



P.O. Box 1749
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Item No. 12.3

Halifax Regional Council
December 13, 2022
January 24, 2023

TO: Chair and Members of Halifax Regional Council

SUBMITTED BY: Original Signed

Caroline Blair-Smith, Acting Chief Administrative Officer

DATE: December 7, 2022

SUBJECT: **Case 24045: Amendments to the Beaver Bank, Hammonds Plains, and Upper Sackville Municipal Planning Strategy and Land Use By-law for Carriagewood Estates, Beaver Bank**

ORIGIN

- Application by Clayton Developments Limited
- April 12, 2022, Regional Council initiation of the MPS amendment process

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter (HRM Charter), Part VIII, Planning & Development

RECOMMENDATION

It is recommended that Regional Council:

1. Give First Reading to consider the proposed amendments to the Municipal Planning Strategy and Land Use By-law for Beaver Bank, Hammonds Plains, and Upper Sackville, as set out in Attachments A and B, respectively, to enable smaller residential lots for a proposed subdivision called Carriagewood Estates off Daisy Drive in Beaver Bank and schedule a public hearing; and
2. Adopt the proposed amendments to the Municipal Planning Strategy and Land Use By-law for Beaver Bank, Hammonds Plains, and Upper Sackville, as set out in Attachments A and B.

BACKGROUND

Clayton Developments Limited (Clayton) is applying to amend the Beaver Bank, Hammonds Plains, and Upper Sackville Municipal Planning Strategy (MPS) and Land Use By-law (LUB) to enable development on smaller lots in a residential subdivision off Daisy Drive in Beaver Bank (PID 00468694) referred to as Carriagewood Estates. The existing MPS policies allow low-rise residential development and the zone applied to the lands permits single unit residential development. Clayton is asking for smaller lot sizes than the LUB currently allows.

Clayton previously applied for an application to amend the R-1 Zone of the LUB to permit smaller lots serviced with municipal water and sewer services and located within the Urban Serviced Area (Case 23213). Over the course of the previous application, the local community and the Planning Advisory Committee members expressed some concern regarding the large geographic scope of the request, whereby this change would impact the entire land use by-law area. This application was subsequently placed on hold at the applicant's request. To limit the impact of the requested change and mitigate the extent of change on the community, Clayton is now requesting site-specific amendments to the MPS to enable their proposal. Acknowledging that authorizing smaller lots could be accomplished via planning policy changes using a number of approaches, this subsequent application is to amend the land use by-law to create a new zone that would permit smaller residential lot sizes and applying that zone exclusively to land they intend to develop, more specifically PID 00468694.

Subject Site	PID 00468694
Location	The site is located at the north end of Daisy Drive and to the east of Trinity Drive in Beaver Bank
Regional Plan Designation	The majority of the site is designated Rural Commuter, but a small portion along Trinity Drive is designated Urban Settlement
Community Plan Designation (Map 1)	R (Residential) of the Beaver Bank, Hammonds Plains, and Upper Sackville Municipal Planning Strategy
Zoning (Map 2)	R-1 (Single Unit Dwelling) of the Beaver Bank, Hammonds Plains, and Upper Sackville Land Use By-law
Size of Site	Approximately 30.5 hectares (75.37 acres)
Street Frontage	Approximately 102.039 metres (334.77 feet) distributed between five access points – two on Trinity Lane, one on Daisy Drive, and two on Darner Drive
Current Land Use(s)	Vacant, but construction has begun for as-of-right subdivision
Surrounding Use(s)	North: vacant land with a watercourse and wetland South: established and new residential development of primarily single unit dwellings East: vacant West: established residential neighbourhood with primarily single unit dwellings

Proposal Details

The applicant is seeking amendments to the MPS and LUB to enable the development of smaller residential lots within a proposed subdivision of PID 00468694. The LUB currently requires R-1 zoned lots with municipal water and sewer services (i.e., centrally serviced) to have a minimum of 60 feet of frontage and 6,000 square feet of lot area. The applicant is asking for the ability to create lots with a minimum of 40 feet of frontage and 4,000 square feet of lot area. To achieve this, a new site-specific policy is required to be applied to the subject site that would enable the creation of a new zone. This new zone would be based on the existing R-1 Zone but would permit reduced lot sizes. To prevent additional unit density above what could be achieved on the site today, the new zone would limit the residential density. The amendments involve amending the LUB to create the new zone and applying it to the subject site.

History

In October of 2020, Clayton applied to amend the R-1 Zone of the LUB. Clayton asked to reduce the minimum required lot area and lot frontage requirements for residential lots serviced with municipal water and sewer from 6,000 square feet and 60 feet of frontage to 4,000 square feet and 40 feet of frontage (Case 23213). The requested amendments would have applied to all lands zoned R-1 within the Beaver Bank, Hammonds Plains, and Upper Sackville Plan Area that are centrally serviced and within the Urban Service Area.

At the time of that application, there were approximately 808 R-1 zoned parcels within the Urban Service Area that were either presently serviced or capable of being serviced with municipal water and sewer in the Plan Area. Approximately 50 percent of these could be further subdivided into at least one additional lot based solely on their existing lot area and frontage (i.e., the lot has at least 8,000 square feet and at least 80 feet of frontage). There are additional requirements in the zone and the Regional Subdivision By-law, such as the distance existing buildings must be from proposed property lines and lot design requirements, that affect the ability to further subdivide a lot, therefore it is challenging to predict the actual potential number of lots that could be created based on such an amendment. Additionally, any centrally serviced lands subject to a development agreement where the agreement reverts to the lot size requirements of the R-1 Zone would be permitted to develop following the smaller lot provisions under the proposed amendments. As well, any lands in the Plan Area that receive both municipal water and sewer services in the future would also be eligible for the smaller lot size requirements.

Because concerns were raised within the community and by members of North West Planning Advisory Committee in regards to the large scope of the proposed change, the applicant requested to place a hold on the application requesting land use by-law amendments in favour of pursuing the site-specific MPS amendments outlined within this report.

MPS and LUB Context

Regional Plan

The majority of the subject site is designated Rural Commuter under the Regional Plan. The Rural Commuter Designation is applied to areas within commuting distance of the Regional Centre and is intended to protect rural character, conserve open space and natural resources, support the delivery of convenience services, control the amount and form of development between centres, and preserve natural features that foster the traditional rural community character.

Two small areas of the subject site along Trinity Drive are designated Urban Settlement. The Urban Settlement Designation applies to areas approved for serviced development and to undeveloped lands to be considered for serviced development over the life of the Regional Plan.

Community Plan

The subject site is designated Residential (R) under the MPS. Policy P-33 of the MPS enables the establishment of the Residential Designation to support and protect the existing low density residential environment. Single unit dwellings, existing two unit, and mobile dwellings, as well as accessory uses to single unit dwellings including small day cares, bed and breakfasts, and home offices are accommodated in the policy.

Land Use By-law

The site is zoned R-1, which reflects the uses outlined in the MPS policies, being single unit dwellings, existing two-unit dwellings, existing mobile dwellings, day care facilities for not more than seven children and in conjunction with permitted dwellings, offices in conjunction with permitted dwellings, bed and breakfasts, and open space uses.

COMMUNITY ENGAGEMENT

The community engagement process is consistent with the intent of the HRM Community Engagement Strategy, the *HRM Charter*, and the Public Participation Program approved by Council on February 25, 1997. Community engagement was achieved through providing information and seeking comments through the HRM website, signage posted on the subject site, 225 letters mailed to property owners within the notification area, and a virtual public information meeting held on August 18, 2022. Attachment C contains a copy of a summary from the meeting. The public comments received at the meeting include the following topics:

- Concerns about traffic levels on the Beaver Bank Road;
- The need for additional sidewalks in the community;
- Concerns about the ability for emergency vehicles to quickly respond in the area; and
- Concerns and questions about the development of the Carriagewood Estates subdivision including concerns about runoff into nearby watercourses, construction traffic and noise, and questions about wastewater infrastructure and parkland.

Staff also received emails from 13 households. The comments received in these emails include all of the same comments as listed above and comments on these additional topics:

- The impact of subdivision's development on residents and wildlife;
- Challenges with turning left onto Beaver Bank Road;
- The need for an alternate route in and out of the community;
- Concerns about a greater demand being put on municipal services (water, sewer);
- Concerns about capacity of schools;
- Concerns this application will set a precedent and other developers will ask for smaller lots;
- Aesthetic of smaller lots does not fit with community;
- Reason they chose to live in Beaver Bank was for larger lots and open space; they do not want city sized lots;
- Need for more crosswalks in community; and
- Need for poor cell service to be fixed.

A public hearing must be held by Regional Council before they can consider approval of the proposed MPS and LUB amendments. Should Regional Council decide to proceed with a public hearing on this application, in addition to the published newspaper advertisements, property owners within the notification area shown on Map 3 will be notified of the hearing by regular mail.

DISCUSSION

The MPS is a strategic policy document that sets out the goals, objectives, and direction for long term growth and development in Municipality. Amendments to an MPS are significant undertakings and Council is under no obligation to consider such requests. Staff have reviewed the applicant's proposal and rationale (Attachment D), and have considered the existing neighbourhood context, current zoning regulations, and Regional Plan policies. Smaller lots can help keep the cost of housing down, which is especially important in a time where housing and cost of living have drastically increased. The amendments include parameters to help reduce the impact on surrounding neighbourhoods, including limiting the permitted development of smaller lots to one parcel of land, inclusion of a limit on the number of single unit dwellings that can be built, and maintaining the remainder of the zone requirements unchanged, reflecting what applies to the surrounding neighbourhoods. Therefore, staff advise the request is reasonably consistent with Regional Planning policy and good planning principles. Further details on the rationale and content of the proposed MPS and LUB amendments is below, for Council's consideration.

