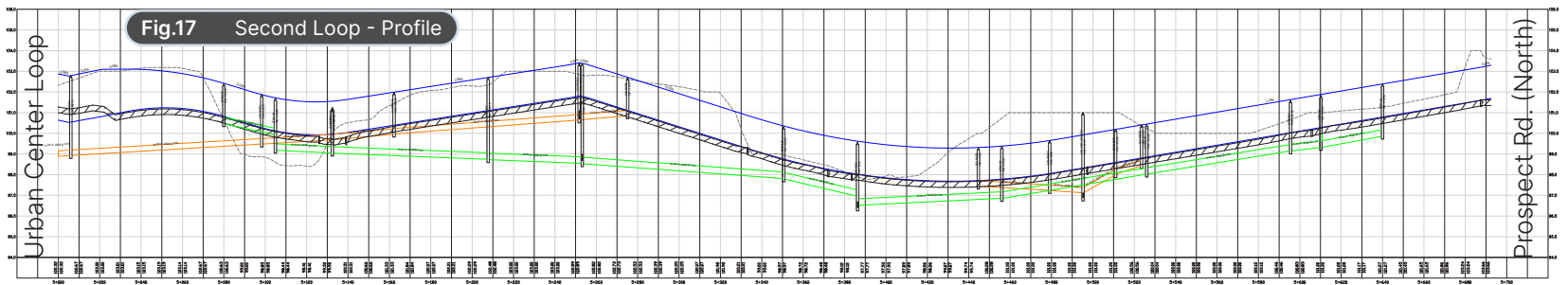
Urban Center Loop

The profile below outlines the preliminary design for the roadway loop around the urban center, with the most significant challenge located immediately off Prospect Road. The existing land slopes away from the roadway at approximately 6% toward the east, indicating that similar grades may be applicable for the roadway. Further analysis indicates that achieving a 4% or 5% grade at this southern connection is both feasible though will require some additional fill materials to achieve required grades. Such options can be pursued as site design gets further refined, and in consideration of transit service around the main central loop of the urban center.



Second Loop

The "Second Loop" extends from the above noted loop around the Urban Center, heading north to connect with Prospect Road just north of the existing Tim Hortons and Gas Station. The profile below illustrates the generally undulating nature of the existing terrain, which allows for the construction of roads and utilities with grades typically ranging from 2% to 3%.



Other Internal Roadways

Other roadways within the development can generally follow the existing topography, with grades ranging between 2% and 4%, resulting in profiles similar to those presented above. Areas where grades exceed 4-5% will be further assessed during the detailed design phase to ensure that slopes remain within a maximum of 4%, as required.

Prospect Road

The profiles below outline the existing topography of Prospect Road. The top figure illustrates the road profile between the Southern and Northern Main Loop (Urban Center Loop) connection points, while the lower figure shows the road profile continuing from the Northern Main Loop connection, extending past Tim Hortons to the end of the development. The existing topography of Prospect Road adjacent to the development exhibits grades ranging from 1% to 4%.

Fig.18 Prospect Road Profile- Main Loop (S) to Main Loop (N)

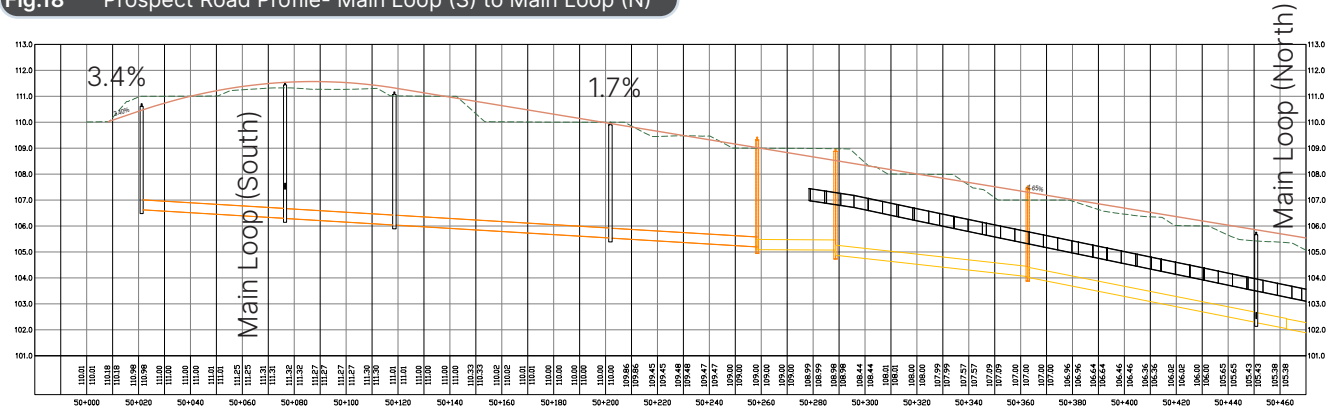
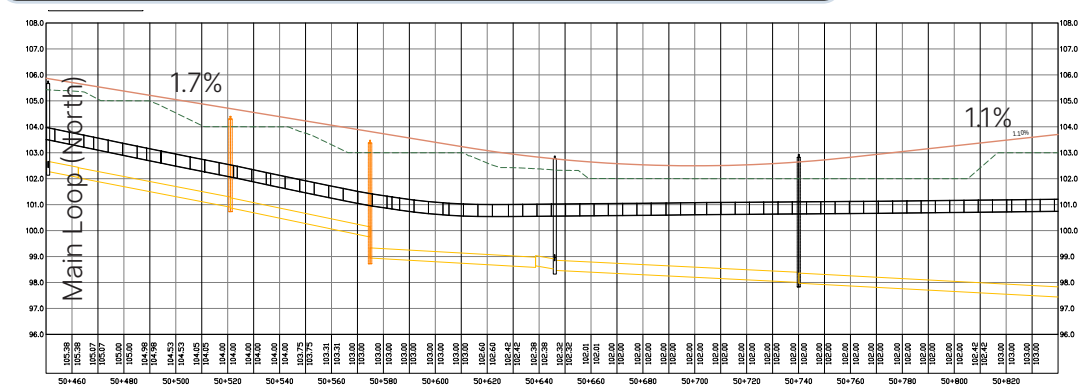
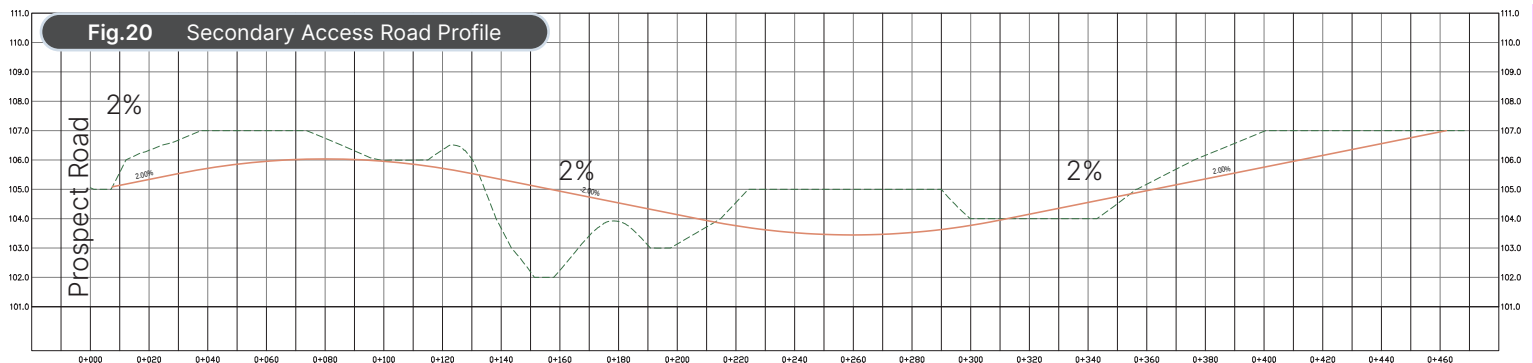
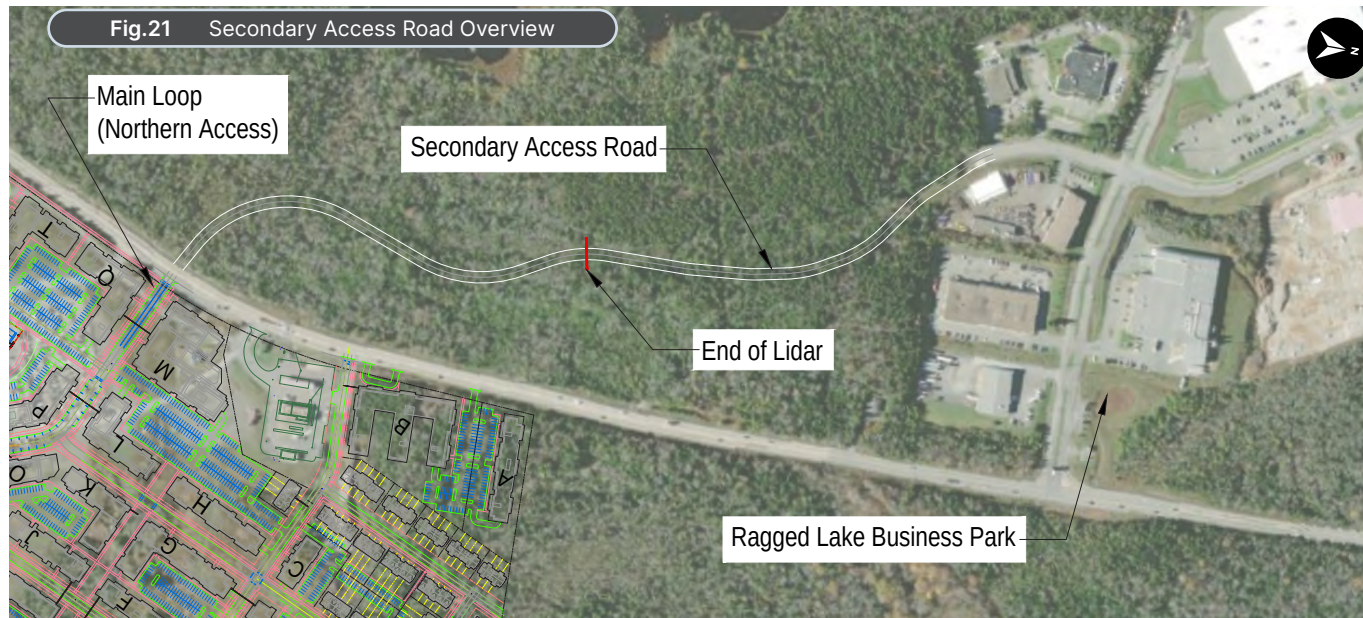


Fig.19 Prospect Road Profile- Main Loop (N) to North of Development



Secondary Access Road

Throughout this report, there are references to new roadways through the future planned Ragged Lake Industrial Park. There are no specific plans in place for this roadway at this time but various versions of the roadway have been identified in past reports. For context, the profile below outlines the existing land topography along a potential secondary access road connecting the Northern Main Loop access point to Ragged Lake Business Park. The LiDAR data currently covers only the first 470 meters of the potential route, as shown in the overview figure below. The access road exhibits consistent grades of approximately 2%. However, this route is presented as a conceptual idea and would require further surveying to incorporate into the design. The plan and profile below suggests that such a road connection appears feasible and practical to construct.



Roadway Cross Sections

Roadway cross sections were generally based on the most recent Halifax Regional Municipality "Red Book" Design Guidelines (2021) and Standard Details.

It is anticipated that the Exhibition Park area will be developed with suburban character and infrastructure including curb and gutter, asphalt paving, etc. The size of the development warrants more urban style corridor features to accommodate active transportation, transit, commercial frontages, parking and other complete street requirements. Therefore, cross sections have been drawn from the "Regional Center / Suburban" set of details.

All internal streets are intended to be HRM owned, with most internal roadways conforming to the suburban residential "Local" street cross section as shown below. These roads will have a road right-of-way of about 20 meters. The only anticipated changes from this cross section will be the addition of sidewalks on both sides of the street where adjacent high density multi-

unit development is expected to generate higher volumes of pedestrian traffic, or the addition of a multi-use trail on one side where the roadway forms an integral part of an AT corridor.

Residential Local Roads

Residential local roads are primarily designed to provide access within residential neighbourhoods, connecting homes to collector streets, and essential public services. The streets bordering the townhouses on the northern side of the development are classified as local roads. A 1.8-meter sidewalk has been planned to accommodate the anticipated density, while a 1.5-meter boulevard has been incorporated as the minimum required spacing for tree planting. Two 3.5-meter travel lanes have been included to facilitate opposing traffic flow and on-street parking. The figure below illustrates the proposed design for the local road, though final dimensions may be refined during detailed design.

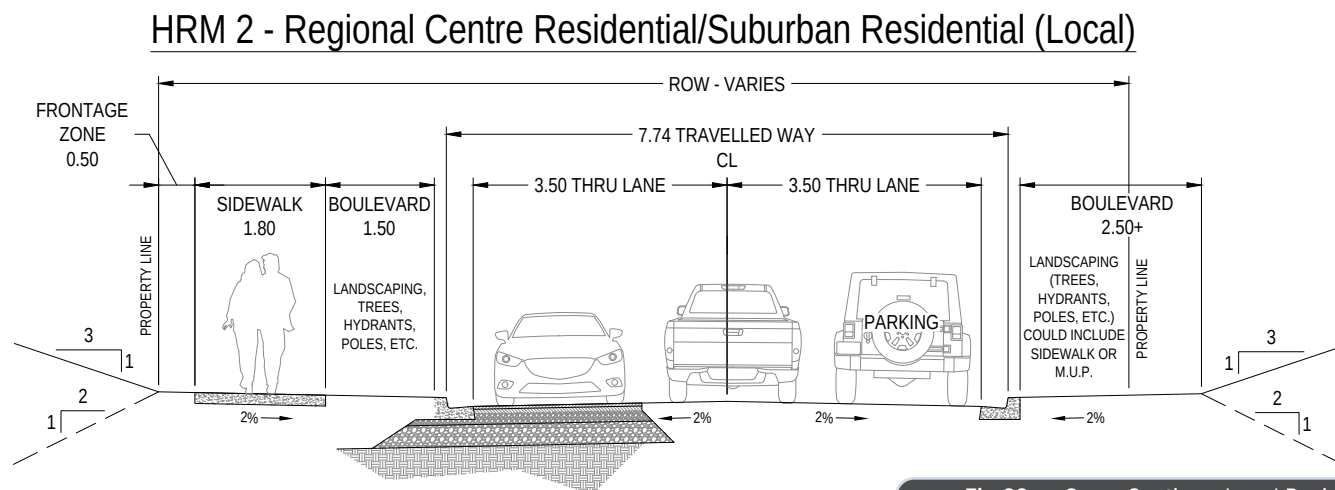


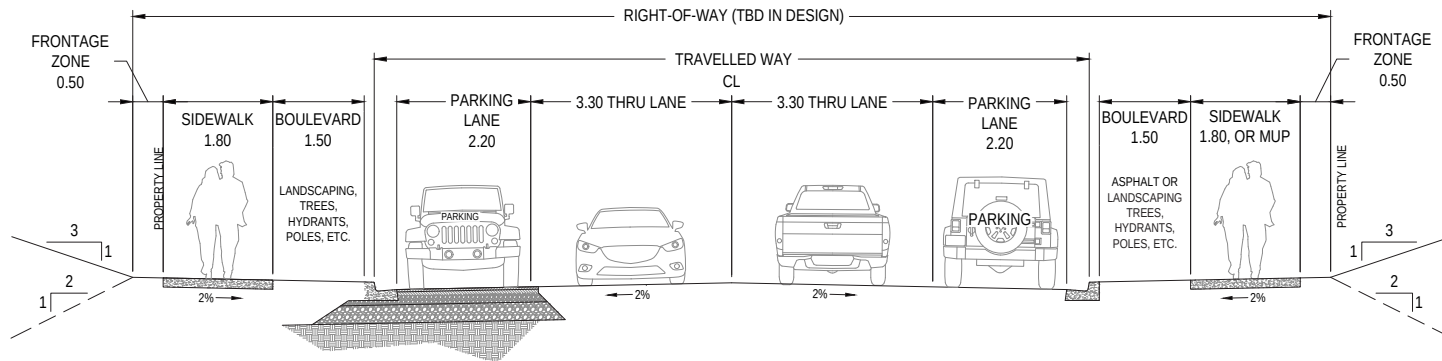
Fig.22 Cross Section - Local Residential

Commercial Local Roads

The "Urban Center" area is anticipated to be a robust multi-modal transportation area that will include transit service, significant pedestrian traffic and the need for parking. Functionally, the area operates similar to an urban core, therefore HRM cross section HRM 5 - Regional Centre Mixed Use (Local) was considered the most appropriate cross section to use and is shown in the figure below. As detailed design proceeds, it is possible that the AT portion of the ROW may include multi-use trails, or widened sidewalks adjacent to commercial land uses.

Fig.23 Cross Section - Mixed Use Local

HRM 5 - Regional Centre/Commercial/Mixed Use (Local)

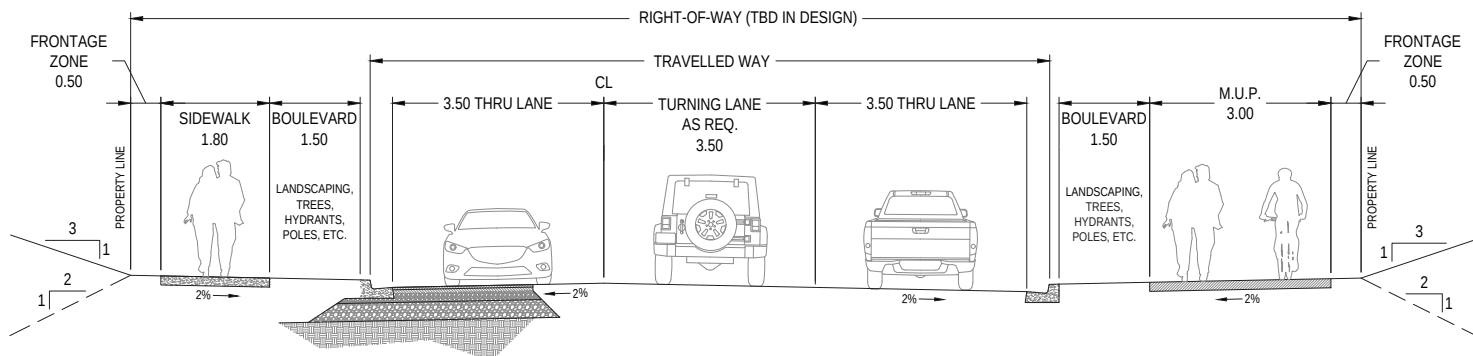


Minor Collector

A suburban minor collector road is designed to serve as an intermediate route within suburban areas, facilitating the movement of traffic from local residential streets to major arterial roads or highways. The Urban Center Loop is planned as minor collector street and includes a 1.8-meter sidewalk on one side and an anticipated multi use pathway adjacent to the urban square and connecting internal AT corridors. The design includes two 3.5-meter travel lanes, with an additional 3.0+meter turning lane where necessary, providing sufficient width for transit vehicles. It is also likely the ROW will include parking in some areas as per detail HRM 6.

Fig.24 Cross Section - Suburban Minor Collector

HRM 9 - Suburban (Minor Collector)





Trip Generation

Given the highly residential nature of the development, the typical weekday peak hours of traffic will dictate the critical analysis periods for the development.

New trips to and from the site are impacted by three main elements:

1. Traffic generation related to the development of the Exhibition Park residential and commercial areas,
2. Reduction in trips due to on-site synergies with retail and business areas with and near Exhibition Park, and
3. Trip reductions for modal share diversions to transit and active transportation modes of travel

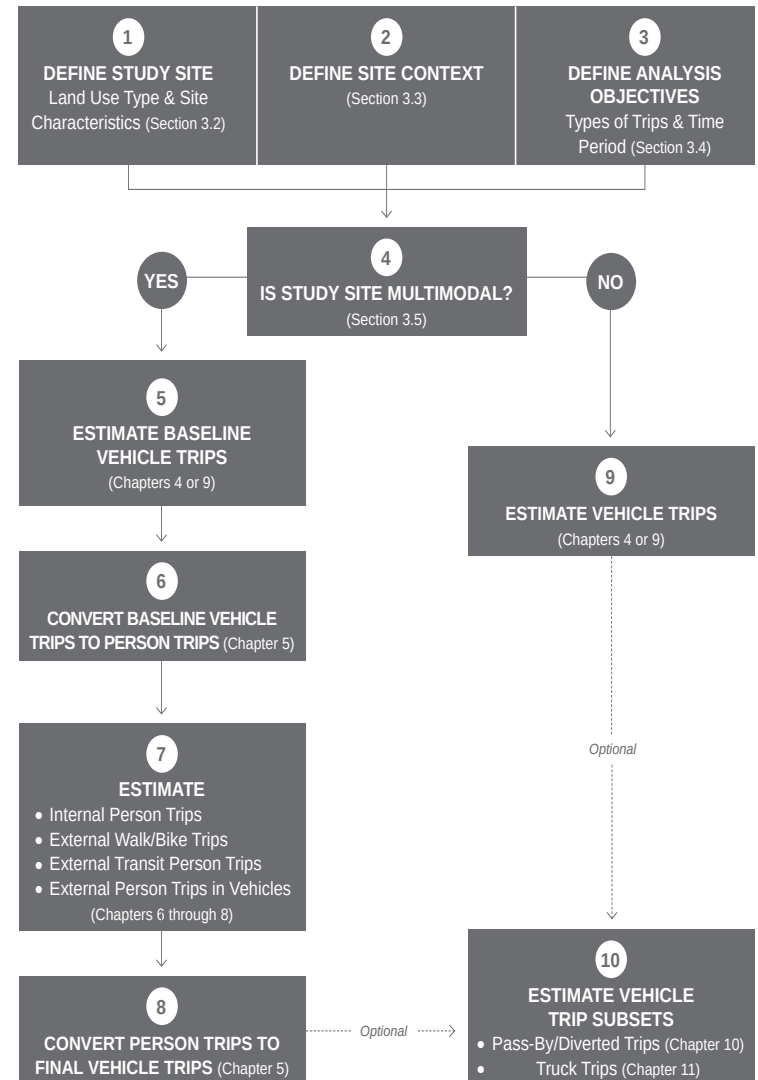
The following discussions walk through each of these key component using methodologies contained in the Institute of Transportation Engineers (ITE) Trip Generation Guide (11th Edition), and 3rd edition of the Trip Generation Handbook.

Figure 2.4 to the right was used to guide the preparation of estimated of anticipated trips generated to and from the site, based on the definition of the site as a Multi-Modal site (Step four as noted in the figure).

Trips Generated by the Development

Initial trip generation numbers were produced from the Institute of Transportation Engineers (ITE) Trip Generation Guide without any reduction factors applied as shown in the table on the following page.

Fig.25 ITE Analysis Approach for Estimating Site Trip Generation



Baseline Vehicle Trips

The figure below illustrates Step 5 of the ITE process, which involves estimating baseline vehicle trips using guidance from the ITE Trip Generation Manual. This figure presents the unadjusted baseline vehicle volumes for both daily and peak hour periods, applying the trip generation rate methodology based on the land uses and anticipated development program.

Note that trip generation estimates were also generated for the existing commercial development and included the "Fast-Food Restaurant with Drive-Thru" and "Gasoline/Service Station". The comparison of the ITE generation trips and the actual trips suggest that the ITE Guide overestimates the trips by about 25%. This comparison is provided for information purposes only.

These baseline trip estimates form the foundation for subsequent analyses, including trip reductions, modal adjustments, and person trip conversions. For transparency and reference, detailed, building-by-building trip generation calculations for each step of the process are provided in the Appendices of this report.

Table 6. Baseline Vehicle Trips

Baseline Vehicle Trips										
		Daily			AM Peak			PM Peak		
Land Use	Trip Code	Daily Enter	Daily Exit	Daily Total	AM Enter	AM Exit	AM Total	PM Enter	PM Exit	PM Total
New Development										
Single Family Attached House	215	526	526	1,051	18	53	70	49	34	83
Multi-unit Mid Rise	221	4,824	4,824	9,648	181	605	786	506	323	829
Multi-unit High Rise	222	8,163	8,163	16,326	252	718	971	713	437	1,151
Strip Retail Plaza	822	1,166	1,166	2,332	61	40	101	141	141	282
ITE NEW DEVELOPMENT TRIPS		14,678	14,678	29,356	511	1,417	1,928	1,409	936	2,345
Commercial Land Use										
Fast-Food Restaurant with Drive-Through (Area)	934	629	629	1,258	87	74	161	33	29	61
Gasoline/Service Station	944	688	688	1,376	41	41	82	56	56	111
Commercial Trips (ITE)		1,317	1,317	2,634	128	115	243	88	84	173
Commercial Trips (Actual)		-	-	-	43	138	178	64	66	130
Comparison - Actual vs ITE		-	-	-	34%	120%	73%	73%	78%	75%
Total Vehicle Trips		15,995	15,995	31,991	554	1,555	2,106	1,473	1,002	2,475

Mixed Use Development

For the purposes of this study, it is assumed that the "Mixed Use Development" is composed of both the existing and new commercial areas, and the new residential parts of the Exhibition Park Development. The development is also expected to have close ties to the expanded Ragged Lake Business Park and to the Bayers Lake Industrial Park. Collectively, these areas are anticipated to function in a similar (albeit smaller) manner as the Burnside Business Park, which has significant interaction with surrounding residential areas.

This recognizes the potential significant synergies and opportunities that are anticipated due to the magnitude of the respective developments. In particular, the Exhibition Park and Ragged Lake Business Park are expected to form a very synergistic relationship over times as both expand closer to their full potential. For the purposes of this study though, it was assumed that there is limited synergies achieved to keep the analysis conservative in nature.

Conversion To Person Trips

Following the ITE procedures, estimated development vehicle trips were converted to person trips using projected modal share targets. The conversion to person trips then allows the ITE procedures in Step 7 to be carried out by applying Internal Trip Capture (on-site synergies) and new modal share assumptions based on future projected modal share values. These values were derived through interpretation of HRM Modal Share Targets contained in the Integrated Mobility Plan.

Modal Share Targets

HRM's Integrated Mobility Plan includes trip estimates for Inner and Outer Suburban areas, with Exhibition Park located at the outside edge of the Inner Suburban Boundary. The table below shows modal share targets for the inner and outer suburban areas as well as the existing modal share estimates from Census data.

Based on the location, this report assumes a 2040 modal share target between the inner and urban values as shown in the final column. This is based on pursuing a development that is highly oriented to providing transit services and active transportation connectivity, as well as promoting ride sharing opportunities that increase the vehicle occupancy from 1.1 persons per car to 1.2 persons per car.

It also assumes as a minimum:

1. Some synergies will be realized between the future development of the Ragged Lake Business Park, and
2. Re-introduction of a Park-and-Ride facility to further promote transit service in the area. The park-and-ride facility could further influence existing residents in surrounding areas to opt for transit, providing a practical alternative for commuters and contributing to reduced vehicle volumes along key corridors.

Table 7. Baseline Vehicle Trips

Mode of Travel	Existing Share	2031 Inner Suburban	2031 Outer Suburban	2040 Targets
Auto	97%	74%	86%	80%
Transit	0%	20%	10%	15%
Walk/Bike/Other	3%	6%	4%	5%
Veh Occ.	1.1			1.20

Internal Capture and Modal Share Estimation

ITE Step 7 utilized the "Spreadsheet Tool for Estimation of Trip Generation and Internal Trip Capture at a Mixed-Use Developments" tool as shown on the next page. The Spreadsheets are also included in Appendix B of this report for reference.

The results of analysis shows that vehicular trips to and from the side reduce from 554 and 1555 vehicles entering and exiting during the AM peak hour to 409 and 1196 vehicles respectively. PM peak vehicle trips similarly reduce from 1473 and 1002 trips entering and exiting to 1096 and 729 trips.

NCHRP 684 Internal Trip Capture Estimation Tool				Organization:		Fathom	
Project Name:		3		Performed By:		James Lockhart	
Project Location:		200 Prospect Road, Goodwood, NS		Date:		2025-04-29	
Scenario Description:				Checked By:			
Analysis Year:		2025		Date:			
Analysis Period:		AM Street Peak Hour					

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)							
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³			
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting	
Office	0	10,000	ft2	0	0	0	
Retail	822	42,830	ft2	101	61	40	
Restaurant	934	1,338	AM Peak Hour	161	87	74	
Cinema/Entertainment	0	-	0	0	0	0	
Residential	215,221,222	5,867	Dwelling Units	1,827	451	1,376	
Hotel	0	-	0	0	0	0	
All Other Land Uses ²	944	8	Fuel Positions	82	41	41	
				2,171	640	1,531	

Table 2-A: Mode Split and Vehicle Occupancy Estimates							
Land Use	Entering Trips			Exiting Trips			
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized	
Office							
Retail	1.50	15%	6%	1.50	15%	6%	
Restaurant	2.00	15%	6%	2.00	15%	6%	
Cinema/Entertainment							
Residential	1.20	15%	6%	1.20	15%	6%	
Hotel							
All Other Land Uses ²	1.20	15%	6%	1.20	15%	6%	

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)							
Origin (From)	Destination (To)						
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel	
Office							
Retail							
Restaurant							
Cinema/Entertainment							
Residential							
Hotel							

Table 4-A: Internal Person-Trip Origin-Destination Matrix*							
Origin (From)	Destination (To)						
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel	
Office		0	0	0	0	0	
Retail	0		8	0	8	0	
Restaurant	0	7		0	6	0	
Cinema/Entertainment	0	0	0		0	0	
Residential	0	16	35	0		0	
Hotel	0	0	0	0	0		

Table 5-A: Computations Summary				
	Total	Entering	Exiting	
All Person-Trips	2,764	856	1,908	
Internal Capture Percentage	6%	9%	4%	
External Vehicle-Trips ⁵	1,632	469	1,163	
External Transit-Trips ⁶	390	116	274	
External Non-Motorized Trips ⁶	157	47	110	

Table 6-A: Internal Trip Capture Percentages by Land Use				
Land Use	Entering Trips	Exiting Trips		
Office	N/A	N/A		
Retail	25%	27%		
Restaurant	25%	9%		
Cinema/Entertainment	N/A	N/A		
Residential	3%	3%		
Hotel	N/A	N/A		

¹Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

³Enter trips assuming no transit or non-motorized trips (as assumed in *ITE Trip Generation Manual*).

⁴Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

⁵Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

⁶Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	3
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.50	61	92	1.50	40	60
Restaurant	2.00	87	174	2.00	74	148
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.20	451	541	1.20	1376	1651
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	17		8	0	8	0
Restaurant	46	21		0	6	4
Cinema/Entertainment	0	0	0		0	0
Residential	33	17	330	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		29	40	0	0	0
Retail	0		87	0	11	0
Restaurant	0	7		0	27	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	16	35	0		0
Hotel	0	4	10	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	23	69	92	37	10	4
Restaurant	43	131	174	52	20	8
Cinema/Entertainment	0	0	0	0	0	0
Residential	14	527	541	347	79	32
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	49	49	33	7	3

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	16	44	60	23	7	3
Restaurant	13	135	148	54	20	8
Cinema/Entertainment	0	0	0	0	0	0
Residential	51	1600	1651	1053	240	96
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	49	49	33	7	3

¹ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
² Person-Trips
³ Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator
[*] Indicates computation that has been rounded to the nearest whole number.

Trip Distribution and Assignment

The HRM Origin/Destination Visualizer was utilized to gain a clearer understanding of travel patterns to and from the site. The nearest relevant Traffic Zone Centroid is located in Brookside (TZ21), the table below identifies the following highest Origin and Destination pairings:

Table 8. Trip Distribution - Census

External Zone	Origin (From TS17)	Destination (To TZ17)
Quninpool District (Halifax) (TZ2)	730	10
Downtown Halifax (TZ3)	750	10
West-end Halifax (TZ4)	440	50
North-end Halifax (TZ5)	660	20
Woodside (TZ6)	70	30
Cowie Hill (TZ11)	230	115
Bayers Lake (TZ12)	325	-
Burnside (TZ18)	650	-

Brookside (TZ21) generates a total of 5,420 outgoing trips by all modes and receives 935 incoming trips by all modes (AM peak hour). The image to the right illustrates the incoming consolidated traffic zone centroids in green and the outgoing centroids in orange. The thickness of the magenta lines connecting the centroid nodes represents the relative trip volume between them — with thicker lines indicating higher volumes of movement.

The largest Origin-Destination (OD) pairings from Brookside (TZ21) are as follows:

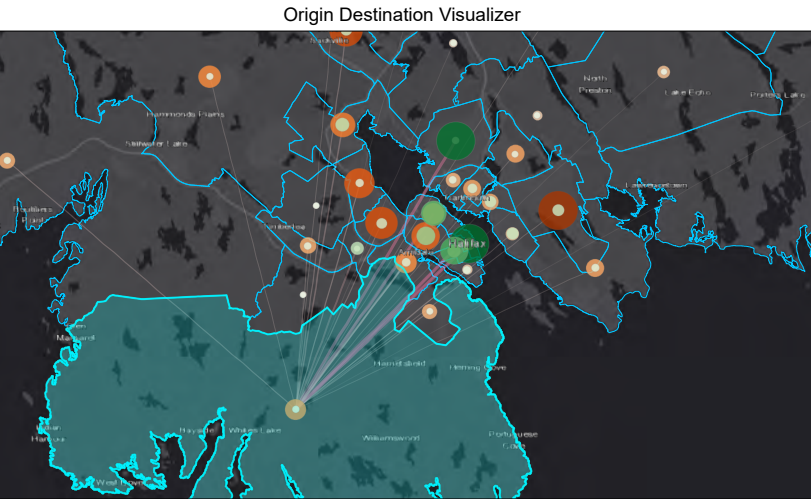
- Downtown Halifax: 760 trips — 99% outgoing
- South-end Halifax: 740 trips — 99% outgoing
- North-end Halifax: 680 trips — 97% outgoing

These account for approximately 40% of all trips originating from the zone, with the remaining trips distributed across various other nodes within and beyond HRM.