Scope of Amendments

As outlined in the Background section above, Clayton originally applied to reduce the minimum required lot area and frontage requirements for residential lots serviced with municipal water and sewer and zoned R-1 with the end goal of being able to subdivide PID 00468694 into 4,000 square foot lots with 40 feet of frontage. The proposed LUB amendment would have created a possible future opportunity for hundreds of additional lots to be subdivided within the plan area, in addition to Clayton's property. In response to the concern that the LUB amendment could have widespread implications, Clayton's new application has several measures to limit the scope and reduce the impact on the community and still achieve the same result.

Firstly, the proposed amendments only apply to PID 00468694, the lands within the Carriagewood Estates subdivision. The proposed amendments are site specific and do not enable the new zone's application to other parcels of land.

Secondly, both the proposed MPS and LUB text amendments explicitly state the maximum number of single unit dwellings that can be built on PID 00468694. In 2021, in accordance with the current R-1 Zone requirements, Clayton received concept subdivision approval to subdivide PID 00468694 into 256 lots. Since the concept was approved, Clayton received final subdivision approval for the first phase of 28 lots, leaving 228 of the 256 lots remaining. Clayton originally proposed to limit the number of lots that can be created from the remaining lands to 228, however, during the detailed review of the proposal, staff noted that the land use by-law cannot be used to regulate subdivision. The number of lots that could be subdivided from a parcel can be regulated through the Regional Subdivision By-law, however, amending the Regional Subdivision By-law is outside the scope of work that Council initiated for this application. As an alternative, the proposed amendments limit the number of single unit dwellings that can be built on PID 00468694 to 228. This means that no additional dwellings can be built beyond what can already be built under today's rules. The limit on the number of single unit dwellings does not prevent the development of secondary or backyard suites, which would be permitted today under the current R-1 Zoning.

And thirdly, the proposed new zone deviates from the existing R-1 Zone only with regard to the minimum lot area and lot frontage. All other LUB regulations, including permitted uses, minimum setbacks, lot coverage, maximum height, and general provisions for matters such as parking, watercourse buffers, and accessory structures, all remain the same. By keeping much of the land use controls the same, the character of the new development will better blend with the character of the existing residential development in the area.

Housing Affordability

HRM cannot regulate the cost of housing, but HRM can play a role in supporting housing affordability. Policy S-30 of the Regional Municipal Planning Strategy states:

"When preparing [...] amendments to existing secondary planning strategies to allow new developments, means for furthering housing affordability and social inclusion shall be considered including: [...] reducing lot frontage, lot size and parking requirements [...]"

The cost of construction of new public street frontage and services within a more compact form of development is typically less than provision within new communities with extensive road frontage. The average price of housing in HRM has increased dramatically in recent years, along with the cost of living. Opportunities for residential development on lots with less frontage where central services are available could help bring more affordable housing to the market.

Proposed Amendments

Staff considered the existing MPS policy context and a number of policy approaches when drafting the proposed MPS and LUB amendments. Attachments A and B contain the proposed MPS and LUB amendments. A summary of the proposed amendments is as follows:

- Addition of a new policy in the Residential Designation subsection of the MPS that enables the creation of a residential zone that permits small lot single unit dwellings on PID 00468694;
- Addition of a schedule in the MPS identifying PID 00468694;
- Addition of a new residential zone (R-1C) in the LUB that permits single unit dwellings and complimentary uses on lots that are 4,000 square feet in area with 40 feet of frontage;
- An amendment to the zoning map to rezone PID 00468694 from R-1 to R-1C; and
- Addition of a schedule to the LUB identifying PID 00468694.

Staff anticipate this report will be going before Council at the same time as a staff report on regulations for short-term rentals (Case 22423). In the short-term rental report, staff are proposing amendments to Municipal Planning Strategies and Land Use By-laws, including for Beaver Bank, Hammonds Plains, and Upper Sackville, to remove all references to bed and breakfasts, add short-term rental as a permitted use, and add a definition of short-term rental. Currently, the R-1 Zone in Beaver Bank, Hammonds Plains, and Upper Sackville permits bed and breakfasts, and staff are proposing to also include this use in the proposed R-1C Zone. To accommodate a situation where Council approves the short-term rental amendments at the same time as the amendments proposed under this application, the proposed amendments for this application include both bed and breakfasts and short-term rentals as permitted uses. Should Council not approve the short-term rental amendments, staff recommend the term be removed from the amendments proposed under this application.

Priority Plans

In accordance with Policy G-14A of the Halifax Regional Plan, this planning application was assessed against the objectives, policies, and actions of the priorities plans, inclusive of the Integrated Mobility Plan, the Halifax Green Network Plan, HalifACT, and Halifax's Inclusive Economic Strategy 2022-2027. While these priority plans often contain policies that were originally intended to apply at a regional level and inform the development of Municipal Planning Strategy policies, there are still components of each plan which can and should be considered on a site by site basis. Where conflict between MPS policy and priority plan policy exists, staff must weigh the specificity, age, and intent of each policy, and consider how they would be applied to a specific geographic context. In this case, the following policies were identified to be most relevant to this application, and as such were used to inform the recommendation within this report:

1. The Integrated Mobility Plan guides investment in active transportation, transit, transportation demand management, goods movement, and the road network. One of the objectives in the IMP is: "To integrate the planning of the transportation network with community design to better facilitate active transportation and transit use through compact, mixed-use development." The IMP supports growth and densification of housing units in the Regional Centre, but also recognizes there is demand for new suburban development. Growth in suburban areas is encouraged through clustering development through complete communities.

The subject site is not within the Regional Centre nor within a Suburban Growth Centre, and it is not directly connected to an existing transit route. From this perspective, it is not a site where higher density development or more housing units should be encouraged, however, the number of single unit dwellings that can be built is capped at the same number as could be approved without the amendments, and the compactness of the lots is increased through the proposal, which relates to the referenced IMP policy.

Conclusion

Staff have reviewed the application and the existing policy context and recommend that the MPS and LUB be amended to allow the development of smaller residential lots in the Carriagewood Subdivision. Allowing smaller lots will provide an opportunity for a more compact residential development on the largest vacant parcel of land within the Urban Service Area in Beaver Bank. Lots with smaller frontages can help promote more affordable housing. In a time where housing costs are increasing, smaller lots can help keep the cost of lots and housing down. The proposal is isolated to one subdivision and the maximum number of single unit dwellings is capped to help limit the impact on the surrounding community. Therefore, staff recommend that Regional Council approve the proposed MPS and LUB amendments.

FINANCIAL IMPLICATIONS

There are no financial implications. The HRM costs associated with the processing of this planning application can be accommodated within the approved 2022-2023 operating budget for Planning and Development.

RISK CONSIDERATION

There are no significant risks associated with the recommendations contained within this report. This application involves proposed MPS amendments. Such amendments are at the discretion of Regional Council and are not subject to appeal to the N.S. Utility and Review Board. Information concerning risks and other implications of adopting the proposed amendments are contained within the Discussion section of this report.

ENVIRONMENTAL IMPLICATIONS

No environmental implications are identified.

ALTERNATIVES

Regional Council may choose to:

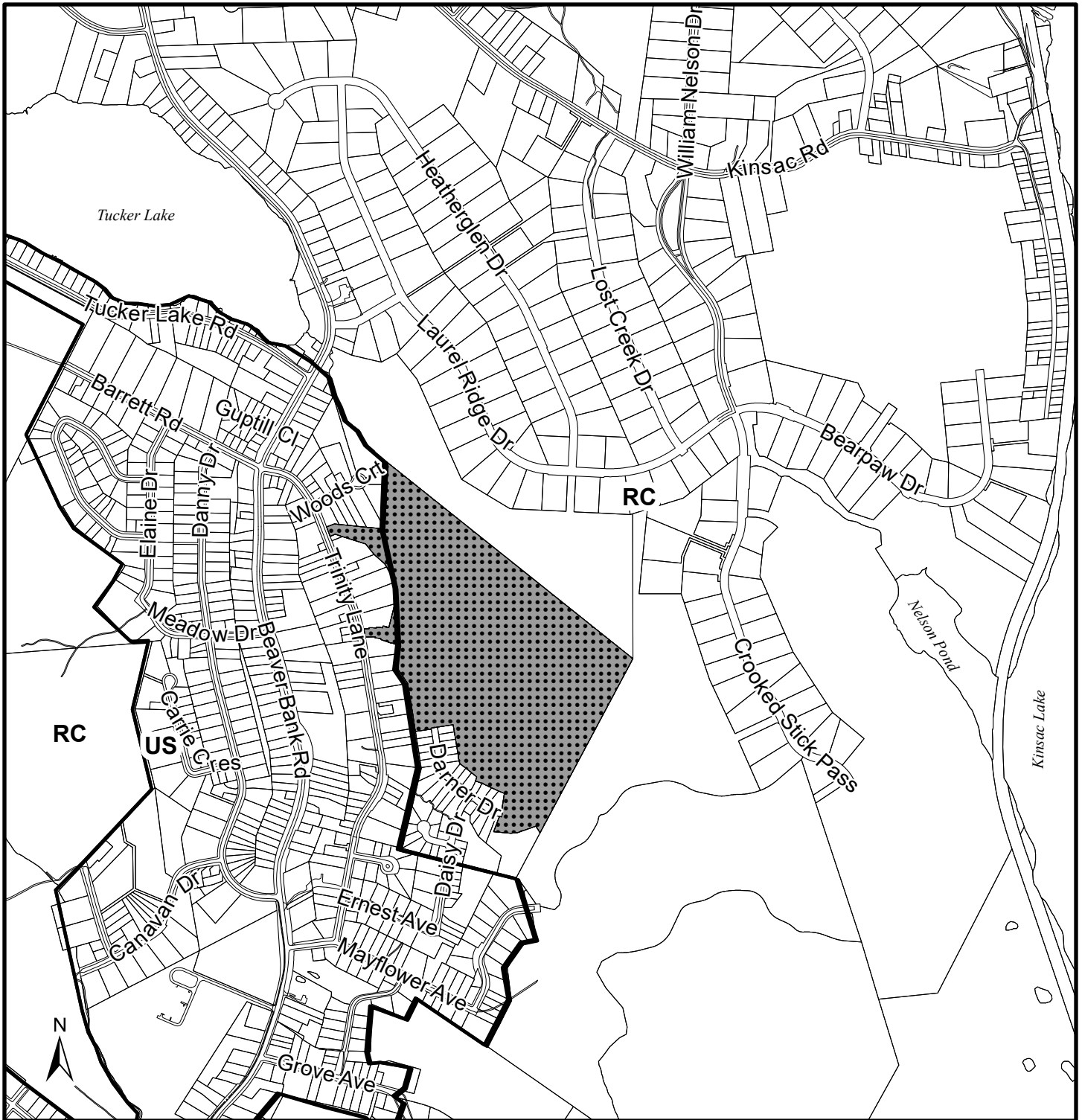
1. Modify the proposed amendments to the MPS and LUB for Beaver Bank, Hammonds Plains, and Upper Sackville, as set out in Attachments A and B of this report. If this alternative is chosen, specific direction regarding the requested modifications is required. Substantive amendments may require another public hearing to be held before approval is granted. A decision of Council to approve or refuse the proposed amendments is not appealable to the N.S. Utility & Review Board as per Section 262 of the *HRM Charter*.
2. Refuse the proposed amendments to the MPS and LUB for Beaver Bank, Hammonds Plains, and Upper Sackville. A decision of Council to approve or refuse the proposed amendments is not appealable to the N.S. Utility & Review Board as per Section 262 of the *HRM Charter*.