The data collected indicates the following distribution of total trips:

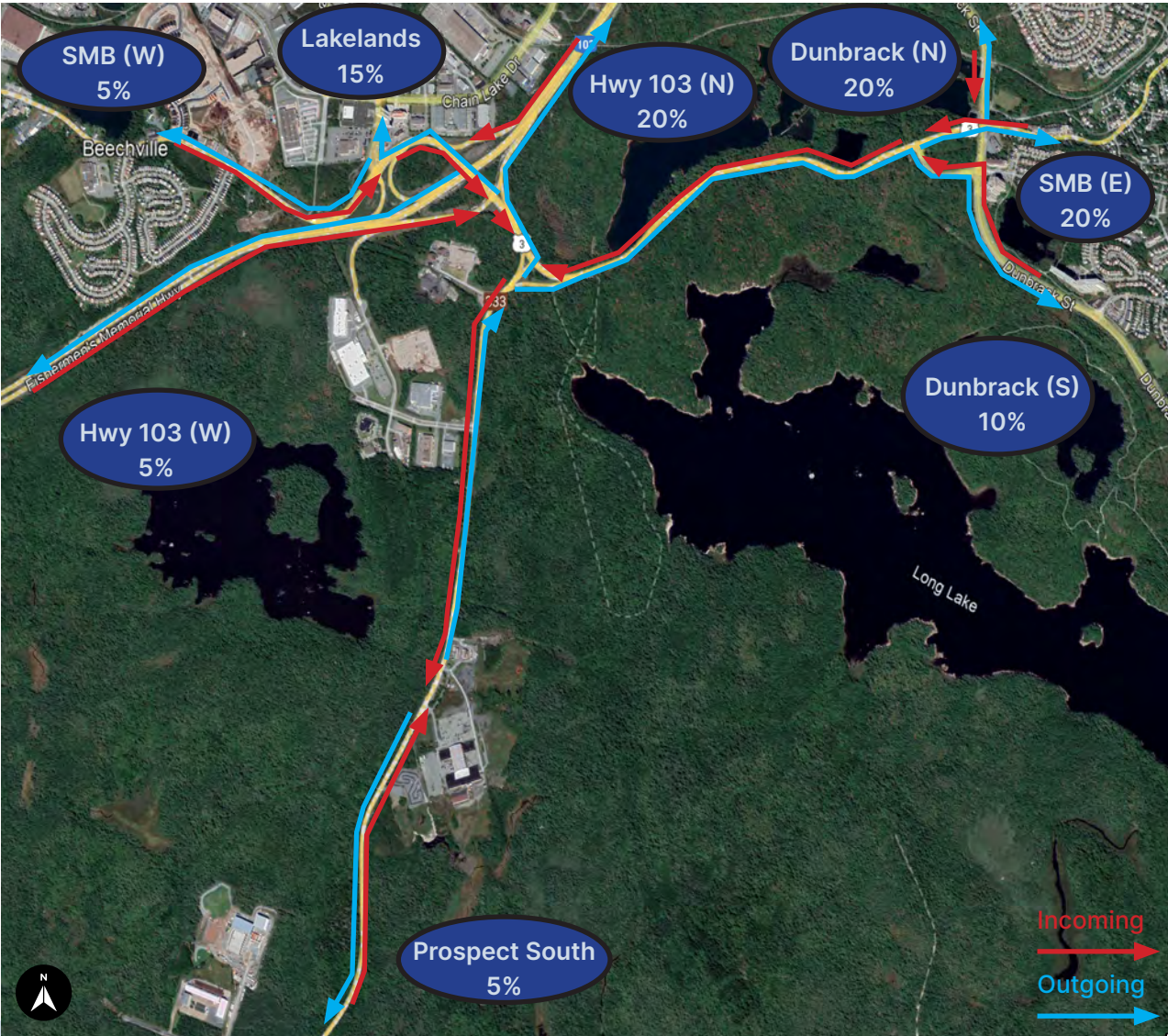
- 47% to Core Area Halifax
- 15% to Core Area Dartmouth
- 2% to Cole Harbour and Area
- 4% to Bedford and Area
- 32% to remaining areas across or external to HRM

Distribution values were rounded and distributed between the most logical routes between origin and destination, and accounted for the potential for congestion levels that frequently occur on St. Margarets Bay Road at the Armdale Roundabout.



Trip Assignment

Halifax and Dartmouth are expected to generate the majority of trips to and from the development. Most vehicle trips will be routed through the primary road network, including Prospect Road (Highway 333), St. Margarets Bay Road (Route 3), and Fishermen’s Memorial Highway (Highway 103). There have been various discussions about introducing a secondary access road through the business park, as well as alternate connections to Highway 103 as well as an east-west connection to Old Sambro Road.



Many of these connections are being explored by CBCL under an ongoing project with Nova Scotia Public Works, though specific options and recommendations have not yet been released.

As the specific alignments and details remain uncertain at this time, the potential impacts of these various options are discussed in greater detail in the analysis sections of this report.

The direct trip assignment process for modelling purpose was carried out using the Traffic Impact Assessment Tool available within SYNCHRO. This tool allowed for the distribution of projected trips across the surrounding road network based on anticipated travel patterns and access points. A detailed summary of the trip assignment results is provided in Appendix C of this report.



Travel Demand Forecasting

Transportation Demand Management

This Transportation Demand Management (TDM) section presents a framework for managing transportation demand related to the proposed Exhibition Park development. With plans for nearly 6,000 residential units and approximately 4,000 square metres of commercial space, it is essential to reduce reliance on single-occupancy vehicles (SOVs), promote sustainable and active transportation options, and align with the goals of Halifax Regional Municipality's Integrated Mobility Plan (IMP).

A sound TDM plan not only impacts local traffic near the development, but has the potential to positively impact traffic conditions within the broader transportation network. A number of opportunities and synergies in this regard are discussed below.

The primary objectives of this TDM Plan are to leverage Exhibition Park's location and synergistic relationships to help reduce the number of SOV trips, provide opportunities to significantly enhance transit services, encourage use active transportation, manage parking demand, and influence areas south of Exhibition Park to embrace the TDM strategies initiated by this development.

To address these considerations, the following strategies are recommended for implementation as part of the development plan.

Land Use Synergies

Currently, virtually all traffic to, and past Exhibition Park is made by passenger vehicle traffic travelling between well separated developed residential areas and major employment nodes - with only a single roadway connection available.

One of the most effective TDM strategies that can significantly change traffic patterns, and volumes is the creation of higher order synergies between Exhibition Park and neighbouring properties.

Seldom is there an opportunity as significant as the synergies that can be created between Exhibition Park, Ragged Lake Business Park, and the Bayers Lake Business Park. In many ways,



this opportunity resembles the synergies created between the Burnside Industrial Park, Dartmouth Crossing, and the surrounding residential areas.

As these areas grow into the future, a mix of residential, commercial, industrial and business land uses will develop and begin to intermix. It is difficult to say at this time, exactly where each of these complementary components are located, suffice to say that if you get the right mix of these land uses, significant internal trip capture can be created that will help keep travel patterns and trip volumes local to the area, and avoid having to travel to more distant employment, recreation, and employment nodes.

Much of the groundwork for this opportunity has already been established over the past couple of decades, yet there has not been a catalyst to create the change needed for the Ragged Lake

Business Park to expand, or for municipal service enhancements to be considered along the Prospect Road corridor. Exhibition Park is likely to be that catalyst by bringing high density residential development near major employment nodes.

Such an arrangement dictates the need for direct connection the Ragged Lake Business Park from Exhibition Park, which has already been established as a requirement to support future sanitary, water service, secondary emergency access and as a potential capacity enhancement for vehicular traffic. This connection is mutually beneficial to all parties involved in that it expands the Ragged Lake developable area, provides capacity improvements to support higher density development in Exhibition Park, and ties into future potential Provincial Road expansion to better service the Ragged Lake area lands.

With improved connections to Bayers Lake, Ragged Lake, Exhibition Park, and Highway 103, it is anticipated that significant number of trips will occur happen in the local area, which in turn will help reduce existing trips that may use St. Margaret's Bay Road, Highway 103, Washmill Lake Drive, Lacewood Drive and other frequently congested roads that currently enter the Bayers Lake area.

Transit Service

Existing area transit service to the area is limited, restricted to Route 22 that travels through the Ragged Lake Business Park, but has limited impact to traffic on Prospect Road or the connecting road network. The size and density of the Exhibition Park development provide obvious incentive to extend transit service to, and through the development. Future routes could continue to use Prospect Road, or alternatively could be rerouted through the proposed extensions to the Ragged Lake Business Park along the Long Lake Drive extension. Assuming the Business Park expands once roadways are in place, such transit service has the potential to capture traffic to and from those developments, and more directly provides a connection between the core residential areas of Exhibition Park and the core employment areas within the Business Park.

Further, extending this connection to and through the Bayers Lake Business Park provides further synergies between these developments and starts to capture a critical mass of interconnected development in the southwestern parts of HRM. It is anticipated that this change will help reduce trips that currently come to Bayers Lake from areas within Highway 102 corridor and result in a more even directional split of peak and non-peak directional traffic. In this context, direct connections between Exhibition Park and the Lacewood Transit Terminal appear to be prudent to pursue.

The second significant transit opportunity is to capture existing traffic on Prospect Road through a larger, convenient, and efficient park-and-ride facility located at or near the Exhibition Park development, preferably near the southern side of the site to reduce traffic immediately adjacent to the development. While transit culture is not prevalent in this area due to lack of service, it is anticipated that some capture of park-and-ride traffic can be achieved to help reduce overall volumes on prospect Road north of Exhibition Park.

Active Transportation Infrastructure

Exhibition Park is somewhat separated from existing major employment zones today, there is significant potential to capture local active transportation trips within the development, and to the adjacent Ragged Lake Business Park through new and existing connections, and the Bayers Lake business Park, provided there's adequate connections across the Highway 103 corridor (currently targeted as the Chain of Lakes Trail about 2 kilometers north of Exhibition Park. Ensuring active transportation connections to these major employment centers are essential to promote commuter based modal shift to walking, biking, mobility, or other active transpiration Modes of travel.

Connections to the extensive adjacent public and private trail networks surrounding the Exhibition Park site are again excellent opportunities to capture recreational active transportation traffic, which can help eliminate some trips to recreational spaces within HRM, and properly upgraded, can provide commuting

opportunities to a much larger area through scenic and strategic trail connections.

Internally, active transportation infrastructure should be prioritized by incorporating on-site multi-use pathways that are well-lit and connect building entrances, parking areas, accessible sidewalks, crosswalks, and key links to Prospect Road. It is also recommended to include secure, covered long-term bicycle parking for residents, along with visitor and staff bicycle racks for commercial tenants, further supporting cycling as a practical and attractive mode of transportation for daily activities.

Other options could include public bicycle or scooter sharing programs like are currently offered in areas of HRM, providing short-term rental at convenient stations throughout the community. Trailheads, commuter rental facilities, and other measures to capture and transition vehicle traffic to AT traffic can also be pursued as the development proceeds.

Carpooling, Car-Share & Ride-Sharing

To support carpooling, car-share, and ride-sharing, the development can promote resources like the SmartRide Halifax website, which helps users find carpool matches. Designating convenient carpool parking spaces and encouraging participation in car-share programs would further reduce reliance on single-occupancy vehicle trips, contributing to a more balanced, sustainable transportation network within and around the development. Such strategies are appropriate for the Exhibition Park development, but also for existing volumes on Prospect Road south of Exhibition Park in an effort to achieve higher levels of vehicle occupancy.

Parking Management

On-site parking management can take a variety of forms with the most likely opportunities including:

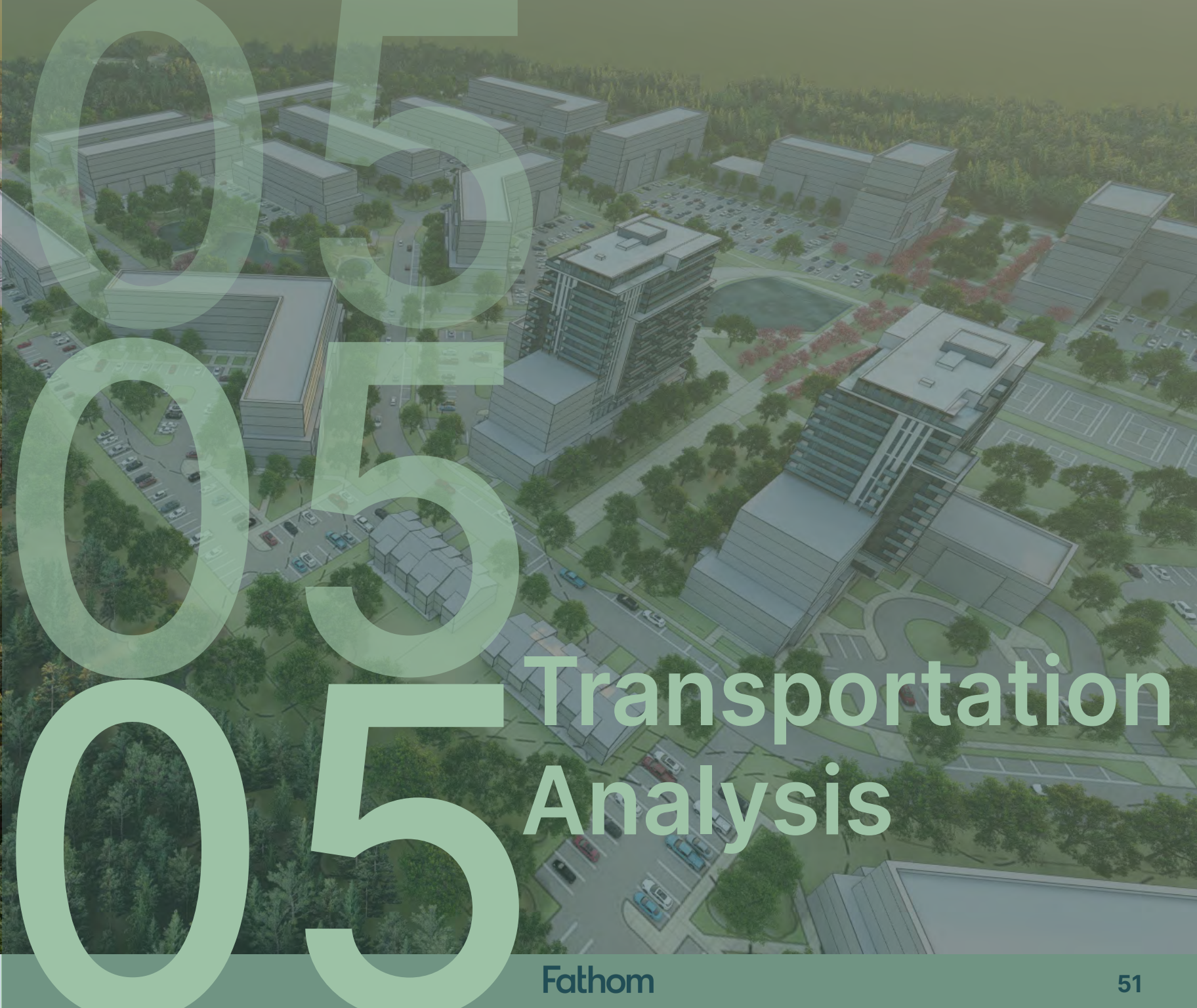
- Reduced minimum vehicle parking requirements to reduce vehicles on site and promote alternate travel modes.

- Increase bicycle parking requirements to promote AT use, including intermodal transit considerations and main transit stops.
- Allocate a portion of on-site parking for electric vehicles (with charging infrastructure) and carpool users.

Promotion Opportunities

Promotion is a key element of an effective Transportation Demand Management (TDM) strategy, as many commuters are often unaware, or have not fully considered the full range of travel options available to them. The Integrated Mobility Plan (IMP) highlights several ways the municipality can better promote TDM to both residents and employers.

- **Community/Workplace Events and Competitions:** Community and workplace events, along with friendly competitions, present opportunities to encourage people to explore alternative commuting options. Events like Bike to Work Week, Winter Bike to Work Day, and national challenges such as the Commuter Challenge can raise awareness and inspire behaviour change by making sustainable commuting both visible and rewarding.
- **SmartTrip Program** provides employers in Halifax Regional Municipality with sustainable commuting programs and benefits for their employees. This program aims to reduce single-occupancy vehicle trips during peak hours by encouraging employees to engage in alternative, sustainable transportation decisions.
- **Transit Promotions & Incentives:** Transit promotions and incentives also play an important role in encouraging public transit use. Initiatives like free transit days, complimentary transit passes for children, or promotional group and family rates can provide extra motivation for residents to choose transit over private vehicles. Creative, targeted incentives can help shift travel behaviour while building a culture of sustainable, shared transportation.

An aerial architectural rendering of a modern campus. The scene features several large, multi-story buildings with flat roofs and some with glass facades. There are extensive parking lots filled with cars, green spaces with trees, and a central area that looks like a pond or a large lawn. In the foreground, large, semi-transparent green numbers '0505' are overlaid on the image. The text 'Transportation Analysis' is written in a large, white, sans-serif font across the middle-right portion of the image.

Transportation Analysis

Modelling and Analysis

The following sections of this report present the Mobility Modeling and Multi-Modal Level of Service (MMLOS) analysis for the study area road network under both existing and future conditions. The analysis is structured to clearly outline network requirements before and after the full build-out of the proposed residential components of the Exhibition Park development.

It also includes discussion on sensitivities and volume impacts related to different levels of development. This includes such considerations such as what could reasonably be constructed and added to the existing road network with limited upgrades, and what portion of the development requires that more significant upgrades are put in place to enable the full development.

Intersection and Roadway Modelling

Traffic models were prepared using the Synchro/SimTraffic (v.11) platform for the weekday AM and PM peak hours of analysis. The model was used to gain insight into traffic operations and capacity utilization at the main intersections potentially impacted by the proposed development under each traffic loading scenario.

Detailed output reports for each of the scenarios are provided in Appendix D of this report and are summarized in the figures and tables within this section of the report. The analysis results and discussion address 9 primary intersections impacted by the development, including the 3 main intersections connecting Exhibition Park to Prospect Road.

The primary information and measures of performance that are summarized in tabular form on the following pages at each intersection include:

- Volume (actual or expected turning movement volumes at the intersection for each time horizon and each peak period),
- Vehicle Control Delay (average seconds per vehicle),
- Volume to Capacity (V/C) ratio (1.0 = full capacity),
- Queueing (95% queue lengths in vehicles).

For each intersection, AM and PM peak summary tables are presented and include the volumes at each analysis scenario followed by the estimated delay, volume to capacity ratios and queues at each time horizon. The tables are grouped by directional approach and results for shared lanes are grouped together. The tables are accompanied by a discussion of key finding for each horizon during each peak time period.

Analysis Process

Preliminary results were prepared for the 2025 existing baseline conditions, and the 2040 conditions with full Exhibition Park build-out and the addition of background traffic (1.0% growth per year).

The 2025 analysis results shows that most movements operated at acceptable levels of service, with a few movements approaching capacity. It also shows that Prospect Road volumes are high enough that side road or driveway movements onto Prospect Road can be challenging today and cannot be accommodated in future with any significant growth.

Subsequently, further analysis was completed using a series of steps to understand how the future mobility network may work in this area. These steps generally included:

- 1) Existing conditions operational analysis to determine potential network bottlenecks,
- 2) Determine which intersections and specific movements begin to fail under background traffic growth and development related traffic,
- 3) Understand impacts of different levels of development have on network operations and upgrading requirements,
- 4) Understand the impacts of adding development traffic if portions of the existing volumes on Prospect Road are reduced due to alternate connection points, or if development volumes are distributed to other routes.

Existing and Background Conditions

The figures below show the general results of the existing conditions traffic volumes (below left), and the 2040 traffic conditions with background traffic only added to the network. The circle at each intersection represent the level of service (LOS) of the critical movement, or movements at the intersection. The left half of the circle represents the AM Peak hour, and the right side is for the PM peak hour. The letters adjacent to the circle identifies which movement is considered critical and is identified for LOS values of D or worse.

The following key points were extracted from this analysis:

1. Higher volumes on Prospect Road result in side road movements becoming increasingly challenging to make as volumes increase.

2. A number of movements along the Route 3 (St. Margarets Bay corridor currently experience increased delay during peaks.
3. The Ragged Lake access currently experiences challenges with exiting left turn movements and suggesting traffic control upgrades are necessary now or in the near future.
4. Driveways on the east side of Prospect Road generally operate at higher LOS due to the majority of side road volumes being right turns as opposed to left turns such as at Ragged Lake.
5. The Highway 103 Ramp intersection and the St, Margarets Bay/Albert Walker intersections show capacity challenges with background traffic growth only.

Fig.26 2024 Existing Conditions Critical Movements

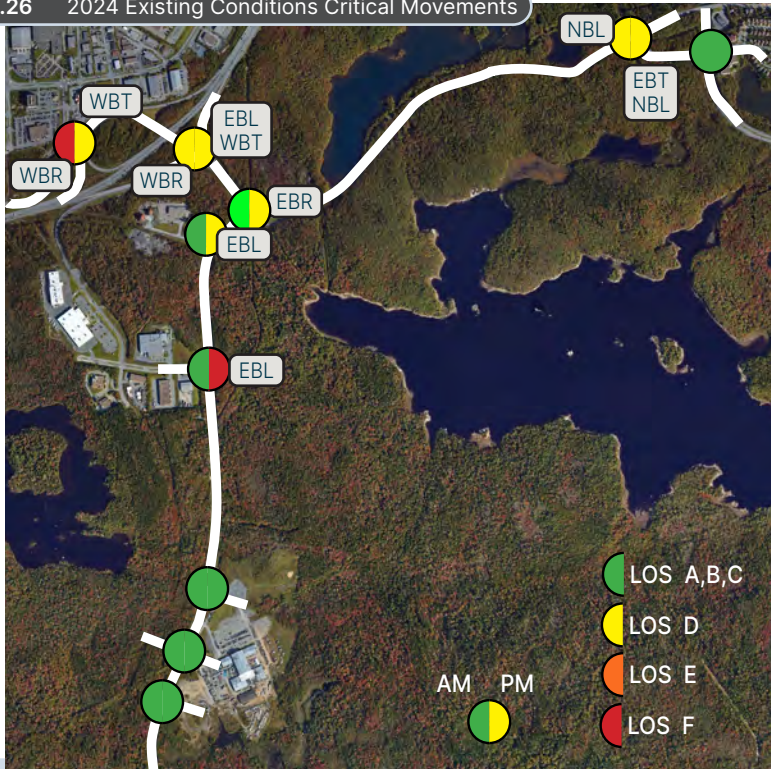
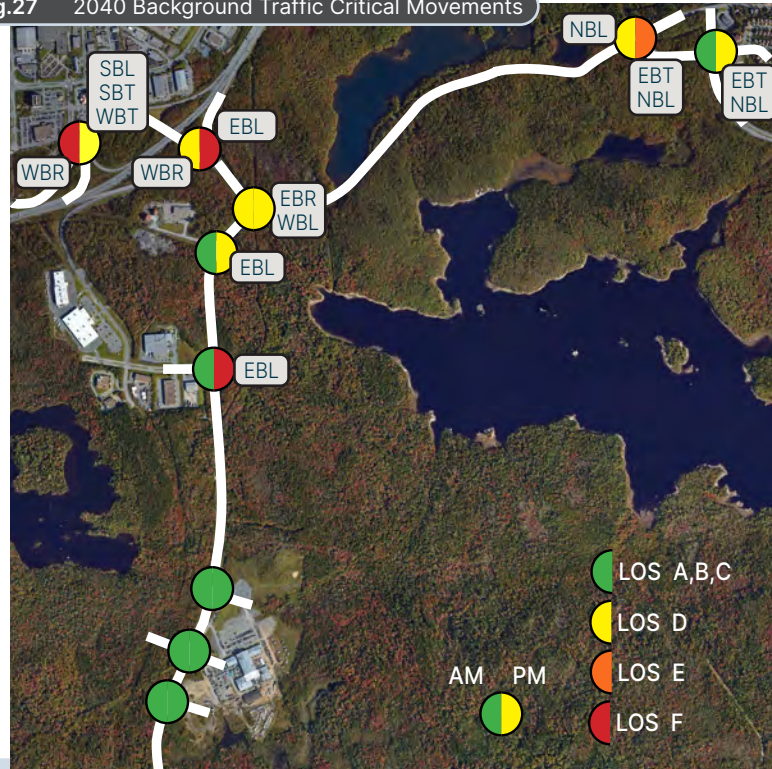


Fig.27 2040 Background Traffic Critical Movements



These analysis suggest that future upgrades will be required in the Prospect Road and St. Margarets Bay Road corridors in the near future just based on typical background traffic growth rates. Such upgrades may be required earlier if higher annual growth rates are experienced, which is certainly possible given the more recent average growth rates across HRM, which are upwards of 4% per year. It is unlikely that similar growth will be experienced in this area, through rates higher than 1% per year are possible.

Impacts of Development Traffic

Various Synchro analysis were run with development traffic added to the network to understand the mechanisms behind any network failures. Not surprisingly, the addition of full development traffic (adjusted for modal share and pass-by traffic) onto St. Margarets Bay Road caused numerous capacity breakdowns through the analyzed road network. These scenarios were therefore not analyzed in great detail as they would be impractical to pursue.

Consequently, additional analysis were run using portions of the total development volumes, reducing from 100% (full development) to 75%, 50% and 25%. The key findings of this analysis include the following:

1. Any side road or driveway connecting to Prospect Road that has moderate traffic volumes will require signalization, a roundabout, or left turn restrictions if it is to remain as a two-way stop-controlled intersection.
2. The AM peak hour analysis shows that about 50% of the development traffic can be accommodated on the existing road network, with no specific upgrades required other than the above noted improvements for major driveways or roadways connecting to Prospect Road.
3. The PM peak hour analysis shows that about 30% of the development traffic can be accommodated on the existing road network, beyond which various network upgrades would be required to accommodate additional traffic from the Exhibition Park site, and/or from the Ragged Lake Business Park.
4. The critical intersection that break down first are the Prospect Road intersection with St. Margaret's Bay Road, and the St. Margarets Bay Road intersection with Albert Walker Drive. Under higher loading volumes, both become capacity constrained on multiple legs of the intersection, suggesting that signal upgrades or localized intersection improvements are unlikely to resolve the capacity issues.
5. This further suggests that to achieve higher level of development on the site, secondary access in some form will be required. Secondary access would serve to alleviate the above noted capacity constraints, and would further provide for critical secondary emergency access to the development and other areas south of Exhibition Park, depending on the location of such an access.
6. The most obvious secondary access options is through the Ragged Lake Business Park as previously noted in this report as well as in the complementary municipal servicing analysis provided under separate cover.

Changes to Traffic on Prospect Road

The previous section addressed variations in development traffic and the associated impact on the road network. This section addresses volume reductions on St. Margaret's Bay Road that may impact the level of development that is feasible at Exhibition Park as different stages of short and long-term road network development. Such volume reductions could result from:

1. Increased Modal Share - as modal share and Travel Demand Management initiatives are implemented as a result of the combined Ragged Lake and Exhibition Park development, it is expected the some traffic currently on Prospect Road will also exhibit similar modal shifts.

2. Ragged Lake and Exhibition Park as Destinations - as these developments further build out, it is expected that they become more likely destinations for existing traffic that currently travels from south of Exhibition Park into Halifax. This is particularly true for the Ragged Lake Business Park which would be considered a significant employment node.

3. Alternate Routes - secondary access options for Prospect Road traffic are currently being investigated in a study for Nova Scotia Public Works. While the specifics of connections options in that study are not known, the figure below shows a number of potential routes that could be considered as alternatives to alleviate some pressures on St. Margaret's Bay traffic volumes - pressures that are going to be present regardless of the Exhibition Park development.

Fig.28 Possible Future Connections



To evaluate the impacts of reduced existing traffic volumes on St. Margarets Bay Road, a series of models were run to better understand how reductions and redistribution of traffic would impact the road network.

This scenario assumed the following:

1. A 15% reduction in traffic volumes south of Exhibition Park associated with revised modal splits and considering Ragged Lake and Exhibition Park as destination sites. This is about half of the reductions calculated for Exhibition Park trip generation based on the ITE procedures and therefore considered reasonable.
2. About half the traffic generated by the site, gets re-routed through a new connection into Ragged Lake Business Park. At this stage of analysis, the specific routing of these vehicles beyond Ragged Lake has not been analyzed in detail due to an extensive number of variables, though the options generally consist of:
 - a. Traffic is routed to alternate roadway connections such as directly to Highway 103 at different locations, or toward Old Sambro Road.

- b. Traffic is directed through Ragged Lake into Bayers Lake using previously considered or updated versions of the options shown below, or new options generated by the ongoing Route 333 study.
- c. Traffic diverted through Bayers Lake and using upgraded versions of the existing Highway 103 off-ramp. This could include maintaining one-way off-ramp only functionality, or could potential be reconsidered with a two-way configuration. This configuration would require the upgrading of the existing St. Margarets Bay Road with the Highway 103 eastbound on and off-ramps.

Regardless of the future configuration, these options functionally remove traffic from the Prospect Road corridor. The results of these preliminary analyses suggest that the full proposed development can be accommodated on the existing road network with limited upgrading requirements under the assumption of a 15% reduction in existing trip volume due to modal share and rerouting about half the development traffic through Ragged Lake.

These options and specific intersection impacts are considered in greater detail under the intersection summaries in the next sections.

Fig.29 Possible Bayers Lake Connection 1



Fig.30 Possible Bayers Lake Connection 2



MMLOS Analysis

Multi-Modal Level of Service

HRM's multi-modal level of service framework (March 2019) was used to evaluate the impacted integrated transportation network under both existing and future proposed conditions. The MMLOS evaluations stem from guidance provided in the Integrated Mobility Plan (IMP), which:

"... strives to identify the two-way relationship between land development patterns and investment in mobility and personal access..."

Foundational Information

Exhibition Park is situated on the edge of the "Sub-Urban" as defined by the MMLOS Framework, and is currently on the border of the "Rural" area.

While Exhibition Park functions in more of a "Rural" capacity today, the site is expected to evolve into a typical suburban landscape internally and in conjunction with the Ragged Lake Business Park, in the short to mid-term future. For reference, the MMLOS Performance Targets for each mode of travel, as outlined in the MMLOS framework document, are provided in the table to the right.



Figure 1: Area Type Breakdown

Table 4: MMLOS Performance Targets

Mode	Corridor Type	Regional Centre	Suburban	Rural
Pedestrian	Basic	B	C	D
	Priority	A	B	C
Bicycle	Basic	B	C	D
	Priority	A	B	C
Transit	Basic	B	C	D
	Priority	A	B	C
Goods Movement	Basic	E	E	D
	Priority	D	D	C
Auto	Basic	E	E	D
	Priority	D	D	C

Segments and Intersections

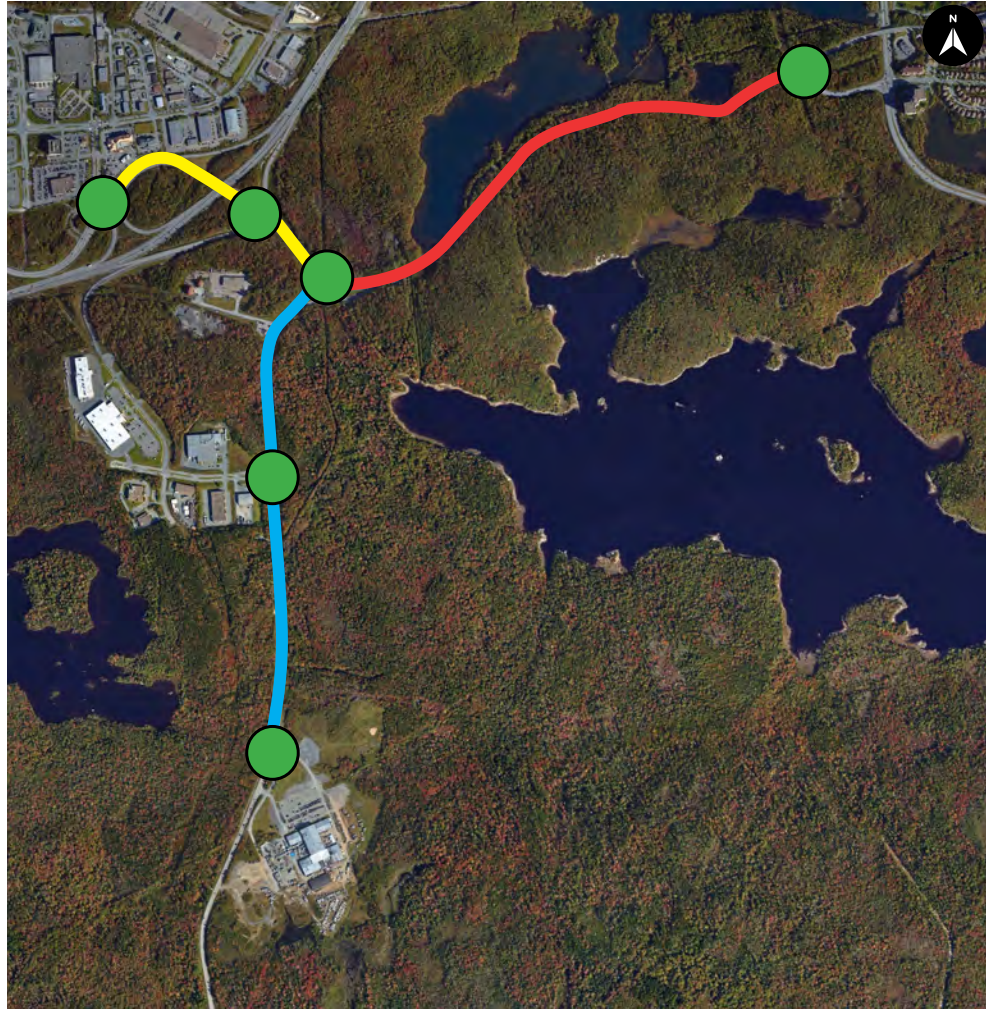
The analysis includes the primary roadways and intersections adjacent to the Exhibition Park development. The segments and intersections considered under the existing conditions scenario are shown in the figure on the following page and include:

- Route 3 / St. Margaret's Bay Road between Lakelands Drive and Albert Walker
- Route 333 / Prospect Road between St. Margaret's Bay Road and Exhibition Park.

Each distinct line color represents a roadway cross section that is similar in form and function, therefore there is a single MMLOS analysis for each coloured segment. Green dots indicate intersections that were evaluated as part of the MMLOS analysis.