ATTACHMENTS

Map 1:	Regional Plan Designation
Map 2:	Generalized Future Land Use
Map 3:	Zoning and Notification Area
Attachment A:	Proposed Amendments to the MPS for Beaver Bank, Hammonds Plains, and Upper Sackville
Attachment B:	Proposed Amendments to the LUB for Beaver Bank, Hammonds Plains, and Upper Sackville
Attachment C:	Public Information Meeting Summary
Attachment D:	Applicant's Proposal

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Meaghan Maund, Planner III, 902.233.0726



Map 1 - Regional Plan Generalized Future Land Use

Daisy Drive
Beaver Bank

 Subject Property

Designation

RC Rural Commuter
US Urban Settlement

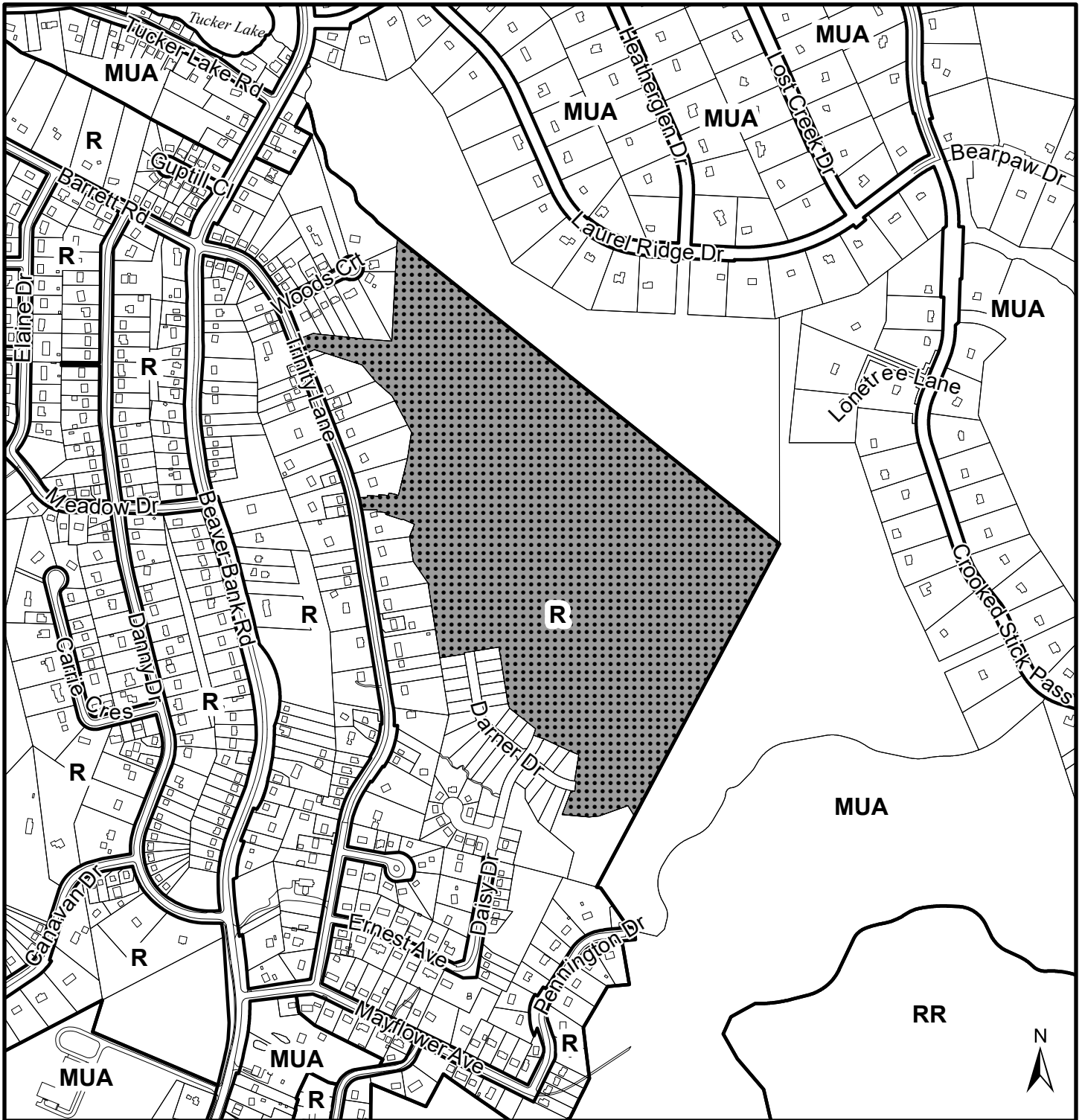
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This map is an unofficial reproduction of a portion of the Generalized Future Land Use Map for the plan area indicated.


The accuracy of any representation on this plan is not guaranteed.

Regional Plan Area



Map 2 - Generalized Future Land Use

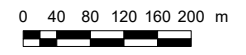
Daisy Drive,
Beaver Bank

 Subject Property

Designation

MUA	Mixed Use A
R	Residential
RR	Rural Resource

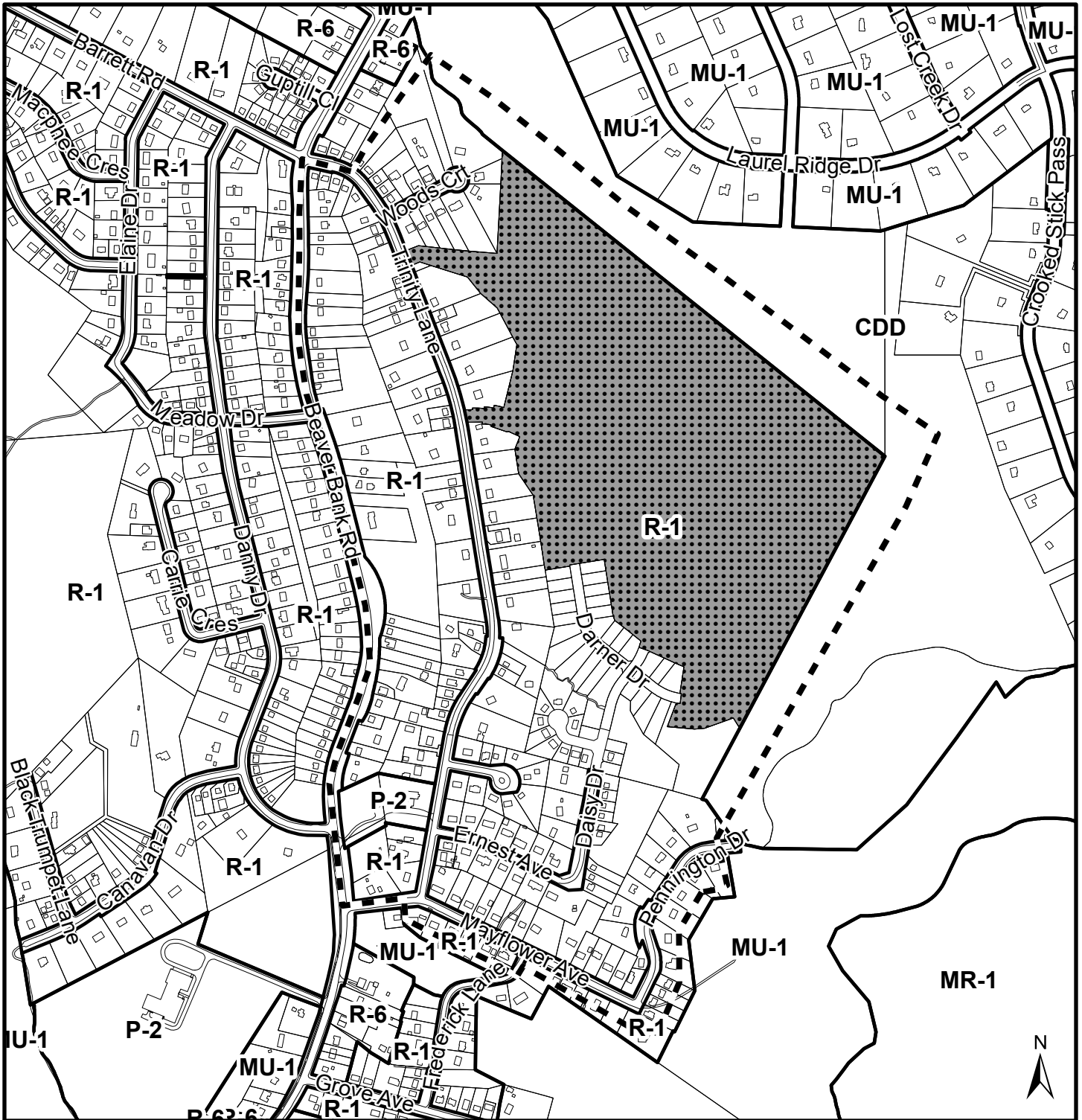
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This map is an unofficial reproduction of a portion of the Generalized Future Land Use Map for the plan area indicated.