The remaining un-highlighted roadways in the area are considered too large (i.e. Highway 103) or too small (i.e. Ragged Lake Drive, etc.) to be relevant for an analysis of this nature. The following sections summarized the findings for each segment and intersection analyzed.

Only graphics for the PM Peak period are presented in the main body of this report. AM Peak graphics and more detailed results of the Multi-Modal Level of Service (MMLOS) calculations are included in Appendix E for reference.





Intersection Summaries

Hwy 333 and Exhibition Park South

Operational Analysis

This is the southernmost intersection to the development occurring where the main central loop road meets Prospect Road. With most development traffic destined to and from the north, it experiences the lowest Prospect Road volumes along the corridor.

The tables to the right show reasonable operational results, through the exiting left turn can occasional experience some delay. The results in the tables to the right shows SimTraffic results for the PM peak hour, as they better account for overall corridor operations with signalization considered at the middle driveway.

This new Exhibition Park access roadway can function adequately as a two-way stop controlled intersection in the future. It is recommended that dedicated right and left turn lanes be constructed approaching Prospect Road, though the remainder

of the interior loop road can function as a single lane collector roadway.

The Prospect Road northbound lanes can operate with a single shared through right turn lane as right turn volumes are expected to be quite low and have minimal impact on through movements. As mentioned earlier in the report, a speed reduction south of this entrance should be implemented to signify a change in operating environment, which would further reduce the impact of any right turning traffic.

There is a higher volume of southbound left turn vehicles, particular in the PM peak that warrants a dedicated left turn lane, similar to those already implemented for the other driveways to Exhibition Park. The specific storage length should be determined during detailed design.



Table 9. Operational Analysis - Prospect / Exhibition Park South

AM PEAK		Exhibition Park WB		Prospect NB		Prospect SB	
		Left	Right	Thru	Right	Left	Thru
2040 with Development	Vol veh/hr	24	376	681	8	93	431
	V/C Ratio	0.12	0.61	Free	Free	0.09	Free
	Delay sec/veh	26.9	23.3	-	-	9.2	-
	95% Q m	2.8	27.3	-	-	2.1	-

PM PEAK		Exhibition Park WB		Prospect NB		Prospect SB	
		Left	Right	Thru	Right	Left	Thru
2040 with Development	Vol veh/hr	16	202	529	24	313	1033
	V/C Ratio	0.48	0.39	Free	Free	0.32	Free
	Delay sec/veh	35-55*	15.2	-	-	10.1	-
	95% Q m	11.2	12.6	-	-	9.8	-

Hwy 333 and Exhibition Park Middle

Operational Analysis

The middle Exhibition Park access is the northern connection of the urban core loop to Prospect Road and is considered the logical connection to the future road network in the Ragged Lake Business Park. As such, it is anticipated to be the primary entry point to the Exhibition Park development due to its central location within the development and the future Ragged Lake connection.

The higher volume of side road vehicles create excessive delays without upgrading of the intersection to include additional intersection lane capacity and higher order traffic control through traffic signals or a roundabout treatment. With signals in place, the tables below show that the intersection can operate at reasonable levels of service under the full development scenario, though volumes in the southbound direction are nearing capacity. Under such circumstances, it is anticipated that some of these southbound vehicles would shift to the alternate access route through the Ragged Lake Road network.

Due to the prominence of the intersection, it is recommended that it be constructed with dedicated left and right turn auxiliary lanes on all legs of the intersection (3 lanes on each approach to the intersection with a single exiting lanes in each direction).

It is also recommended that the signals (if this is the selected traffic control option) be actuated and coordinated with any signals immediately upstream or downstream if present.

The other alternative at this location would be a roundabout feature which could potentially serve as a gateway feature as it would be the primary access point for both Exhibition Park and future expansion to the Ragged Lake Business Park. A roundabout would be expected to have a multi-lane configuration accommodating through and left turns and may include dedicated right turn channelizations on major movements such as the westbound right turn from Exhibition Park to northbound Prospect Road.



AM PEAK		Ex.Park Middle - EB			Ragged Lake - WB			Prospect - NB			Prospect - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2040 with Development	Vol veh/hr	39	78	39	26	262	274	132	803	9	84	429	132
	V/C Ratio	0.19	0.30		0.08	0.63	0.78	0.23	0.85	0.01	0.26	0.46	0.17
	Delay sec/veh	27.7	21.1		22.7	24.1	29.5	7.5	18.1	7.9	11.7	10.9	9.0
	95% Q m	12.9	23.9		9.2	59	20.4	12.2	141.3	0.0	8.4	58.4	7.3

PM PEAK		Ex.Park Middle - EB			Ragged Lake - WB			Prospect - NB			Prospect - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2040 with Development	Vol veh/hr	124	248	124	16	161	170	81	545	24	255	1028	79
	V/C Ratio	0.52	0.85		0.12	0.52	0.65	0.49	0.57	0.03	0.47	0.98	0.09
	Delay sec/veh	35.2	43.5		40.4	34.3	37.0	22.6	1536	106	10.9	42.3	8.9
	95% Q m	30.9	88.4		8.0	43.1	13.9	12.4	98.0	0.0	28.0	261.1	2.1

Table 10. Operational Analysis - Hwy 333 / Exhibition Park Middle

Hwy 333 and Exhibition Park North

Operational Analysis

The existing Prospect Road intersection at the Exhibition Park commercial development is the busiest existing intersection and sees regular peak traffic entering and exiting the site. Typically all movements onto and off of Prospect Road can occur with relatively high levels of service with minimal delays during both peak hours. The most challenging movement to make during the peak hours is the left turn exit movement from any of the driveways as volumes on Prospect Road are relatively high in both directions, through volumes are relatively low.

Higher volumes during the PM peak hour make this movement more challenging and is anticipated as volumes increase associated with the residential development that more advanced traffic control options such as traffic signals or roundabouts will be required to provide entry and exit movements to Prospect Road.

A dedicated southbound left turn lane is already present on Prospect Road at Exhibition Park, which can service the proposed

development, and consideration should be given to adding a northbound right turn lane to help minimize impacts to through volumes on Prospect Road. The existing three lane cross section (with 2 lanes exiting the development) should be retained and transition to a basic two lane cross section within the development.

Should signals be used at this intersection, interconnection with signals at the middle driveway should be considered to aid in progression along the Prospect Road corridor.

Table 11. Operational Analysis - Prospect / Exhibition Park North

AM PEAK		Exhibition Park WB		Prospect NB		Prospect SB	
		Left	Right	Thru	Right	Left	Thru
2024 Existing Volumes	Vol veh/hr	16	119	617	5	42	351
	V/C Ratio	0.13	0.38	-		0.06	
	Delay sec/veh	30.9	19.6	0.0		9.6	
	95% Q m	2.8	11.9	0.0		0.2	
2040 with Development	Vol veh/hr	139	318	1027	41	103	473
	V/C Ratio	0.38	0.72	0.86	0.04	0.79	0.40
	Delay sec/veh	27.2	24.6	18.7	1.9	53.7	6.8
	95% Q m	32.9	51.2	166.1	2.9	40.4	43.9

PM PEAK		Exhibition Park WB		Prospect NB		Prospect SB	
		Left	Right	Thru	Right	Left	Thru
2024 Existing Volumes	Vol veh/hr	7	65	420	5	64	862
	V/C Ratio	0.07	0.12	0.27		0.06	0.55
	Delay sec/veh	37.3	11.8	0.0		8.5	0.0
	95% Q m	1.6	3	0		1.5	0
2040 with Development	Vol veh/hr	88	202	719	128	272	1338
	V/C Ratio	0.41	0.54	0.54	0.10	0.61	0.94
	Delay sec/veh	34.5	10.7	5.9	0.9	12.1	23.8
	95% Q m	23.1	16.3	66.7	3.5	44.8	269.5



Table 12. MMLOS - Prospect / Exhibition Park North

MMLOS Analysis

Active Transportation

The existing three-legged suburban intersection exiting Exhibition Park is stop-controlled today, but is anticipated to be signalized (alternatively a roundabout) in the future. It generates four uncontrolled conflict points for both pedestrians and cyclists. Additionally, the intersection lacks marked crosswalks. Prospect Road features designated bicycle lanes in both directions and AT connectivity to the development is a priority. With signal lengths estimated between 80 and 90 seconds, intersection meets Level of Service (LOS) criteria for the pedestrian and bicycle cycle lengths. Both, the pedestrian and cyclist modes received a Level of Service (LOS) rating of B, meeting the target requirements.

Transit

Currently, there is no transit service routed to Exhibition Park; however, transit service is anticipated to be introduced following the development of the area. It is not a transit priority route, though there is potential to incorporate transit priority measures at the intersection on Prospect Road, or on the Exhibition Park access depending on the Transit routes implemented for the development.

Goods Movement

The average curb lane width is 3.8 meters, with an average curb radius of 12.3 meters. Currently, goods movement along Highway 333 experiences minimal delay, as there are no stopping requirements at the intersection. As a result, the goods movement mode received a Level of Service (LOS) rating of D, meeting the target performance. In the future, slower speeds are anticipated on Prospect Road and implementation of a right turn lane would benefit truck movements to and from the site.

Automobiles

The intersection currently features two dedicated turning lanes, and the proposed right turn lane in the future results in exclusive turning lanes for all turning movements. The intersection does not feature any turn prohibitions providing excellent freedom of movement for cars in the area under signalized conditions., which also result in reasonable delays for

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
Prospect Road (Hwy 333) / Exhibition Park - One-way Stop Control					
Target	C	C	C	D	D
Actual	B	B	C	D	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	< 6	< 6	N/A	3.60 - 3.79	85 - 100%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	10.5 - 14	80 - 89%	0.80 - 0.89	11 - 12	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	21 - 35	36 - 55	36 - 55

cars at the intersection. As a result, the automobile mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Recommendations for Future Development

With an additional 6,000 residents expected to move in and out of the development, it is recommended that this intersection be signalized and include marked crosswalks to enhance safety and accommodate increased traffic volumes. It is also important to consider accommodating bicycle movements to bikes lanes on either side of Prospect Road. Transit service may not use this intersection if the Ragged Lake Connection is constructed, through could serve short term transit requirements. While transit priority may be challenging, options exist to use right turn lanes as possible queue jump opportunities on Prospect or exiting the development. As the intersection is to be retrofitted for the larger development, opportunities existing design for trucks and automobiles.

Prospect Road and Ragged Lake

Operational Analysis

Similar to the Exhibition Park driveways and access points, left turn exit movements from Ragged Lake Drive onto Prospect Road can be challenging, though delays are higher at this intersection as the left turns represent the higher volume exit movement toward Halifax. Relatively high vehicle speeds on Prospect Road also make finding acceptable gaps more challenging, resulting in existing LOS F during the PM peak hours. Generally, left turn movements into the development from Prospect Road, and exiting right turn movements operate relatively efficiently and with high levels of service.

As the Ragged Lake Business Park expands its footprint, more advanced levels of traffic control will be required at this location in the near future, regardless of the Exhibition Park development. Under signalized conditions, all movements can be accommodated at good levels of service, through southbound peak movements can experience some significant queueing. It is likely that future alternative access options through Ragged Lake will help alleviate some of

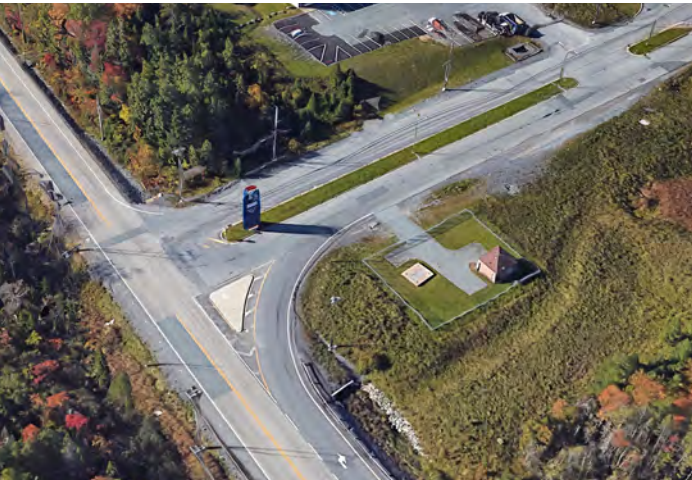
these pressures and reroute a portion of the traffic through Ragged Lake.

As previously noted, the proximity of Ragged Lake Business Park and Exhibition Park suggest Prospect Road corridor between St. Margaret's Bay Road and the future Nova Scotia Sound Stage should be considered as a unique extension of a suburban roadway with slower speeds and improved access opportunities.

Table 13. Operational Analysis - Prospect / Ragged Lake Drive

AM PEAK		Ragged Lake EB		Prospect NB		Prospect SB	
		Left	Right	Left	Thru	Thru	Right
2024 Existing Volumes	Vol <i>veh/hr</i>	20	6	10	810	334	78
	V/C Ratio	0.18	0.01	0.01	0.60	0.25	0.06
	Delay <i>sec/veh</i>	36.6	10.8	8.5	0.0	0.0	0.0
	95% Q <i>m</i>	4.8	0.3	0.3	0.0	0.0	0.0
2040 with Development	Vol <i>veh/hr</i>	22	43	131	1415	523	84
	V/C Ratio	0.15	0.26	0.18	0.79	0.29	0.06
	Delay <i>sec/veh</i>	34.1	14.0	2.3	10.2	2.3	0.6
	95% Q <i>m</i>	9.4	8.5	8.2	241.3	24.2	2.3

PM PEAK		Ragged Lake EB		Prospect NB		Prospect SB	
		Left	Right	Left	Thru	Thru	Right
2024 Existing Volumes	Vol <i>veh/hr</i>	78	7	4	567	852	27
	V/C Ratio	0.68	0.02	0.01	0.36	0.54	0.02
	Delay <i>sec/veh</i>	80.7	16.3	10.0	0.0	0.0	0.0
	95% Q <i>m</i>	28.1	0.6	0.1	0.0	0.0	0.0
2040 with Development	Vol <i>veh/hr</i>	91	129	84	1014	1535	31
	V/C Ratio	0.40	0.47	0.77	0.62	0.94	0.02
	Delay <i>sec/veh</i>	35.8	20.8	61.7	6.7	23.8	1.2
	95% Q <i>m</i>	22.9	20.0	21.8	96.9	300.7	1.8



MMLOS Analysis

Active Transportation

The three-legged rural intersection is unsignalized today with a stop sign controlling traffic on Ragged Lake Boulevard as it enters Highway 333, allowing uninterrupted automobile movement along Prospect Road. The intersection generates five uncontrolled conflict points for both pedestrians and cyclists. Additionally, the intersection will require marked crosswalks (primarily on the west leg) and consideration of designated bicycle lane in both directions on Prospect Road. Future conditions with traffic signals and crosswalks results in LOS C for pedestrians and LOS B for cyclists. Opportunities to improve crossing distances on the west leg using median refuge should be considered.

Transit

Route 22 currently serves Ragged Lake, with the inbound route making a right turn from southbound Prospect Road, though future routing could result in northbound or southbound through movements on Prospect. These may be some advantage to routing transit to coordinate with non-peak direction traffic to reduce delays. Based on the analysis, delays can be kept reasonable under signalized conditions, despite relatively high V/C ratios resulting in an overall transit LOS of C.

Goods Movement

The industrial oriented intersection has an average curb lane width of 5.1 meters and average curb radius of 25.4 meters. Currently, goods movement along Highway 333 experiences minimal delay, as there are no stopping requirements at the intersection and signalized conditions maintain a majority of green time for Prospect Road movements. As a result, the goods movement mode received a Level of Service (LOS) rating of C, primarily associated with longer delays exiting from Ragged Lake Drive.

Table 14. MMLOS - Prospect / Ragged Lake Drive

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
Prospect (Hwy 333) / Ragged Lake - One-way Stop Control					
Target	C	C	C	D	D
Actual	C	B	C	C	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	< 6	< 6	N/A	>= 4.00	85 - 100%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	17.5 - 21	70 - 79%	0.80 - 0.89	> 18	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	21 - 35	56 - 80	36 - 55

Automobiles

The intersection features dedicated turning lanes on all three approaches, providing exclusive turning lanes for all turning movements. The intersection does not feature any turn prohibitions providing excellent freedom of movement for cars, with minimal delay at the intersection. As a result, the automobile mode achieves a future LOS rating of B, exceeding the target performance.

Recommendations for Future Development

It is recommended that this intersection be signalized and include marked crosswalks to enhance safety and accommodate the anticipated increase in traffic volumes resulting from the future Ragged Lake Business Park expansion in association with the Exhibition Park development.

Prospect Road and St. Margaret's Bay

Operational Analysis

The Prospect Road intersection with St. Margaret's Bay Road is a large extended intersection with high speed right turn channelizations, double left turn lanes in the northbound direction and traffic signalization. It serves as the main connection between two major arterial routes and provides access to Bayers Lake Business Park and the southern shore to the west, and into downtown Halifax to the east.

The intersection experiences relatively high volumes on all legs of the intersection with the northbound left turn movements on Prospect competing for green time with the through movements on St. Margarets Bay Road. Modeling analysis shows that the St. Margaret's Bay eastbound approach operates near capacity, though there is excess capacity on other movements suggesting modifications to traffic signal timing or detection and signal actuation may provide for higher levels of service and more flexibility in moving traffic through the intersection.