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Beaver Bank, Hammonds Plains and Upper Sackville Plan Area



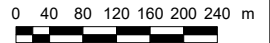
Map 3 - Zoning and Notification Area

Daisy Drive,
Beaver Bank

 Subject Property

Zone

- CDD Comprehensive Development District
- MR-1 Mixed Resource
- MU-1 Mixed Use 1
- P-2 Community Facility
- R-1 Single Unit Dwelling
- R-6 Rural Residential



This map is an unofficial reproduction of a portion of the Zoning Map for the plan area indicated.

The accuracy of any representation on this plan is not guaranteed.

Beaver Bank, Hammonds Plains and
Upper Sackville Land Use By-Law Area

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ATTACHMENT A

Proposed Amendment to the MPS for Beaver Bank, Hammonds Plains, and Upper Sackville

BE IT ENACTED by the Halifax Regional Council of the Halifax Regional Municipality that the Municipal Planning Strategy for Beaver Bank, Hammonds Plains, and Upper Sackville is hereby further amended as follows:

1. Within Section II, under the Residential Designation subsection, the text shown in bold shall be added immediately after Policy P-41 and before the Glen Arbour Integrated Golf Course and Residential Community subsection:

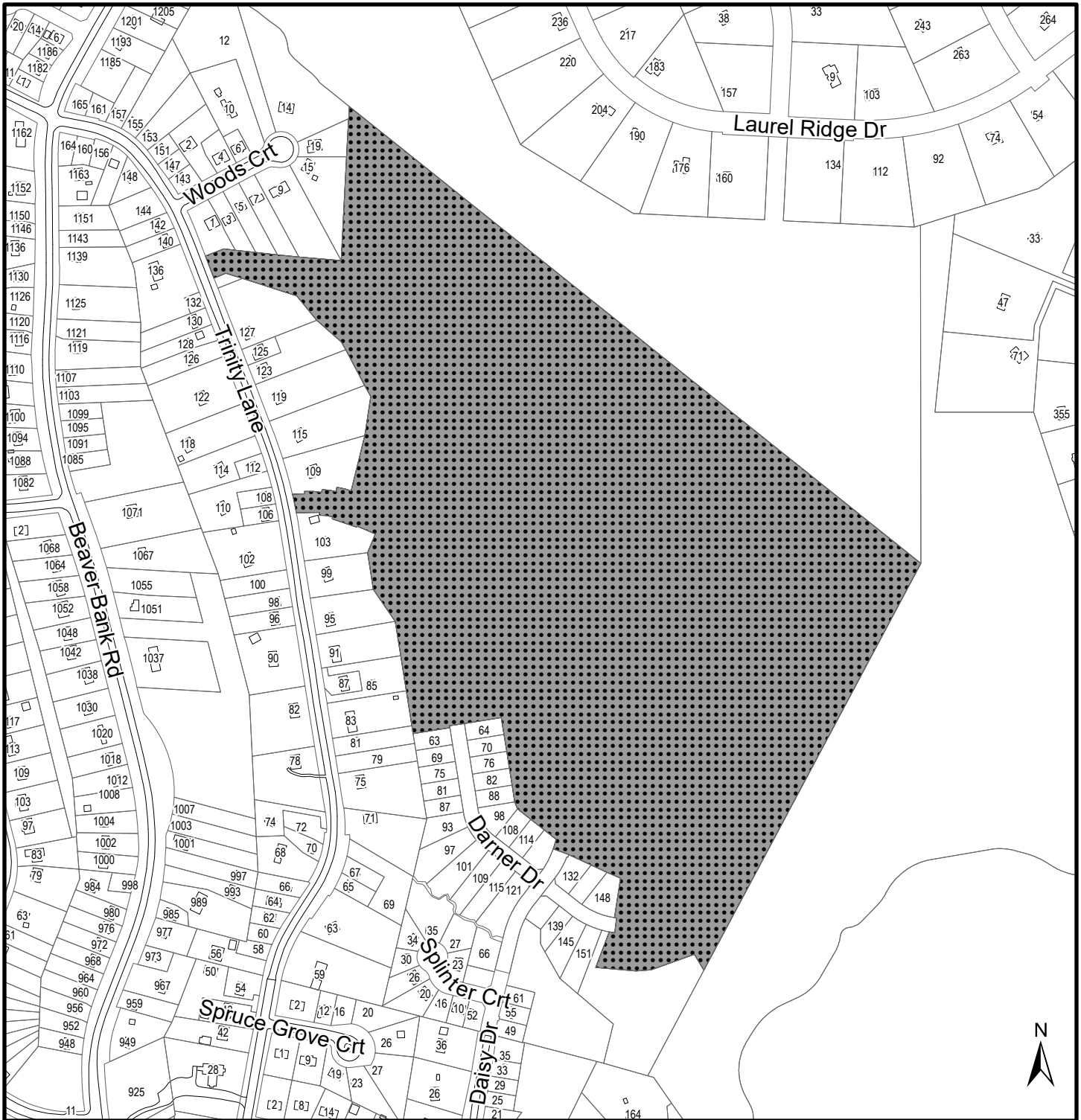
Within the Residential Designation there is a parcel of land east of Trinity Drive (PID 00468694) where a small lot single unit dwelling subdivision is appropriate to promote more efficient use of infrastructure and housing affordability. To limit the impact on the surrounding community and align with the existing proposed lot yield, the development shall be limited to 228 single unit dwellings.

P-42 Within the Residential Designation and within lands shown on Schedule RES-1, it shall be the intention of Council to establish a R-1C (Small Lot Single Unit Dwelling) Zone that permits small lot single unit dwellings, open space uses, offices and day care facilities operated by a resident of the dwelling, bed & breakfasts, short-term rentals, as well as activities related to traditional arts and crafts and domestic arts, provided controls are established on the scale of the business and no outdoor storage or display are permitted and signs are regulated through provisions of the Land Use By-law, in order to ensure the external appearance is compatible with the residential environment. The maximum number of single unit dwellings permitted on the lands shown on Schedule RES-1 shall be 228.

2. Within Section II, under the Residential Designation subsection, Schedule RES-1, as shown on the attached Schedule A, shall be inserted after Policy P-42.

I, Iain MacLean, Municipal Clerk for the Halifax Regional Municipality, hereby certify that the above-noted amendment was passed at a meeting of the Halifax Regional Council held on [DATE], 202[#].


Iain MacLean
Municipal Clerk

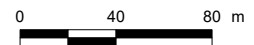


Schedule RES-1

Lands subject to P-42 (PID 00468694)

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 Subject Property



Beaver Bank, Hammonds Plains and
Upper Sackville Land Use By-Law Area

The accuracy of any representation on
this plan is not guaranteed.

ATTACHMENT B

Proposed Amendment to the LUB for Beaver Bank, Hammonds Plains, and Upper Sackville

BE IT ENACTED by the Halifax Regional Council of the Halifax Regional Municipality that the Land Use By-law for Beaver Bank, Hammonds Plains and Upper Sackville is hereby further amended as follows:

1. Adding Part 7B: R-1C (Small Lot Single Unit Dwelling) Zone after Part 7A and before Part 8 as follows:

PART 7B: R-1C (SMALL LOT SINGLE UNIT DWELLING) ZONE

7B.1 R-1C USES PERMITTED

No development permit shall be issued in any R-1C (Small Lot Single Unit Dwelling) Zone except for the following:

Single unit dwellings
Day care facilities for not more than seven (7) children and in conjunction with permitted dwellings
Offices in conjunction with permitted dwellings
Bed & Breakfasts
Short-term Rentals
Open space uses

7B.2 R-1C ZONE REQUIREMENTS

In any R-1C Zone, no development permit shall be issued except in conformity with the following:

Minimum Lot Area:	4,000 square feet (371.6 square metres)
Minimum Frontage:	40 feet (12.2 meters)
Minimum Front or Flankage Yard:	20 feet (6.1 metres)
Minimum Side or Rear Yard:	8 feet (2.4 metres)
Minimum Lot Coverage:	35 percent
Maximum Height of Main Building:	35 feet (10.7 metres)

7B.3 MAXIMUM NUMBER OF SINGLE UNIT DWELLINGS ON THE AREA IDENTIFIED ON SCHEDULE J

A maximum of 228 single unit dwellings shall be permitted on the area identified on Schedule J.

7B.3 R-1C ZONE REQUIREMENTS: OPEN SPACE USES

In any R-1C Zone, where open space uses are permitted, no development permit shall be issued except in conformity with the provisions of Part 22.