Given the transitional nature of St. Margaret's Bay Road and Prospect Road in this area from more rural highway context to urban context, it is suggested that the intersection be reconfigured to eliminate the large high speed right turn channelizations. This further reduces the land footprint required for the intersection and is expected to improve safety operations in the vicinity of the intersection - an important consideration given the relatively high collision statistics experienced at this intersection.

Table 15. Operational Analysis - Prospect / St. Margarets Bay

AM PEAK		St. Margarets EB		St. Margarets WB		Prospect NB	
		Thru	Right	Left	Thru	Left	Right
2024 Existing Volumes	Vol veh/hr	379	314	108	400	605	280
	V/C Ratio	0.52	0.39	0.40	0.29	0.58	Free
	Delay sec/veh	20.3	3.3	25.8	20.9	14.9	0.0
	95% Q m	70.2	14.2	22.5	23.2	77.0	0.0
2040 with Development	Vol veh/hr	408	410	208	431	922	573
	V/C Ratio	0.87	0.53	0.79	0.32	0.88	Free
	Delay sec/veh	50.9	6.1	44.0	19.1	24.3	0.0
	95% Q m	117.6	19.6	48.1	38.6	145.2	0.0

PM PEAK		St. Margarets EB		St. Margarets WB		Prospect NB	
		Thru	Right	Left	Thru	Left	Right
2024 Existing Volumes	Vol veh/hr	513	610	259	724	409	213
	V/C Ratio	0.59	1.0	0.69	0.36	0.25	Free
	Delay sec/veh	9.5	41.0	18.9	7.5	28.4	0.0
	95% Q m	57.0	57.7	53.9	33.4	56.5	0.0
2040 with Development	Vol veh/hr	596	950	605	871	652	425
	V/C Ratio	0.95	0.87	0.98	0.39	0.94	Free
	Delay sec/veh	55.2	19.2	61.1	8.3	45.4	0.0
	95% Q m	166.4	120.5	138.0	44.8	106.2	0.0

MMLOS Analysis

Active Transportation

The intersection of Prospect Road and St. Margaret's Bay Road has 3 pedestrian and 6 cyclist uncontrolled conflict points. The average crossing width at the intersection is 14.6 meters, and the cycle length is about 80 seconds. While there are no sidewalks present in the area, both roadways have allowed for wide asphalt paved widths with marked bike lanes / pedestrian space on the shoulders of the road. As a result, the pedestrian and bicycle modes meet the target levels. That said, the high speed right turn lanes, and large intersection configuration are less desirable from a AT perspective. These represent a rural AT environment, while transition to more characteristics would be preferable.

Transit

Route 22 travels westbound along St. Margarets Bay Road, making a left turn onto Prospect Road before continuing through the Ragged Lake Business Park. It then returns eastbound to St. Margarets Bay Road, passing through the intersection as an eastbound through movement. Route 123 passes through the intersection in both the eastbound and westbound directions along St. Margarets Bay Road. There is currently no transit priority routes. The average volume-to-capacity (V/C) ratio for the transit routes is 0.65. Due to requiring a left turn on Prospect Road, transit movement experiences some delay resulting in a LOS D and missing the target LOS. Depending on the routing for future transit service, navigating movements at the intersection may change and could result in an improved LOS. Ultimately, the intersection has relatively high volumes therefore consideration should be given to intersection reconfiguration as noted previously, and should include consideration of transit priority measures.

Goods Movement

The average curb lane width is 3.6 meters, with an average curb radius of 53.8 meters due to the large right turn channelizations and the rural environment. Currently, goods movement along Highway 333 experience limited delay at the intersection. As a

Table 16. MMLOS - Prospect / St. Margarets Bay

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
St. Margarets Bay (Route 3) / Prospect (Hwy 333) - Signalized 3-Way					
Target	C	C	C	D	D
Actual	C	B	D	C	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	< 6	6-7	N/A	3.60 - 3.79	85 - 100%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	14 - 17.5	90 - 100%	0.80 - 0.89	> 18	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	36 - 55	36 - 55	36 - 55

result, the goods movement mode received a Level of Service (LOS) rating of C, meeting the target performance.

Automobiles

The intersection features four dedicated turning lanes out of four, providing exclusive turning lanes for all turning movements. The intersection does not feature any turn prohibitions providing excellent freedom of movement for cars in the area. There can be relatively high delay for some movements at the intersection though the analysis results in an overall LOS rating of B, exceeding the target performance.

Recommendations for Future Development

The intersection takes up significant land area and maintains a rural highway feel that is more consistent with Highway 103 and Route 333 beyond Exhibition Park. This intersection should serve as northern gateway to the suburban version of Prospect Road.

St. Margaret's Bay and Hwy 103 Ramps

Operational Analysis

The Highway 103 ramp intersection is the interface between Highway eastbound traffic and access to St. Margaret's Bay Road, Route 333, Bayers Lake and more. The intersection currently operates at relatively good levels of service in the AM and PM peak hours, though St. Margaret's Bay Road eastbound (through and left), and westbound through movements are relatively high volume resulting in high capacity ratio values on multiple movements. This suggests the intersection is nearing capacity presently and in the future.

Modelling also suggests that the addition of development traffic has limited impact on operations at the intersection. This is due to St. Margaret's Bay Road having 2 through lanes in each direction, and other movements with higher volumes being right turn movements and therefore having limited demand for additional green time.

Delays and queueing can extend back 10 to 15 vehicles during some peak periods so all cars generally clear the intersection on any given traffic signal cycle.

In the future, various options existing for this intersection that could require reconsideration of upgrading. This could include accommodating additional traffic direct from the Ragged Lake Park should access be pushed through the north end of the Park.

Table 17. Operational Analysis - St. Margarets / Hwy 103 Ramp

AM PEAK		St. Margarets EB		St. Margarets WB		Hwy 103 Ramp NB		
		Left	Thru	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	332	343	523	479	142	30	344
	V/C Ratio	0.59	0.17	0.48	0.60	0.30	0.55	
	Delay sec/veh	12.8	7.9	25.9	5.4	26.8	7.2	
	95% Q m	43.1	19.5	56.0	20.9	36.4	26.5	
2040 with Development	Vol veh/hr	358	404	708	642	153	32	407
	V/C Ratio	0.76	0.20	0.63	0.73	0.33	0.62	
	Delay sec/veh	23.4	7.4	24.7	8.7	25.0	8.0	
	95% Q m	69.7	20.5	68.5	43.9	35.6	30.2	

PM PEAK		St. Margarets EB		St. Margarets WB		Hwy 103 Ramp NB		
		Left	Thru	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	576	969	985	349	96	4	237
	V/C Ratio	0.96	0.43	0.95	0.50	0.27	0.57	
	Delay sec/veh	51.4	7.0	47.5	5.1	31.6	19.7	
	95% Q m	156.8	48.2	134.4	18.7	28.8	41.4	
2040 with Development	Vol veh/hr	669	1245	1242	484	111	5	397
	V/C Ratio	0.99	0.43	0.95	0.59	0.30	0.90	
	Delay sec/veh	56.2	6.7	49.2	6.0	32.7	46.6	
	95% Q m	169.0	46.6	133.8	23.7	30.9	97.1	



MMLOS Analysis

Active Transportation

The intersection of St. Margaret's Bay Road and the Highway 103 Ramp has four pedestrian and five cyclist uncontrolled conflict points. The average crossing width at the intersection is 16.2 meters, with a cycle length of 80 - 90 seconds. As a result, the pedestrian and bicycle targets are met at the intersection, though it is important to note that there is no specific sidewalk or cycling infrastructure present on any legs of the intersection at this time.

Transit

Route 123 passes through the intersection in both the eastbound and westbound directions along St. Margarets Bay Road. There are currently no designated transit priority routes at this location. The average volume-to-capacity (V/C) ratio for the transit routes is high related to the westbound and northbound movements in the PM peak also resulting in higher levels of delay that reduced the transit movement Level of Service (LOS) to D. As this is below the transit As a result, the overall transit mode received an LOS rating of D, meeting the target performance level. These results impact both Route 123 as well as route 22 coming from Ragged Lake to the 103 off ramp, therefore transit improvement measures are recommended at this location. To accommodate Route 22 that is directly associated with the Exhibition Park development, this could include a queue jump lane for the northbound right turn movements, or potential signal modification to prioritize green time in the northbound direction when transit vehicles are approaching.

Goods Movement

The average curb lane width is 4.6 meters, with an average curb radius of 23 meters. Currently, goods movement along St. Margarets Bay Road experiences some delay at the intersection. As a result, the goods movement mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Automobiles

The intersection features three dedicated turning lanes out of four, providing exclusive turning lanes for 75% turning movements. The intersection does not feature any turn prohibitions providing excellent freedom of movement for cars in the area. There is moderate delay for cars at the intersection. As a result, the automobile mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Recommendations for Future Development

No specific recommendations are noted at this time for the accommodation of Exhibition Park, though the intersection should be evaluated further as the development proposal matures and further clarity is realized on transit routing and schedules, and secondary access options to the Ragged Lake Business Park.

Table 18. MMLOS - St. Margarets / Hwy 103 Ramp

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
St. Margarets Bay (Route 3) / Hwy 103 East Ramps - Signalized 3-Way					
Target	C	C	C	D	D
Actual	C	D	D	B	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	A	A	F	A	B
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	D	E	B	A	A
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	D	D	C	C	C

Route 3 and Lakelands

Operational Analysis

The Route 3 / St. Margaret's Bay Road intersection with Lakelands Drive coming from the Bayers Lake Business Park is a large connecting intersection with high volumes on eastbound and westbound on St. Margaret's Bay Road and similarly heavy volumes exiting the Bayers Lake. The south leg of the intersection serves as a one way southbound on ramp to Highway 103.

In order to accommodate volumes through the intersection, approach lanes are configured with double left turn lanes in the eastbound, westbound and southbound directions requiring that traffic signal timing accommodate dedicated protected left turn phases for each movement. This results in some delays at the intersection, though the size of the intersection allows for higher capacity throughput during the peak hours of traffic.

Due to the robustness of the intersection, all movements generally operate with limited

delay, limited queueing and relatively low volume to capacity ratios during the peak hours. The highest capacity utilization is generally found in the westbound movements on St. Margaret's Bay Road, which accommodates the heavier through volumes from Halifax to suburban communities to the west along the St. Margaret's Bay Road corridor. The analysis also shows that the impacts of the new Exhibition Park development has limited impact on intersection operations.

Table 19. Operational Analysis - St. Margarets / Lakelands

AM PEAK		St. Margarets EB			St. Margarets WB			Lakelands SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	289	342	14	92	313	736	227	68	139
	V/C Ratio	0.26	0.25		0.10	0.25	0.73	0.32	0.32	0.26
	Delay sec/veh	7.4	12.8		7.2	15.6	5.9	21.5	21.5	5.1
	95% Q m	13.9	24.2		5.3	24.3	20.6	31.7	32.7	11.4
2040 with Development	Vol veh/hr	311	377	15	129	367	877	270	73	150
	V/C Ratio	0.48	0.41		0.46	0.37	0.37	0.31	0.31	0.31
	Delay sec/veh	7.9	12.2		6.6	13.2	7.7	22.2	21.8	5.8
	95% Q m	13.4	24.1		6.1	23.1	19.1	45.1	45.2	13.9

PM PEAK		St. Margarets EB			St. Margarets WB			Lakelands SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	216	357	22	308	588	585	767	290	351
	V/C Ratio	0.47	0.42		0.46	0.58	0.68	0.69	0.69	0.42
	Delay sec/veh	20.2	27.7		19.2	29.0	6.5	23.5	23.3	6.5
	95% Q m	20.0	43.1		27.7	66.0	25.4	116.4	118.1	30.4
2040 with Development	Vol veh/hr	251	443	26	377	702	7.8	981	337	408
	V/C Ratio	0.66	0.60		0.59	0.72	0.77	0.80	0.81	0.46
	Delay sec/veh	27.2	34.0		22.1	33.2	8.0	28.0	28.1	7.7
	95% Q m	22.7	55.3		33.3	79.0	31.1	159.3	173.0	38.4



MMLOS Analysis

Active Transportation

The intersection of St. Margaret's Bay Road and the Highway 103 Ramp has three pedestrian and nine cyclist uncontrolled conflict points. The average crossing width at the intersection is 55.6 meters, with a cycle length of 80 seconds. As a result, the pedestrian mode meets target LOS/ Cycling infrastructure is minimal at the intersection with heavy traffic turning volumes, high speed right turn channelizations and other infrastructure that can be challenging for cyclists. Therefore cycling targets are not met at the intersection. That said, multi use pathways exist just west of the intersection connecting the St. Margarets Bay Road multi-use trail to Horseshoe Lake Drive which is preferred to trying to accommodate cyclists through this highway oriented intersection. Cyclist accommodation east of the intersection is discussed further in the discussions section of this report and again preferably avoid this intersection.

Transit

Route 21 turns at the intersection between Lakelands Street and St. Margarets Bay Road in both directions, while Route 123 travels through the intersection in both the eastbound and westbound directions along St. Margarets Bay Road. There are currently no designated transit priority routes at this location. The average volume-to-capacity (V/C) ratio for the transit routes is 0.58, with minimal delays observed in transit movements. As a result, the overall transit mode received a Level of Service (LOS) rating of B, meeting the target performance level.

Goods Movement

The average curb lane width is 4.4 meters, with an average curb radius of 30 meters. Currently, goods movement experiences a small delay at the intersection. As a result, the goods movement mode received a Level of Service (LOS) rating of B, exceeding the target performance.

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
St. Margarets Bay (Route 3) / Lakelands - Signalized 3-Way					
Target	C	C	C	D	D
Actual	C	D	B	B	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	< 6	8-10	N/A	>= 4.00	85 - 100%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	> 21	30 - 49%	< 0.60	> 18	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	21 - 35	21 - 35	21 - 35

Automobiles

The intersection features eight dedicated turning lanes out of nine, providing exclusive turning lanes for 89% turning movements. The intersection does not feature any turn prohibitions providing excellent freedom of movement for cars in the area. There is a small delay for cars at the intersection. As a result, the automobile mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Recommendations for Future Development

There is limited impact from the Exhibition Park development as traffic is well dispersed by this intersection, and the size of the intersection has the ability to accommodate new trips. Consideration should be given to future possible connections across Highway 103 at or near this location which may impact future traffic implications

St. Margaret's Bay and Albert Walker

Operational Analysis

The St. Margaret's Bay Road intersection with Albert Walker drive is a simple Tee intersection with single lane approaches in each direction and a dedicated left turn lane in the westbound directions on St. Margarets Bay Road. The intersection is signalized and includes right turn channelization's in the northbound and eastbound directions.

The signalization allows this intersection to operate at reasonable levels of service during the AM and PM peak hours though capacity utilization during the PM peak hour can exceed 90% and may result in some longer queue lengths and delay on all three legs of the intersection as various movement compete for green time. The primary challenge results from the northbound left turn movement competing with the eastbound through movements during the AM peak hour, and the northbound left with the westbound through movements during the PM peak.



Previous analysis showed that this intersection started to see some level of congestions during the baseline scenario with background only traffic added to the network, suggesting that future upgrades at this intersection should be considered. Preliminary analysis suggests that a roundabout treatment at this location may be a suitable solution.

Table 21. Operational Analysis - St. Margarets / Albert Walker

AM PEAK		St. Margaret's EB		St. Margaret's WB		Albert Walker NB	
		Left	Right	Left	Thru	Thru	Right
2024 Existing Volumes	Vol veh/hr	614	179	47	281	187	123
	V/C Ratio	0.77		0.26	0.27	0.65	
	Delay sec/veh	17.6		11.7	8.2	29.1	
	95% Q m	135.7		9.9	31.6	66.6	
2040 with Development	Vol veh/hr	729	301	51	328	256	119
	V/C Ratio	0.97		0.56	0.30	0.79	
	Delay sec/veh	35.7		37.3	8.1	38.1	
	95% Q m	233.5		23.5	34.8	95.6	

PM PEAK		St. Margaret's EB		St. Margaret's WB		Albert Walker NB	
		Left	Right	Left	Thru	Thru	Right
2024 Existing Volumes	Vol veh/hr	401	325	162	807	200	215
	V/C Ratio	0.91		0.74	0.77	0.85	
	Delay sec/veh	35.1		31.8	17.4	40.3	
	95% Q m	173.3		39.3	137.6	105.5	
2040 with Development	Vol veh/hr	456	415	175	951	374	232
	V/C Ratio	1.06		0.87	0.90	0.99	
	Delay sec/veh	72.8		54.7	30.8	65.4	
	95% Q m	236.6		51.6	228.2	171.6	

Table 22. MMLOS - St. Margarets / Albert Walker

MMLOS Analysis

Active Transportation

The intersection of St. Margaret's Bay Road and Albert Walker Drive has four pedestrian and five cyclist uncontrolled conflict points. The average crossing width at the intersection is 31.7 meters, with a cycle length of 80 seconds. As a result, both the pedestrian and cyclist modes meeting the suburban target performance Level of Service (LOS) rating of C.