7B.4 OTHER REQUIREMENTS: OFFICE USES

Where offices are permitted in any R-1C Zone, the following shall apply:

- (a) Any office shall be wholly contained within the dwelling which is the principal residence of the operator of the office.

- (b) No individuals who are not residents in the dwelling shall be employed in the office.
- (c) No more than twenty-five (25) per cent of the gross floor area shall be devoted to any office, and in no case shall any office occupy more than three hundred (300) square feet (28 m).
- (d) No open storage or outdoor display shall be permitted.
- (e) Not more than one (1) business sign shall be permitted, and no such sign shall exceed two (2) square feet (0.2 m²) in area. The height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling.
- (f) One off-street parking space, other than that required for the dwelling, shall be provided for every one hundred and fifty (150) square feet (14 m²) of floor area devoted to any office.

7B.5 OTHER REQUIREMENTS: DAY CARE FACILITIES

Where day care facilities are permitted in any R-1C Zone, the following shall apply:

- (a) With the exception of outdoor play space, any day care facility shall be wholly contained within the dwelling, which is the principal residence of the operator of the facility.
- (b) No open storage or outdoor display shall be permitted.
- (c) Not more than one (1) business sign shall be permitted, and no such sign shall exceed two (2) square feet (0.2 m²) in area. The height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling.
- (d) One off-street parking space, other than that required for the dwelling, shall be provided.

7B.6 OTHER REQUIREMENTS: BED AND BREAKFASTS

Where a bed & breakfast is permitted in any R-1C Zone, the following shall apply:

- (a) The bed & breakfast shall be wholly contained within the dwelling which is the principal residence of the operator of the establishment;
- (b) Not more than three (3) rooms may be let;
- (c) No window display and not more than one (1) business sign shall be permitted, and no such sign shall exceed two (2) square feet (0.2 m²) in area; and
- (d) One off-street parking space in addition to that required for the dwelling shall be provided for each room to be let.

7B.7 OTHER REQUIREMENTS: COMMERCIAL MOTOR VEHICLES

In any R-1C Zone, not more than one commercial vehicle shall be kept on any lot and no such commercial motor vehicle shall exceed a registered vehicle weight of five (5) tons nor be kept less than ten (10) feet from any front lot line.

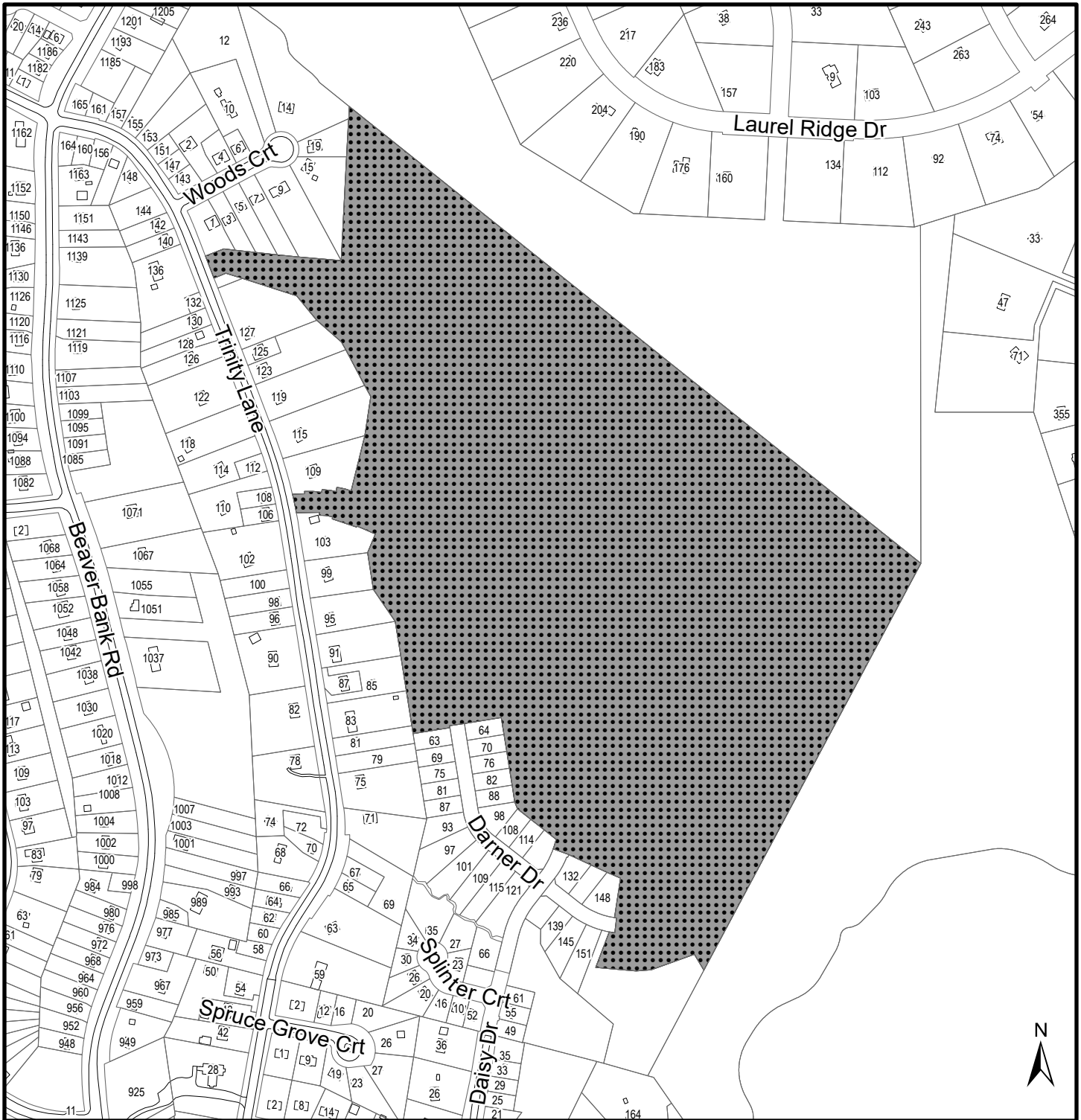
7B.8 FRONTAGE ON A STREET

No development permit shall be issued in an R-1C Zone unless the lot or parcel intended to be used or upon which the building or structure is to be erected abuts and fronts upon a public street or highway.

2. Zoning Map 1C shall be amended by rezoning specific lands in Beaver Bank from R-1 (Single Unit Dwelling) Zone to R-1C (Small Lot Single Unit Dwelling) Zone, as shown on the attached Schedule A.

I, Iain MacLean, Municipal Clerk for the Halifax Regional Municipality, hereby certify that the above-noted by-law was passed at a meeting of the Halifax Regional Council held on [DATE], 202[#].


Iain MacLean
Municipal Clerk

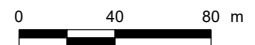


Schedule J

Lands subject to provision 7B.3 (PID 00468694)

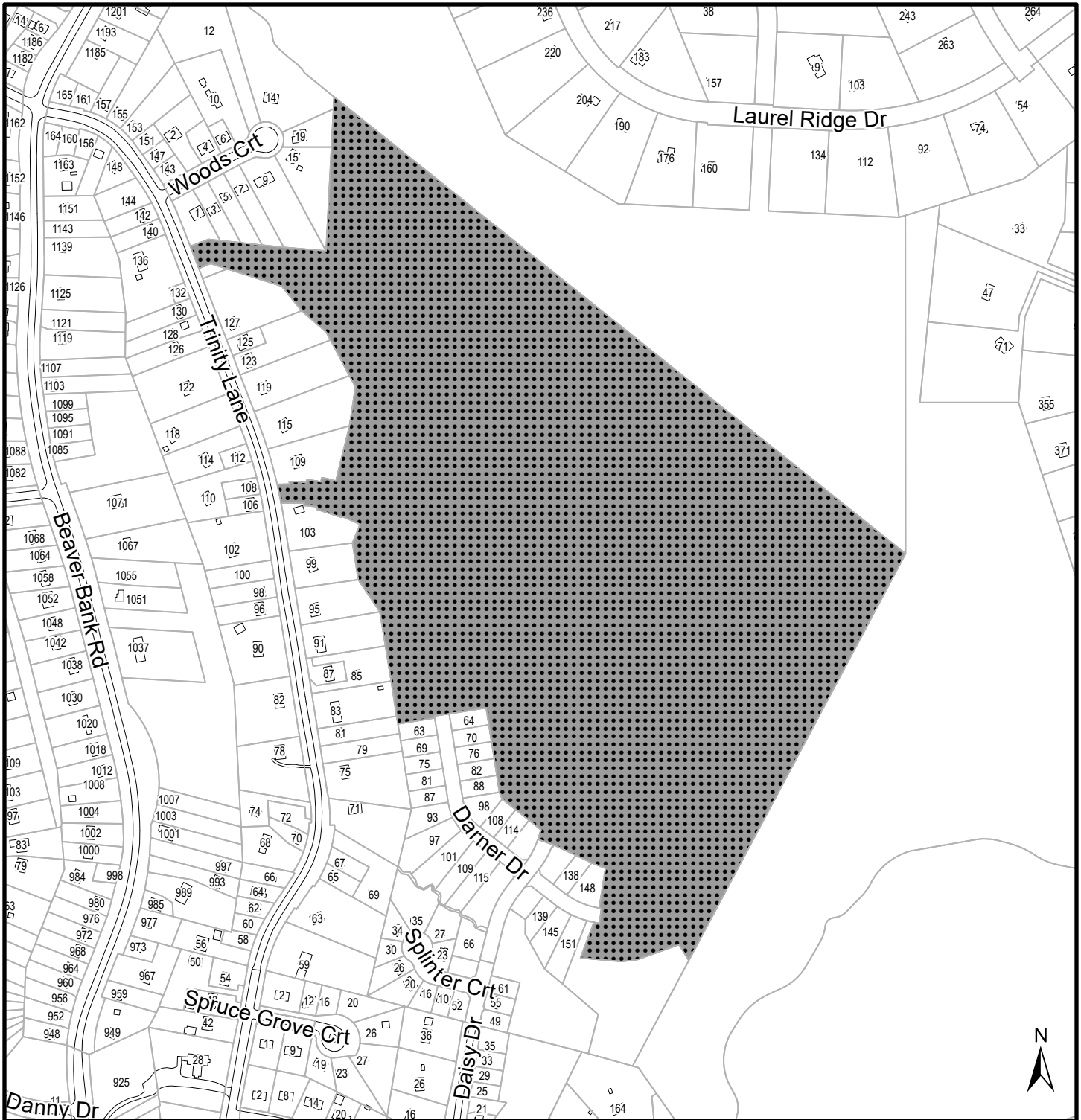
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 Subject Property




Beaver Bank, Hammonds Plains and
Upper Sackville Land Use By-Law Area

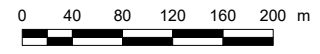
The accuracy of any representation on
this plan is not guaranteed.



Schedule A
 Daisy Drive,
 Beaver Bank

HALIFAX

 Lands to be rezoned from R-1 to R-1C



Beaver Bank, Hammonds Plains and
 Upper Sackville Land Use By-Law Area

The accuracy of any representation on
 this plan is not guaranteed.



**Virtual Public Information Meeting
Case 24045**

The following does not represent a verbatim record of the proceedings of this meeting.

**Thursday, August 18, 2022
6 p.m.
Virtual**

STAFF IN

ATTENDANCE: Meaghan Maund, Planner, Planner III, HRM Planning
Yanan Gou, Planner, Planner II, HRM Planning
Maggie Holm, Principal Planner, HRM Planning
Tara Couvrette, Planning Controller, HRM Planning

ALSO IN

ATTENDANCE: Jared Dalziel – Applicant, Clayton Developments
Andrew Bone – Applicant, Clayton Developments
Lisa Blackburn (District 14) – Councillor;
Middle/Upper Sackville – Beaver Bank - Lusasville

PUBLIC IN

ATTENDANCE: Approximately: 5

1. Call to order and Introductions – Meaghan Maund, Planner

Case 24045: Carriagewood Estates Development GP Ltd. is asking to make changes to the Beaver Bank, Hammonds Plains, and Upper Sackville Municipal Planning Strategy (MPS) and Land Use By-law (LUB) to allow the development of smaller residential lots in Carriagewood Estates (PID 00468694), Beaver Bank

Ms. Maund introduced herself as the Planner and Facilitator guiding Clayton Developments application through the planning process. They also introduced other staff members, and the presenter for this application. The area Councillor for District 14, Lisa Blackburn, was also in attendance online.

2. Presentations

2a) Presentation by HRM Staff – Meaghan Maund

Ms. Maund presentation included information on the following:

- (a) the purpose of the meeting including to share information and collect public feedback about the proposal - no decisions were made at this meeting;
- (b) the role of HRM staff through the planning process;
- (c) a brief description of the application including application history, application proposal, site context, proposal, planning policies, policy and bylaw overview;
- (d) and status of the application.

2b) Presentation by Jared Dalziel – Applicant

Mr. Dalziel presented details of Clayton Developments proposal including project location & zoning, an introduction of the case, existing approvals and regulations, their request, the

impact of this development, concept plan, context plans, what is proposed for the subdivision, original approved lots vs the proposed lots, character of a street with 40' wide lots vs 60' wide lot, benefits of the proposed design, spoke to public engagement concerns that were raised during their previous application, closing comments.

3. Questions and Comments

Ms. Maund welcomed attendees to ask questions to staff and the presenters and provide their feedback, including what they liked and disliked about the proposal. Attendees that were connected via Team's webcast were called upon to provide their comments and questions.

(1) Questions from people connected via MS Teams

Ms. Holm invited the speakers from the public, one at a time, to unmute themselves and provide their comments:

(i) **Councillor Blackburn:**

Does this increase the number of homes? Are there any examples of this elsewhere? In the example in the presentation of the subdivision with 40' frontages, did that developer have to go through the same process for have 40' frontage's?

Mr. Bone – The location shown on the slides was likely done through a development agreement however, there was some places in HRM that have been done as-of-right. No, it does not increase the number of homes proposed.

(ii) **Trish MacNeil – Trinity Lane:**

Relieved to hear of the greenspace that is going to be kept. Concerned with traffic on Beaver Bank Rd. – was the Traffic Impact Study (TIS) done in 2014? What are the plans for sidewalks, will they be going onto Trinity Lane because it will not be safe to walk? Ability for emergency vehicles to respond. The buildout in 2024 – what is that all about?

Jared Dalziel – The latest date for the traffic study was in Feb of 2021 (addendum). Sidewalks – will not be extending them out of the current subdivision. The build out in 2024 will depend on the speed of this application and will include more homes.

Meaghan Maund – original TIS was done in 2014 – addendum was done in 2021.

Follow up – no sidewalks on Trinity?

Andrew Bone – There will be sidewalks, as required by the city, throughout our development. Off site is the municipality's responsibility.

Councillor Blackburn – Trinity is on the list for sidewalks.

(iii) **Lyle Mailman:**

What is the nearest brook that siltation would occur from the development? Box Mill brook goes around to Duck Lake – It has been reposted, by the Grove family, that siltation is continuously run off from this development being constructed and that is really concerning. What mitigation will take place during the rest of this development to mitigate that? Currently there is 60' frontage and reducing to 40' frontage is over a 33% reduction in frontage width. 10% is the typical reduction that is allowed. What are the subdivision bylaws going to be stating for the new creation of Carriagewood? How many subdivisions are included in this? This development is hooked up to municipal wastewater and water services. Will it require an additional pump house to get things back up the hill to the main line on Beaver Bank? Where is the wastewater station that you had mentioned going to be located?

Meaghan Maund – This only applies the Carriagewood site. The other application, which included more subdivision, is on hold and could be cancelled if this one goes through. Frontages depends on where you are located, and each bylaw has their own requirements. With his application Clayton is asking to make a new zone and it is requesting these reductions in frontage. There is no threshold on what they can ask for.

Jared – We are required, when we do any construction like this, to have a siltation management plan submitted and offered to look at that to see if anything needs to be remedied because of the brook on the site. Showed on a slide where the storm water management was proposed but

believes it is all gravity feed.

Andrew Bone – Wasn't positive on the exact infrastructure but that would all be determined through the subdivision process. If a pump station was required that would be under the specification of Halifax water and the Department of Environment. When the subdivision is fully built out there will be a series of storm water controls throughout the development which could vary from grass line ditches to stormwater retention/detention facilities. We try to do a more modern approaches with more natural options.

Follow up question – Recreation Park area – what is planned/proposed? Was there any discussion around cash in leu or that there will be designated area?

Meaghan Maund – Through the subdivision application it would determine what type of park it is going to be.

Jared Dalziel – It is potentially going to go to HRM Parks, and they would tell us what they would like to see. It would be determined in the subdivision stages of the development. Clayton is only showing a concept plan at this point.

Maggie Holm – Cut in to say it is potentially going to go to HRM Parks. Parks will have the option to accepting or not accepting parkland that is shown on any concept. What is shown here today may or may not be accepted by HRM. It may be retained in Clayton's ownership, go to a third-party ownership but all of this would be determined as we continue through this process. No there hasn't been any discussion around cash in leu or designated area at this point. It is a little premature in the process yet.

(iv) Deborah Jardine – Ernest Ave:

Concerned with the amount of construction vehicles and the speed at which they travel up and down the road – will there be more than one access point in the future? Issues with speed and noise.

Jared Dalziel – there will be a second access but later in the development – in a later phase, likely next year with the connection on Trinity Lane. Will look into the speed and noise of the vehicles and amount to traffic.

Andrew Bone – will speak with the operations teams and see if they can talk to the contractors about the speed and the impact on the neighbours.

(v) Shelia Kelly:

What time of day are they allowed to be doing construction – have heard back up beeper well past the time they are supposed to be there, 10-10:30 pm.

Andrew Bone – will talk with the operations team. Backup beepers are a requirement of labour law and sometimes fuel up happens after hours and we can't regulate the beepers at that time.

Councillor Blackburn thanked everyone for providing their questions and concerns.

Jared Dalziel and Andrew Bone thanked everyone from providing their feedback.

4. Closing Comments

Ms. Maund thanked everyone for their participation in the meeting.

5. Adjournment

The meeting adjourned at approximately 7:10 p.m.