Transit

Route 22 turns at the intersection between St. Margarets Bay Road and Albert Walker Drive in both directions, while Route 123 travels through the intersection in both the eastbound and westbound directions along St. Margarets Bay Road. There are currently no designated transit priority routes at this location. The average volume-to-capacity (V/C) ratio for the transit routes is 0.91, with some delays observed in transit movements. As a result, the overall transit mode received a Level of Service (LOS) rating of E, falling short of meeting the target performance level. Above noted intersection improvements, whether through localized additional lane capacity, or conversion to a roundabout, should account for transit priority measures that could include a basic queue options coordinate with the eastbound right turn movement.

Goods Movement

The average curb lane width is 4 meters, with an average curb radius of 26.4 meters. Currently, goods movement experiences a small delay at the intersection. As a result, the goods movement mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Automobiles

The intersection features four dedicated turning lanes out of four, providing exclusive turning lanes for all turning movements. The intersection does not feature any turn prohibitions, but most

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
St. Margarets Bay (Route 3) / Albert Walker - Signalized 3-Way					
Target	C	C	C	D	D
Actual	C	C	E	C	C
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	< 6	< 6	N/A	>= 4.00	60 - 85%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	> 21	50 - 69%	0.90 - 0.99	> 18	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	56 - 80	56 - 80	56 - 80

movements experience longer delays due to competition for green time due to limited through lane capacity. As a result, the automobile mode received a Level of Service (LOS) rating of C, exceeding the target performance.

Recommendations for Future Development

With existing traffic volumes and the demand for routing to and from the Armdale Roundabout, this intersection appears to be somewhat undersized. Background growth analysis suggests some levels of congestion are likely today and increases as general traffic growth proceeds. Consideration for improvements at this intersection should be pursued regardless of the Exhibition Park development and should account for higher order transit services through this intersection and along the St, Margarets Bay corridor in general.

Albert Walker and Dunbrack

Operational Analysis

The Albert Walker and Dunbrack Street intersection is somewhat removed from the development area resulting in traffic being well distributed throughout the network prior to reaching this intersection. As a result, the intersection accommodates a relatively low percentage of trips to and from the development.

It is a four lane intersection complete with turning lanes and traffic signals which operates at relatively high levels of service during the AM and PM peak hours of traffic. The highest volumes and capacity utilization results occur during the PM peak hour on southbound Dunbrack Street Where movements operate at 85% capacity utilization or less today, which increases to about 90% on certain movements under future full development conditions.

This suggests that the intersection has adequate capacity to accommodate additional volumes related to Exhibition Park without significant operational impact.



AM PEAK		Albert Water - EB			Walter Havill - WB			Dunbrack - NB			Dunbrack - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	62	12	141	1	24	40	188	1036	5	29	685	79
	V/C Ratio	0.25	0.25	0.32	0.00	0.16		0.40	0.57	0.01	0.10	0.52	
	Delay sec/veh	31.1	31.1	7.0	27.0	14.9		7.9	14.7	0.0	6.8	18.8	
	95% Q m	23.6	23.6	14.5	1.4	13.8		19.2	80.9	0.0	4.3	67.8	
2040 with Development	Vol veh/hr	188	13	182	1	26	43	221	1116	5	31	738	122
	V/C Ratio	0.59	0.59	0.33	0.00	0.14		0.55	0.67	0.01	0.15	0.68	
	Delay sec/veh	35.1	35.1	5.4	23.0	12.2		15.8	19.0	0.0	10.0	25.6	
	95% Q m	55.5	55.5	14.8	1.2	13.3		37.2	100.4	0.0	5.5	89.1	

PM PEAK		Albert Water - EB			Walter Havill - WB			Dunbrack - NB			Dunbrack - SB		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2024 Existing Volumes	Vol veh/hr	130	30	290	7	20	43	210	935	13	74	1224	160
	V/C Ratio	0.63	0.63	0.66	0.04	0.18		0.69	0.49	0.01	0.22	0.84	
	Delay sec/veh	43.8	43.8	20.4	29.4	14.8		28.8	12.2	0.0	6.8	24.3	
	95% Q m	49.2	49.2	46.7	4.7	13.6		49.9	65.1	0.0	7.8	141.4	
2040 with Development	Vol veh/hr	213	32	331	8	22	46	282	1008	14	80	1319	286
	V/C Ratio	0.83	0.09	0.73	0.03	0.19		0.86	0.47	0.01	0.22	0.91	
	Delay sec/veh	61.0	29.8	24.2	29.0	15.0		46.8	11.1	0.0	68	29.0	
	95% Q m	70.9	12.2	52.5	4.7	13.6		76.0	66.0	0.0	7.9	183.1	

Table 23. Operational Analysis -Albert Walker / Dunbrack

MMLOS Analysis

Active Transportation

The intersection of Albert Walker Drive and Dunbrack Street has eight pedestrian and fourteen cyclist uncontrolled conflict points. The average crossing width at the intersection is quite higher due to the long crossing width over Dunbrack Street, resulting in pedestrian LOS D which does not meet target values.

The intersection has an urban environment on the east side complete with sidewalks and a multi-use trail in the northeast quadrant. The existing longer pedestrian crossings currently have no receiving sidewalks, trails or other AT infrastructure, therefore pedestrian volumes are very low on these crossings.

With some cyclist priority provided in areas, and reasonable cycle lengths, the cyclist mode met the LOS target with a rating of C.

Transit

Route 22 travels through the intersection in both the eastbound and westbound directions along Albert Walker Drive. There are currently no designated transit priority routes at this location. The average volume-to-capacity (V/C) ratio for the transit routes is 0.35, with some delays observed in transit movements. As a result, the overall transit mode received a Level of Service (LOS) rating of B, meeting the target performance level.

Goods Movement

The average curb lane width is 4 meters, with an average curb radius of 27.5 meters. Currently, goods movement experiences a small delay at the intersection. As a result, the goods movement mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Automobiles

The intersection features seven dedicated turning lanes out of eight, providing exclusive turning lanes for 88% turning movements.

Table 24. MMLOS - Albert Walker / Dunbrack

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour					
Area Type: Suburban					
MODE					
Dunbrack / Albert Walker - Signalized 4-Way					
Target	C	C	C	D	D
Actual	D	C	B	B	B
Priority Corridor	No	No	No	Yes	Yes
Space	Number of Uncontrolled Conflicts	Number of Uncontrolled Conflicts	% of Transit Priority Measures (of Ideal)	Avg. Curb Lane Width (m)	% of movements with exclusive turn lanes
	8-10	11-13	N/A	>= 4.00	85 - 100%
Environment	Avg. Crossing Width (m)	Priority Treatments	Transit Movement V/C Ratio	Avg. Effective Curb Radius (m)	Turn prohibitions
	17.5 - 21	70 - 79%	< 0.60	> 18	0
Time	Cycle Length (sec)	Cycle Length (sec)	Transit Movement Delay (sec)	Truck Intersection Delay (sec)	Car Intersection Delay (sec)
	76 - 90	76 - 90	21 - 35	21 - 35	21 - 35

The intersection does not feature any turn prohibitions providing freedom of movement for cars in the area. There is a limited delay for cars at the intersection. As a result, the automobile mode received a Level of Service (LOS) rating of B, exceeding the target performance.

Recommendations for Future Development

This intersection is relatively robust with multiple through lanes in each direction and dedicated turn lanes, therefore is capable of handling relatively high traffic volumes. Exhibition Park traffic is widely distributed throughout the road network be this locations therefore development impacts are minimal with no specific recommendations required to accommodate development traffic.

MMLOS Road Segment Summaries

Hwy 333 Between Exhibition Park and Route 3

The 3-kilometre segment features an average pedestrian facility width of over 2 metres and a pedestrian zone exceeding 3.5 metres in both directions. However, there are no designated pedestrian crossings between Exhibition Park and Highway 3. Despite this, the pedestrian mode received a Level of Service (LOS) rating of C, exceeding the target performance level.

The segment contains no driveways, which enhances safety for cyclists by reducing potential conflict points. Despite the cyclist mode receiving a score of E for the environmental criterion, the cyclist mode still achieved a Level of Service (LOS) rating of D in both directions meeting the target for rural conditions, but not for a suburban scenario. It is likely suburban conditions can be met through previously noted speed reductions, and refinements to the definition of "block length" to be context appropriate.

Relocating cycling route through the Ragged Lake Business Park can provide opportunity to improve this MMLOS criteria.

Traffic traveling southbound, including transit, goods movement, and automobiles, all achieved a 100% travel speed relative to the ideal speed. In contrast, traffic traveling northbound scored only 83%, indicating slower travel speeds compared to the ideal.

Transit operates in mixed traffic on a single lane and does not have any designated stops along Prospect Road. Despite this, the transit mode achieved a Level of Service (LOS) rating of C, exceeding the target performance level.

Prospect Road has a southbound curb lane width greater than 4 metres and a northbound curb lane width of 3.7 metres. Both directions have no restrictions on stopping or loading along the segment. As a result, the goods movement mode traveling in the southbound direction scored a Level of Service (LOS) rating of A,

while the northbound direction received a LOS rating of B.

There is no on-street parking along the segment, and the automobile mode achieved a Level of Service (LOS) rating of C, meeting the target performance level.

Table 25. Segment MMLOS - Prospect Road

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour												
St. Margarets Bay Road (Route 3)						Exhibition Park (Tim Hortons)						
DIR	MODE											MODE
SB ↓	Target	C	C	C	D	D	D	D	C	C	C	Target
	Actual	C	D	C	A	C	A	B	C	D	C	Actual
Prospect Road (Hwy 333)	Priority Corridor	No	No	No	Yes	Yes	Yes	Yes	No	No	No	Priority Corridor
	Space	Pedestrian Facility Width (m)	Driveway Density	Transit Facility Type	Width of Curb Lane (m)	Midblock V/C Ratio	Midblock V/C Ratio	Width of Curb Lane (m)	Transit Facility Type	Driveway Density	Pedestrian Facility Width (m)	Space
		A	A	E	A	A	A	C	E	A	A	
	Environment	Pedestrian Zone Width (m)	Speed x Volume	% of Stops with Bus Lay-bys	% No Stopping / No Loading	On-street Parking Availability (%)	On-street Parking Availability (%)	% No Stopping / No Loading	% of Stops with Bus Lay-bys	Speed x Volume	Pedestrian Zone Width (m)	Environment
		A	E	A	A	F	A	A	A	E	A	
NB ↑	Time	Distance Between Marked Crossings (m)	Block Length	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Block Length	Distance Between Marked Crossings (m)	Time
		F	F	A	A	A	B	B	B	F	F	

Albert Walker From St. Margarets Bay to Dunbrack

MMLOS Analysis

The 291-metre segment features an average pedestrian facility width of over 2 metres and a pedestrian zone of nearly 4 metres in both directions. However, Albert Walker Drive has designated pedestrian crossings only at the intersections at the beginning and end of the street. Despite the limited crossing opportunities, the pedestrian mode received a Level of Service (LOS) rating of B, exceeding the target performance level.

The absence of driveways along the segment enhances the cyclist safety by reducing potential conflict points, resulting the cyclist mode receiving an overall LOS rating of D in both directions, again meeting targets for rural areas, but not suburban environments.

The traffic travel speed relative to the ideal speed—including transit, goods movement, and automobiles—was considered not applicable for this segment, as it is less than 700 metres in length.

Transit operates in mixed traffic on a single lane and does not have any designated stops along Albert Walker Drive. Despite this, the transit mode achieved a Level of Service (LOS) rating of D in both directions, below the suburban target level.

Albert Walker Drive has a westbound curb lane width of 3.3 metres and an eastbound curb lane width of 3.8 metres. Both directions have no restrictions on stopping or loading along the segment. As a result, the goods movement mode traveling in the westbound direction scored a Level of Service (LOS) rating of D, while the eastbound direction received a LOS rating of B.

There is no on-street parking along the segment, and the automobile mode achieved a Level of Service (LOS) rating of C, meeting the target performance level.

Table 26. Segment MMLOS - Albert Walker Drive

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour															
MODE														MODE	
DIR	Dunbrack Street						St. Margarets Bay Road (Route 3)						DIR		
WB 	Target	C	C	C	D	D	Albert Walker Drive	D	D	C	C	C	Target	 EB	
	Actual	B	D	D	D	C		C	B	D	D	B	Actual		
	Priority Corridor	No	No	No	Yes	Yes			Yes	Yes	No	No	No	Priority Corridor	
Space	Pedestrian Facility Width (m)							Midblock V/C Ratio							Space
	Driveway Density								Width of Curb Lane (m)						
Environment	Transit Facility Type							% No Stopping / No Loading							
	Width of Curb Lane (m)								% of Stops with Bus Lay-bys						Speed x Volume
Time	Midblock V/C Ratio							On-street Parking Availability (%)							
	Pedestrian Zone Width (m)								% No Stopping / No Loading						Block Length
Time	Speed x Volume							Travel Speed / Ideal Speed							
	Distance Between Marked Crossings (m)						Travel Speed / Ideal Speed								Time
Time	Block Length							Travel Speed / Ideal Speed							
	Travel Speed / Ideal Speed						Travel Speed / Ideal Speed								Time
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Time	Travel Speed / Ideal Speed							Travel Speed / Ideal Speed							
	Travel Speed / Ideal Speed						Travel Speed / Ideal Speed								Time

St. Margarets Bay From Hwy 333 to Albert Walker

MMLOS Analysis

The 1.7-kilometre segment features an average pedestrian facility width of over 2 meters and a pedestrian zone exceeding 3.5 meters in both directions. However, there are no designated pedestrian crossings between Prospect Road and Albert Walker Drive. Despite this, the pedestrian mode received a Level of Service (LOS) rating of C in both directions, exceeding the target performance level.

The segment contains no driveways, which enhances safety for cyclists by reducing potential conflict points. However, the cyclist mode received a score of E for the environmental criterion, resulting in a Level of Service (LOS) rating of D in both directions meeting the target level.

Traffic traveling westbound, including transit, goods movement, and automobiles, all achieved a 93% travel speed relative to the ideal speed. In contrast, traffic traveling eastbound scored only 84%, indicating slower travel speeds compared to the ideal.

Transit operates in mixed traffic on a single lane and has 1 non lay-by stop along St Margarets Bay Road in each direction. Despite this, the transit mode achieved a Level of Service (LOS) rating of C in both directions, exceeding the target performance level.

Both directions on St Margarets Bay Road have a curb lane width greater than 4 meters no restrictions on stopping or loading along the segment. As a result, the goods movement mode traveling in both directions scored a Level of Service (LOS) rating of A.

There is no on-street parking along the segment. The automobile mode achieved a LOS rating of C in both directions, meeting the target level.

Table 27. Segment MMLOS - St. Margarets Bay Road - East

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour																			
MODE																		MODE	
DIR	Albert Walker Drive						Prospect Road (Hwy 333)										DIR		
WB ↓	Target	C	C	C	D	D							Target	↑ EB					
	Actual	C	D	C	A	C							Actual						
	Priority Corridor	No	No	No	Yes	Yes							Priority Corridor						
	Space	Pedestrian Facility Width (m)	Driveway Density	Transit Facility Type	Width of Curb Lane (m)	Midblock V/C Ratio							Midblock V/C Ratio	Width of Curb Lane (m)	Transit Facility Type	Driveway Density	Pedestrian Facility Width (m)	Space	
		A	A	E	A	A							A	A	E	A	A		
	Environment	Pedestrian Zone Width (m)	Speed x Volume	% of Stops with Bus Lay-bys	% No Stopping / No Loading	On-street Parking Availability (%)							On-street Parking Availability (%)	% No Stopping / No Loading	% of Stops with Bus Lay-bys	Speed x Volume	Pedestrian Zone Width (m)	Environment	
		B	E	A	A	F							F	A	A	E	B		
	Time	Distance Between Marked Crossings (m)	Block Length	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed							Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Block Length	Distance Between Marked Crossings (m)	Time	
		F	F	A	A	A							B	B	B	F	F		
St. Margarets Bay Road (Route 3)																			

St. Margarets Bay From Lakelands to Hwy 333

MMLOS Analysis

The 530-metre segment features an average pedestrian facility width of over 2 metres, with a pedestrian zone measuring 3.5 metres westbound and 3.0 metres eastbound. However, the segments designated pedestrian crossings over 300 metres apart. Despite the limited pedestrian crossings the pedestrian mode received a Level of Service (LOS) rating of C in both directions, exceeding the target performance level.

Due to the segment's facility type being mixed traffic with an operating speed of 70 km/h, the environmental score for cyclists resulted in a Level of Service (LOS) rating of F. Although, the absence of driveways along the segment enhances cyclist safety by reducing potential conflict points the block length is greater than 300 metres. As a result, the cyclist mode received an overall LOS rating of E in both directions, failing to meet the target performance level. That said, this highway environment is not considered appealing as a cycling route and alternative connections to Bayers Lake are preferable as discussed in other sections of this report. The traffic travel speed relative to the ideal

speed—including transit, goods movement, and automobiles—was considered not applicable for this segment, as it is less than 700 metres in length.

Transit operates in mixed traffic on a single lane and does not have any designated stops along the segment. Despite this, the transit mode achieved a Level of Service (LOS) rating of D in both directions, meeting the target performance level for rural but not suburban road segments.

St. Margarets Bay Road features a southbound curb lane width of 3.7 metres and an eastbound curb lane width of 3.9 metres. Both directions have no restrictions on stopping or loading along the segment. As a result, the goods movement mode achieved a Level of Service (LOS) rating of B in both directions.

There is no on-street parking along the segment. The automobile mode received a LOS rating of E in the southbound direction, failing to meet the target performance level, while the northbound direction achieved a LOS rating of C, meeting the target.