Carriagewood Estates

Municipal Planning Strategy Amendment

Clayton Developments Limited
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APPENDIX D: TIS Addendum – February 2021
APPENDIX E: Original TIS – October 2014
APPENDIX F: Provincial Statement of Interest Regarding Housing

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1.0

INTRODUCTION



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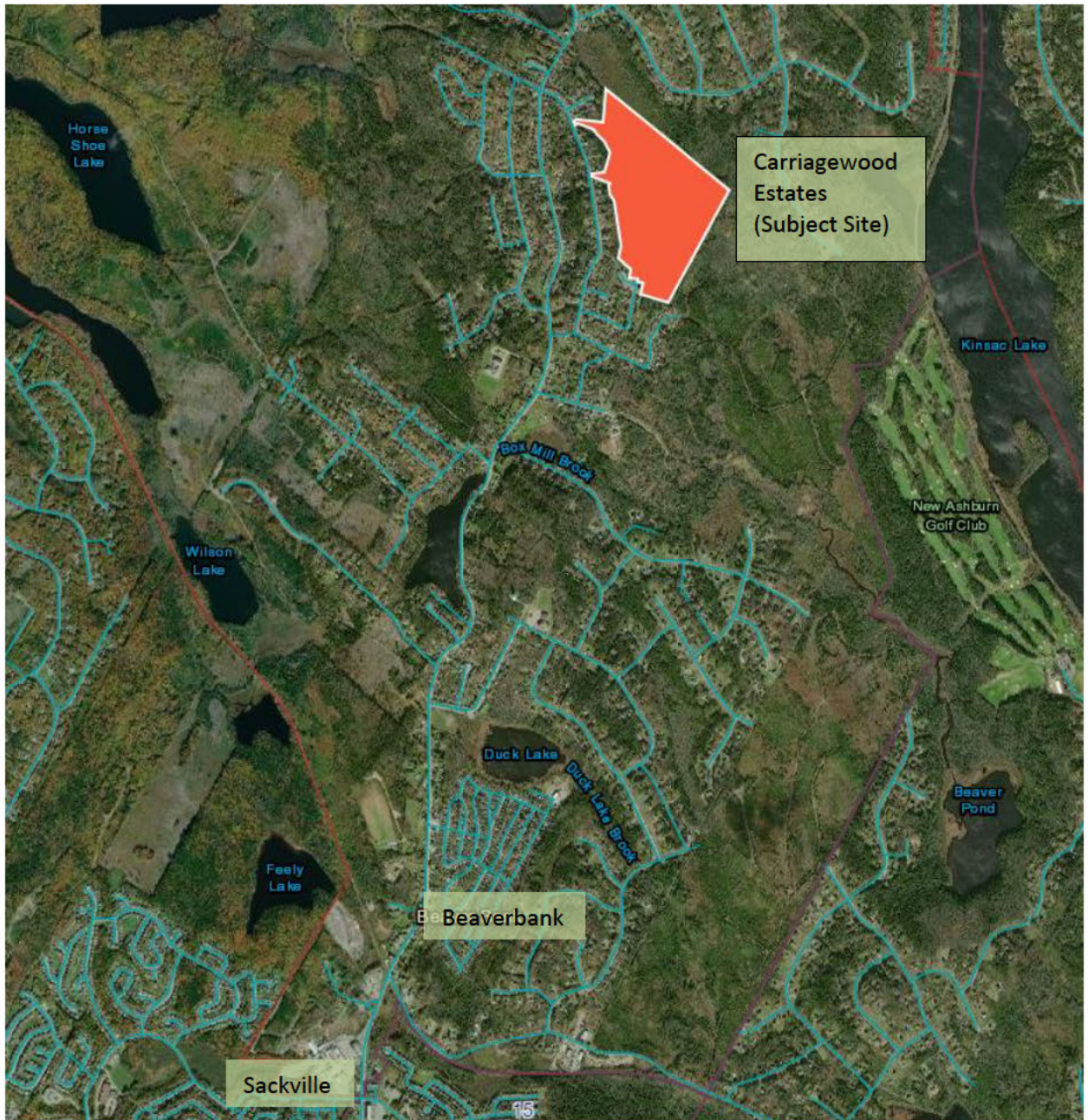


Figure 1 - Location Map



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This Planning Rationale report has been prepared in support of an application by Clayton Developments Limited on behalf of Carriagewood Estates Development GP Limited for a Municipal Planning Strategy and Land Use By-law amendment for the Beaverbank, Hammonds Plains and Upper Sackville Plan area. The amendment is to enable site specific amendments to allow for smaller lots with 40 foot frontages on the subject site as shown on Figure 1 – Location Map.

The subject site has a developable area of 35.73 ha (88.31 acres) and is generally located on the eastern side of Beaverbank Road, east of Trinity Drive, north of Splinter Court. The subject site is currently unoccupied and vacant but partially under development via existing regulations. The site is serviced by municipal sewer and water and zoned for single unit dwellings with a minimum lot size of 6000 square feet. The first phase of a subdivision is under construction on a portion of the lands.

A previous request to amend the Land Use By-law is currently in progress which would broadly enable 40 foot lots in the Beaverbank area. The application has not proceeded to North West Community Council for first reading or decision to date.

During the review process for the existing application, several concerns with the proposal were identified by the community and municipal staff. These concerns included:

- Possibility of increased number of lots;
- Increased traffic;
- Impact on neighbourhood schools
- Impact on sewer and water infrastructure;
- Failure to protect existing low-density community;
- Proposal would significantly change the community; and
- Risk to onsite wetland

While significant evidence was provided to the contrary of the identified issues, municipal staff advised that a site-specific municipal plan amendment would eliminate many of the potential impacts.

Clayton Developments representing Carriagewood Estates Development GP Limited is therefore requesting:

- a site-specific amendment to the Beaverbank, Hammonds Plains and Upper Sackville Municipal Planning Strategy (MPS) be made which enables lots with 12.19 metres (40 feet) of frontage on PID# 00468694 and that the total number of lots permitted on the lands be limited to 270 lots to maintain and not exceed existing development rights. It is suggested that the potential amendments could be achieved by the attached Appendices A and B.
- that the current application (Case 23213) be placed on hold, pending the outcome of the afore requested MPS amendment.

The MPS amendment and subsequent amendment to the Beaverbank, Hammonds Plains and Upper Sackville MPS and Land Use By-law amendment would permit the redevelopment of the subject site in a modern, more affordable, and attainable development form while not exceeding existing densities on the subject lands enabled under current land use regulations for the property.

This rationale concludes that the proposal, limited to the site contributes to the achievement of numerous policy directions articulated in the NS Provincial Statement of Interest, the Regional Plan and local MPS while maintaining existing densities on the subject lands and not creating unexpected impacts in the surrounding community.



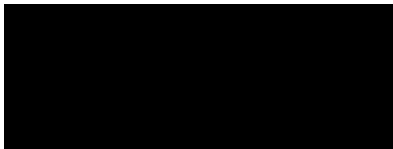
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The subject site is one of the last large parcels of undeveloped serviced residential land in Beaverbank. This proposal will largely complete the serviced residential community and support local business and services, transit and community amenities.

From a design perspective, the proposal will result in a similar suburban form to existing development on the adjacent Splinter Court and Daisy Drive. While the proposal results in a denser suburban form, limits proposed for the development do not create additional lots greater than what is currently enabled under the existing R-1 zone. The relationships between existing and new homes remains the same as required in existing development regulations and the proposed single unit dwellings are compatible with the surrounding single unit dwellings which remain zoned R-1. The lot fabric of Beaverbank can be described as a patchwork with a mix of newer smaller lots and larger historic lot sizes, the proposal continues the trend of smaller lot sizes, a modern suburban characteristic which integrates well into the community.

Based on the above, this report concludes that the proposed development represents good planning and design and is supported by numerous policy directions of the Province and the Municipality. Further the form supports housing affordability which is a significant concern in the Halifax real estate market. Accordingly, it is our opinion that the proposed amendments to the MPS and LUB draft are appropriate, and desirable and should be approved.



Andrew Bone, MCIP, LPP
Director of Planning and Development
Clayton Developments Limited



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2.0

SITE & SURROUNDINGS



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2.1 Site

The subject site has a developable area of 35.73 ha (88.31 acres) and is generally located on the eastern side of Beaverbank Road, east of Trinity Drive, north of Splinter Court and Daisy Drive. The subject site is currently unoccupied and vacant. (Figure 2 – Aerial Photo of Subject Site). The site has two vehicular access points, one to the northwest at Trinity Drive and the other to south at Daisy Drive. The site is generally triangular in shape and has a frontage of approximately 20 metres on Trinity Drive and 16.1 metres on Daisy Drive. The site is approximately 580 metres wide and 1000 metres long at its greatest measurements. The property abuts and contains a large wetland in the northwest corner.



Figure 1 – Aerial Photo of Subject Site

2.2 Area context

The area surrounding the subject site (Figure 3 – Aerial Photo) is primarily suburban residential with a nearby family of Halifax Centre for Education English schools. Beaverbank - Monarch Drive Elementary,



Harold T. Barrett Junior High and Lockview High School currently service English and immersion programs for the subject site. Conseil scolaire acadien provincial (CSAP) French schools for those of French descent are not located in the immediate area but are located in Sackville and Halifax.

The Beaverbank Community centre and Fire Hall are located on Beaverbank Road, north of the site. Several golf course, Lost Creek and New Ashburn are a short drive away. There are several local commercial uses along Beaverbank Road, but the majority of shopping and service needs are typically met in the Sackville and Bedford communities to the south.

Beaverbank Road, the major arterial road in the area connects Beaverbank to Rawdon, Hants East in the north and to Sackville in the south, eventually connecting to Highway 101. Beaverbank Road has experienced some capacity issues in its lower reached near Sackville and the municipality has limited development rights for lands outside the municipal sewer and water boundaries. The subject site is not subject to these development restrictions.