Table 28. Segment MMLOS - St. Margarets Bay Road - West

SCENARIO: Exhibition Park - Future Conditions - PM Peak Hour																		
MODE																	MODE	
DIR	Prospect Road (Hwy 333)						Lakelands Boulevard										DIR	
SB ↓	Target	C	C	C	D	D											Target	↑ NB
	Actual	C	E	D	B	E											Actual	
	Priority Corridor	No	No	No	Yes	Yes											Priority Corridor	
	Space	Pedestrian Facility Width (m)	Driveway Density	Transit Facility Type	Width of Curb Lane (m)	Midblock V/C Ratio											Space	
		A	A	E	C	E												
Environment	Pedestrian Zone Width (m)	Speed x Volume	% of Stops with Bus Lay-bys	% No Stopping / No Loading	On-street Parking Availability (%)											Environment		
	A	F	A	A	F													
Time	Distance Between Marked Crossings (m)	Block Length	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed											Time		
	F	F	N/A	N/A	N/A													
St. Margarets Bay Road (Route 3)							D	D	C	C	C	Target						
							C	B	D	E	C	Actual						
							Yes	Yes	No	No	No	Priority Corridor						
							Midblock V/C Ratio	Width of Curb Lane (m)	Transit Facility Type	Driveway Density	Pedestrian Facility Width (m)	Space						
							A	B	E	A	A							
Environment	On-street Parking Availability (%)	% No Stopping / No Loading	% of Stops with Bus Lay-bys	Speed x Volume	Pedestrian Zone Width (m)	Environment												
	F	A	A	F	B													
Time	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Travel Speed / Ideal Speed	Block Length	Distance Between Marked Crossings (m)	Time												
	N/A	N/A	N/A	F	F													



06 06 06 Discussion & Conclusions

Findings and Discussions

The Exhibition Park Development is not a traditional urban development and therefore required a number of different analysis tools to understand how the development may impact the surrounding road network, now and in the future. The results of this analysis are also somewhat difficult to apply given some ongoing uncertainty with respect to:

- The Route 333 Corridor Study currently being prepared for NSPW,
- Any conclusions or adopted recommendations that may stem from that report,
- Time lines for expansion of the Ragged Lake Business Park and the proposed road network to support the growth.

That said, many of the uncertainties noted above can fit into a time line of development plans that limit growth until certain network improvements are realized. In that regard, there are limited risks associated with initiating the development and phasing it in an appropriate manner.

The following points are considered the critical findings from this Mobility analysis and form the basis for the Conclusions and Recommendations in the next section of the report.

1. The development can proceed up to a certain point on the existing road network without any significant improvements, with the exception of providing some form of upgraded traffic control at least at one of the main intersections of the Exhibition Park Development with Prospect Road. This could be:
 - » The existing northern commercial entrance to service existing traffic and the northern parts of the new Exhibition Park Development, and/or
 - » The Middle access road that services the center portions of the proposed development.

2. There are very strong synergies between Exhibition Park and Ragged Lake Business Park from a development perspective, municipal servicing perspective (see associated Engineering Servicing Report - Fathom), and transportation perspective. In particular, a new roadway west of, and parallel to Prospect Road serves as a corridor to resolve many issues associated with both development areas.
3. Ragged Lake Business Park has been stagnant for many years and needs a catalyst to create momentum in the Park. The combination of high general growth rates in HRM and a large residential development immediately adjacent to the Park may be exactly what the area needs to promote change and growth.
4. Prospect Road is busy today, and people movement is expected to grow in the future as more rural and suburban areas continue to develop. With growth, additional capacity will be required in the relatively near future. While expanding the Prospect Road cross section is an option it still leaves a larger portion of the areas south of Exhibition Park with a single access point resulting in poor emergency service conditions. This suggests an alternate route should be pursued and as a preferred alternative to investing money into additional lanes on Prospect Road.
5. A study is currently being completed for Nova Scotia Public Works that specifically addresses this issue of capacity on Route 333 (Prospect Road). It is currently in draft form and is not available for review and inclusion at this time, though hopefully will be a useful resource in the near future. That study and this Mobility Analysis should be coordinated to define a larger area vision for the future mobility network.

6. Should money be invested to create additional capacity to wards St. Margarets Bay Road, it appears there is significantly higher value in construction a parallel roadway between Ragged Lake and Prospect Road as envisioned in many previous development plans for the Ragged Lake Park. Benefits include:
 - » A secondary emergency access route to at least Exhibition Park should Prospect Road be closed for whatever reason.
 - » Serves as a secondary capacity option for traffic destined toward Halifax and could connect to a variety of alternate routes to Highway 103 or Bayers Lake Park. Again, this are issues anticipated to be addressed in the Route 333 corridor study.
 - » Provide a primary access road through the developable areas of Ragged Lake Business Park which is likely to promoted growth of the Park.
 - » Provides additional connectivity to areas south and west of Ragged Lake, again plans that have been proposed in the past numerous times.
 - » Could connect to a new connection to Bayers Lake using a Highway 103 overpass of some form, and creating synergies between the two Parks.
 - » Could connect to a more significant secondary access point that include connections to Highway 103 at Otter Lake (Exit 3), or intermediate location between Exit 2 and 3 at a new interchange, and connect to some location well south of Exhibition Park.
7. As the number of intersections to Exhibition Park and Ragged Lake increase, Prospect Road should be designed to promote an urban environment as opposed to the current highway operational environment. Similarly, roadways through the Ragged Lake Park should be designed in an urban/suburban manner to promote slower vehicle speeds, and increased active transportation and transit use.
8. To accommodate the full proposed Exhibition Park Development, such a secondary access option will be required. Analysis suggest that about 40 - 50% of the proposed development could be accommodated on the existing road network with minor upgrades at downstream intersections based on AM peak projections. PM peak volumes are higher and show that about 25-30 of the development could be accommodated on the existing roadway network.
9. Due to high volumes on Prospect Road:
 - a. Side road movements should include separated left and right/through lanes to minimize impacts of left turn movements.
 - b. Left turn lanes on Prospect Road should be provided at all intersections along the corridor to minimize impact on through traffic.
 - c. Right turn lanes on Prospect Road should be provided at major intersections to minimize impact on through traffic.
10. A location south of Exhibition Park, and presumably south of the new Nova Scotia Sound Stage should be identified as a gateway location, where Prospect Road transitions from highway to urban/suburban character - promoting slower speeds, increased awareness of pedestrians, cyclists and transit traffic, and other features to positively impact driver behaviour and expectations.
11. Given the changing nature of the roadway, the above noted design environment changes should be accompanied by a reduction in speed limit from 80 km/h to 60 km/h from the gateway point to St. Margarets Bay Road.
12. Intersections on Prospect Road will need upgraded traffic control to accommodate future traffic higher volumes of traffic on Prospect Road. Treatments could include traffic signals, roundabouts or some combination thereof. Either way, the intersections between the Nova Scotia Sound Stage and St. Margarets Bay Road should be planned and designed as a consistent and complementary corridor.

13. The number of direct access points to Prospect Road should be minimized using sound access management principles as the area develops.
14. The Prospect Road intersection with St. Margarets Bay Road will need upgrading or retro-fitting under most future roadway scenarios. This will likely be required in the future regardless of the Ragged Lake and Exhibition Park expansions, though it is recognized the either or both of these developments move up the time line for intersection improvements. Improvements could include, advanced "smart" traffic signal installations, a multi-lane roundabout, or potential a full reconfiguration of the intersection to better accommodate the highest volumes as free-flow movements.
15. The other downstream intersection that appears challenged by the growth of existing traffic is the St. Margarets Bay intersection with Albert Walker Drive. This intersection has high capacity utilization today as a single lane tee-intersection and will likely need upgrading regardless of the Exhibition Park development.

Internal Roadways and Intersections

Roadway internal to the subdivision are all expected to function at good levels of service with single through lanes in each direction. Major intersections within the development are anticipated to include dedicated left turn lanes at a few locations.

Based on the existing building layout and internal connectivity, it is expected that all internal intersections will function as two-way stop controlled intersections, or potentially as single lane roundabouts at some strategic locations. Signalization is not anticipated at this time, though could be a possibility at the intersection of the urban core loop road with the secondary collector loop that services the northern portions of the development.

Depending on the proposed routing of transit services, roadway cross sections will need adequate width to accommodate transit movements and bus stop locations.

Transit Operations

The size and density of the Exhibition Park development make it a logical expansion of Halifax Transits service offering. This opportunity becomes particularly appealing if it can also be integrated with new trips to and from the Ragged Lake Business Park, as well as to the Bayers Lake Business Park.

Existing Route 22 that travels through the Ragged Lake Business Park is destined eastward to the Mumford Terminal, which is logical given the absence of significant residential development nearby Ragged Lake. It is assumed that the Exhibition Park Development would generate the need for a route revision, or a new route that would more closely tie Exhibition Park to Ragged Lake and Bayers Lake Business Parks and more likely be based from the Lacewood Terminal.

With respect to local routing, there is limited benefit to routes along Prospect Road as limited ridership is available. Looking to the future, a expanded Ragged Lake route connecting to Exhibition Park and Bayers Lake (on existing or new connections), provides high ridership opportunity and synergies. Such routing also provides the opportunity to provide bi-directional services.

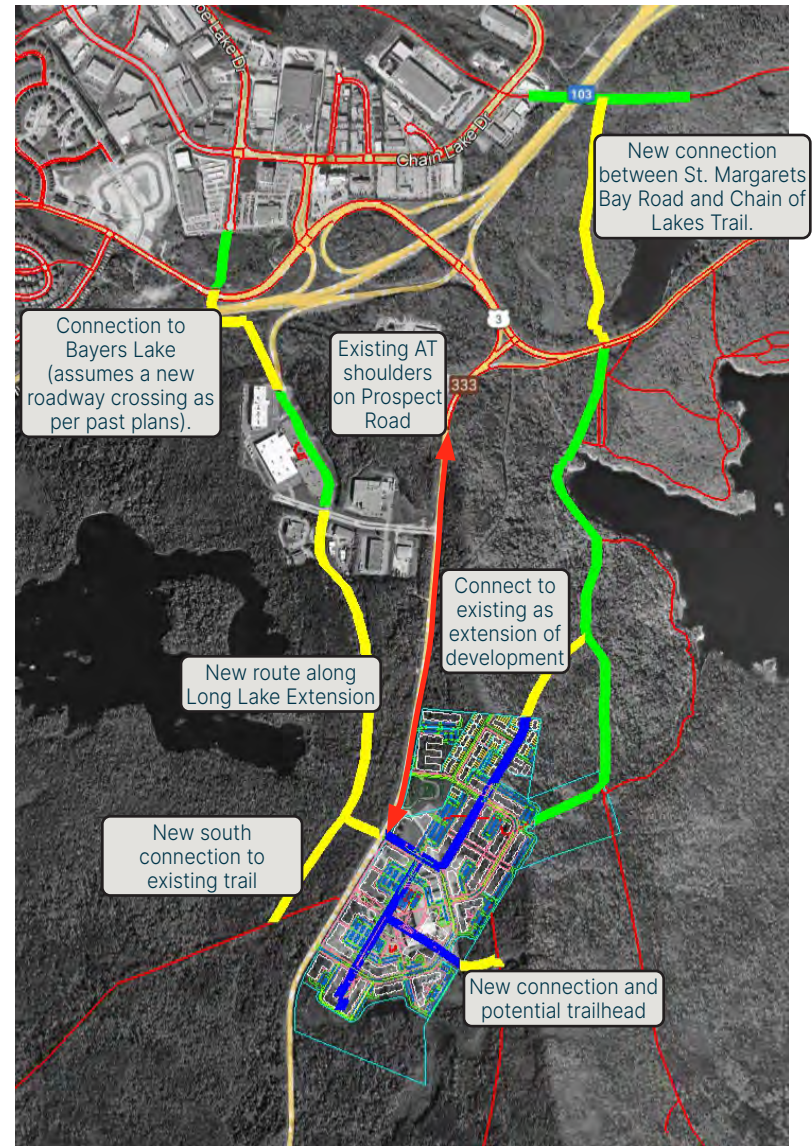
Specific routing and scheduling proposals are beyond the reasonable scope of work of this mobility analysis, though the study establishes the need for pursuing Transit Oriented Development and identifies numerous opportunities to pursue higher order transit services.

Active Transportation Connections

The Exhibition Park Site has extensive trail networks surrounding the development and a good foundations for more regional level connectivity. This provides excellent opportunities for recreational active transportation use in the area and requires internal AT connections from the site service these routes.

The figure to the right shows existing and proposed active transportation connections surrounding Exhibition Park. **RED** lines are existing trail networks based on HRM and AllTrails data. **GREEN** lines are routes applicable to Exhibition Park that are existing trails that may or may not require some level of upgrading. **YELLOW** lines are connectivity additions that should be considered to improve connectivity to the existing Trail Networks. **BLUE** lines are core AT routes that should include higher order AT facilities that could include a variety of different multi-use or separate pedestrian, bicycle, e-mobility or other infrastructure to support local and regional AT trips.

Key connections are included in the figure to the right.



Conclusions & Recommendations

Exhibition Park is a large, multi-purpose event and recreational venue located on the western edge of Halifax, Nova Scotia, adjacent to the Ragged Lake Business Park. Well known for hosting a wide range of events throughout the year, the site has long served as a regional destination for exhibitions, trade shows, cultural events, and recreational gatherings. The site includes existing commercial land uses such as Tim Hortons, Needs Convenience, Petro-Canada Gas Station, and a Touch-less Car Wash. These established commercial services are expected to remain in place and continue operating alongside planned future development, while the existing Exhibition Center has the potential to continue to operate as early phases of the new residential development are constructed.

While just inside HRMs suburban boundary, Exhibition Park is in a strategic location and can serve as a catalyst for a significant regional redevelopment program that includes the expansion of the Ragged Lake Business Park, connection to the Bayers Lake Business Park, integration with the Nova Scotia Sound Stage, and collectively help drive improvements in connectivity for areas south of Exhibition Park that have long requested mobility and emergency service improvements.

The area faces some existing transportation challenges with relatively high volumes of traffic on Prospect Road, a single access point, and a few bottle necks at key locations in the downstream network. These issues have been addressed in detail in this report, but are also subject to a larger area study being prepared for Nova Scotia Public Works that looks at opportunities to alleviate some of the challenges with Prospect Road. It is expected that the Prospect Road study and this study will inform each other moving forward to find the best solutions that support growth in this regional node and include the Exhibition Park development.

This report lays out a number of different development requirements and limitations based on existing infrastructure that need to be considered as the development proceeds through detailed design and construction phasing. It is clear that the full development potential of the site cannot be accommodated by the existing Prospect Road corridor and that additional capacity will be required. Expansion of the Prospect Road corridor is not considered a prudent option as it does not resolve the many issues associated with only having a single access route to areas south of Exhibition Park.

The most obvious and practical solution is to target this additional corridor capacity along the new extension of Long Lake Drive in the Ragged Lake Business Park, that has long been identified as a future roadway as the Park expands. Stagnant growth in the Park has meant this road has not been constructed, but the Exhibition Park development quickly changes the opportunities associated with the Park and construction of this extension to solve a variety of vehicle, active transportation, transit, and municipal servicing challenges in the area.

With signalized or roundabout connections required for intersections on Prospect Road, the nature of the corridor changes, and this report suggests looking at more prominent changes that help transition Prospect Road, between the Nova Scotia Sound Stage and St. Margarets Bay Road, from a rural highway character to a more urban feel. This would include focus on slower vehicle speeds and improved infrastructure to support active transportation and transit services to the development. Using the new roadway through Ragged Lake Park, these connections provide potential for increased transit ridership and synergies between the development in the area.

Large scale changes like this cannot operate in isolation and will require that many parties come together to build a coordinate visions for what this area looks like in 10, 20 or 50 years. Viewing this areas through the lens of a Burnside Industrial Park and Dartmouth Crossing, and the synergies they create with the surrounding residential neighbourhoods, there appears to be great potential for this area to become a significant business node with integrated mobility networks and strong synergies between adjacent land uses.

Given that there are many variable yet to be established, it is challenging for a study of this magnitude to dive to far into detailed design aspects of the development. Suffice to say that the internal layout of roadway corridors, active transportation trails, building and parking configurations, and other design feature have great flexibility moving forward. It also establishes that there are great possibilities and potential for external and integrated connectivity with adjacent land uses.

Area development is likely to be heavily influenced by connections that stem from the Provincial Route 333 corridor study. While it is not expected to directly impact the result and recommendations in this report, more significant connections to Highway 103 may further help mitigate any challenges with vehicular capacity in the future. With respect to vehicular traffic, this report assumes that the developer, HRM and the Province support and pursue aggressive modal share targets, in keeping with HRMs Integrated Mobility Plan, and what is now becoming best practices for urban and suburban planning and design.

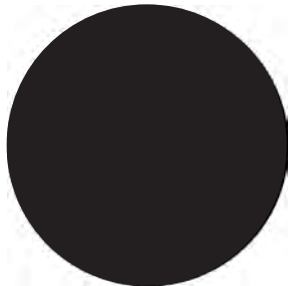
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If you have any questions or comments regarding the content of this letter supplement to the original transportation impact study, please don't hesitate to contact the undersigned.

Sincerely,

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