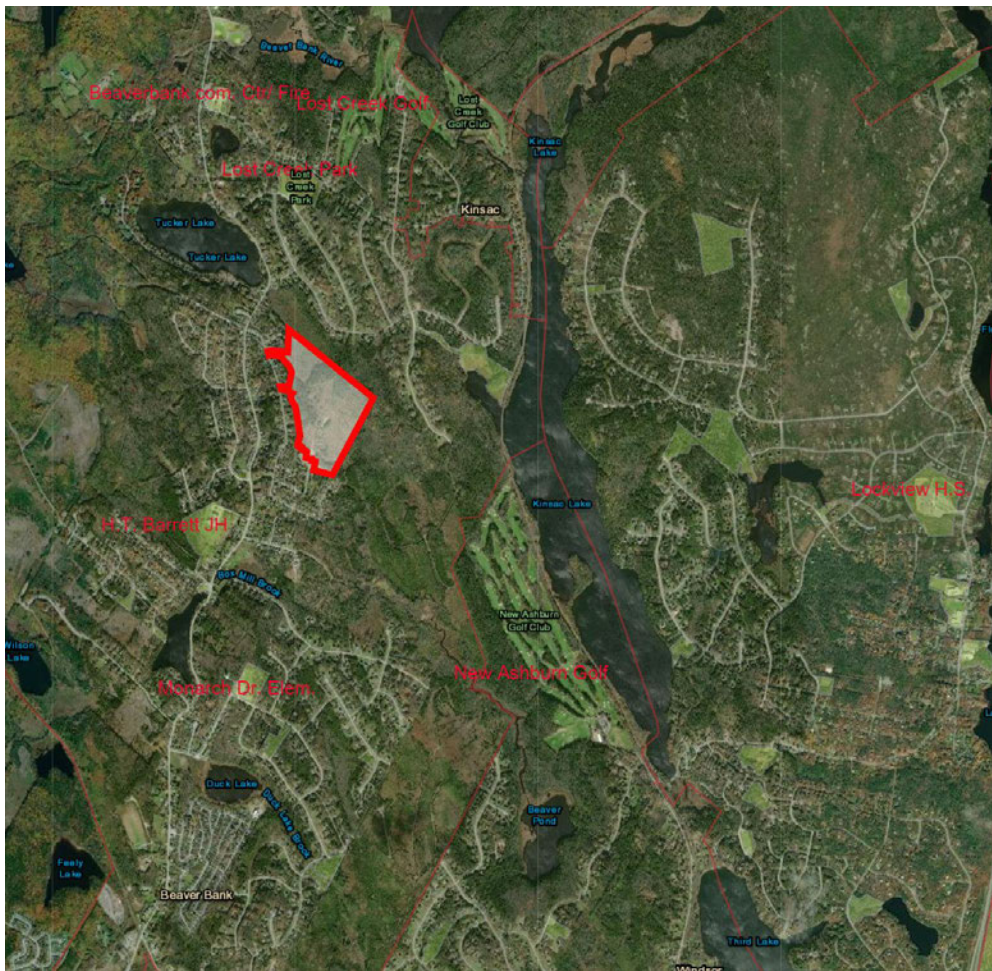


Figure 2 - Aerial Photo of greater Beaverbank/Fall River



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2.3 Immediate Surroundings

Recent redevelopment has taken place to the immediate south of the subject site with the extension of Daisy Drive and the construction of Splinter Court. This residential subdivision was previously part of the subject lands. The subdivision is a development of small sized homes on typical 6000 square foot lots with 60 feet of frontage.



Figure 3 – Recent Daisy Drive Homes

To the immediate west of the subject site are residential lots on Trinity Drive. They are generally characterized as larger lots which appear to be created prior to municipal sewer and water being installed in the Beaverbank area. These lots are generally about 35,000 sq ft in size, however some have been subdivided into smaller lots more recently to match present day serviced lot standards. Generally, these lots contain homes located close to Trinity Drive and large separation distances to the subject site (~50-55m (165-180 feet)).



Figure 4 – Trinity Drive Homes

To the immediate north is a large wetland separating the site from the Lost Creek subdivision. Lost Creek is a large unserviced subdivision, served by well and septic on large lots (~ 1 acre plus) with



single unit dwellings. This subdivision makes up the western property line as well, however, it is separated by lands which are currently undeveloped. Crooked Stick Pass and Laurel Ridge Drive are the closest residential streets along these property lines.

2.4 Transportation Network

Beaverbank Road (Highway 354) functions as an Arterial Road. Halifax Regional Municipality does not have an official street hierarchy map, but Beaverbank Road is often referenced as an arterial in Regional planning documents. The local MPS references Beaverbank Road as a collector Highway. Portions of Beaverbank Road, especially those in the Sackville area have issues during peak hours. Several



Figure 5- Beaverbank By-pass (yellow) excerpt from Regional MPS Transit and Transportation Map

proposed projects have previously been identified as long-term solutions to peak hour issues. One such project is the Beaverbank By-pass which was proposed in the late 1990's by the Province of N.S. Since that time little action has taken place by government to implement this proposed road or other improvements. The Regional Plan identifies this project as "Future Potential".

In response to long term risk to Beaverbank Road from primarily rural, large lot subdivisions, the Municipality in 2006 implemented growth controls in unserved areas of Beaverbank to limit unserved subdivision growth.

The subject site is not within the growth control area as the serviced suburban subdivisions

as proposed are considered appropriate suburban growth.

Metro Transit Bus Routes 86 and 186 provide transit along Beaverbank Road. 112 - The 86 route provides service from Lower Sackville (Walker Avenue Terminal) to the Beaverbank Fire Station at Kinsac Road and return. The bus generally operates in 30 minute intervals during the day and 60 minutes in non-peak hours. Saturday and Sunday service runs every 60 minutes all day. During peak hours the Route 186 provides service from or to downtown Halifax and the Summer Street area (Hospital District) at a 30 minute interval. Bus stops are located 375 metres from the northern entrance to the site on trinity Drive and 780 metres from the site at the Daisy Drive entrance.

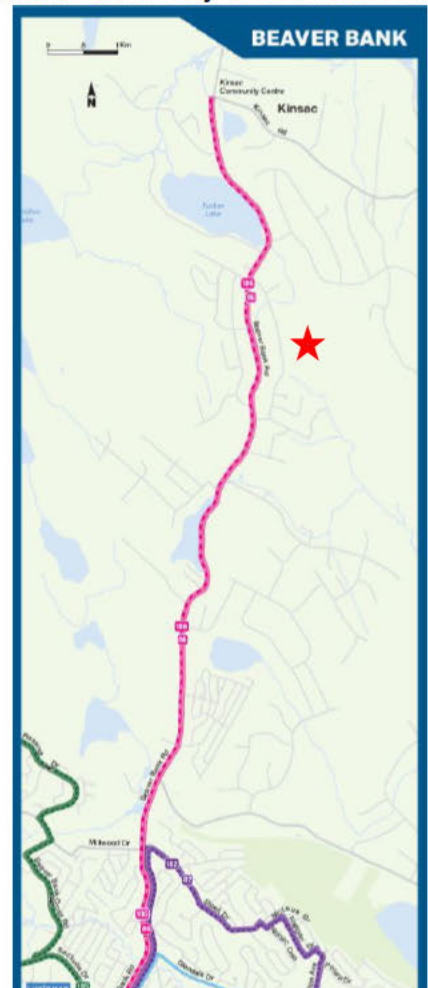


Figure 6- Excerpt from Metro Transit Route Map

2.5 Schools

English

Beaverbank - Monarch Drive Elementary, Harold T. Barrett Junior High and Lockview High School currently service English and immersion programs for the subject site.

The Halifax Regional Centre for Education (HRCE) identified the following breakdown of educational programs by school:

Program Type	Grades/School
Elementary	PP - 5 Beaver Bank-Monarch Drive Elementary School
Junior High	6 - 8 Harold T. Barrett Junior High School
Senior	9 - 12 Lockview High School
Senior - Early Immersion	9 - 12 Lockview High School
Junior - Late Immersion	7 - 8 Harold T. Barrett Junior High School
Senior - Late Immersion	9 - 12 Lockview High School

Clayton Developments Limited discussed enrollment numbers and capacity issues with the HRCE. They identified that the Harold T. Barrett Junior High and Lockview High School were operating at approximately 80 percent capacity and that there were no issues with these schools. Beaverbank – Monarch Drive Elementary was operating close to or at capacity for their current configuration and that they anticipated declining enrollment due to demographic analysis.

Appendix C contains excerpts from the HRCE Long Range Outlook (2019) which provide maps of the school catchment areas and detailed specifics and data on each school.



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PROPOSAL



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3.1 Conceptual Design

The proposed design includes 270 lots, the majority of which will be 40 foot lot frontages and 4000 sq. ft in area.



Figure 7 - Conceptual Subdivision Design



3.2 Site Data

The following table includes summary statistics for the proposed subdivision and proposed lot requirements.

Proposed Lot Size	4,000 sq. ft. (371.6 m ²) PROPOSED
Proposed Lot Frontage	40 feet (12.19 m) PROPOSED
Proposed Side / Rear Yards	8 feet (2.4 m)
Proposed Front Yards	20 feet (6.1 m)
Proposed Lot Coverage	35%
Proposed Maximum Height	35 feet (10.7 m)
Total Number of Proposed Lots	270
Development Form	Single Unit Dwellings of varying widths
Parking	As per Land Use By-law

3.3 Requested Amendments

The proposed amendments as shown in Appendix A and B are to:

- (a) Amend the Beaverbank, Hammonds Plains and Upper Sackville Municipal Planning Strategy to create a new zone, the R1-C (Small Lot Single Unit Dwelling) Zone which is based on the existing R-1 Zone with smaller lot frontage (40 feet) and lot area requirements of 4000 square feet. Further the zone would include provisions to limit the maximum number of lots enabled on the site to that enabled currently, 270 lots.
- (b) Amend the Beaverbank, Hammonds Plains and Upper Sackville Land Use By-law to add the new zone, the R1-C (Small Lot Single Unit Dwelling) Zone as described above.

3.4 Required Approvals

The requested amendments to the Beaverbank, Hammonds Plains and Upper Sackville MPS and LUB will require the following reviews and approvals from the following bodies to become effective:

Regional Council	Initiation
North West Planning Advisory Committee	Committee Recommendation
North West Community Council	Recommendation to Regional Council
Regional Council	First Reading, Public Hearing and Decision
Province of N.S.	Review by Minister

No appeals are permitted for MPS amendments and related LUB amendments.



4.0

POLICY & REGULATORY CONTEXT



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As identified out below, the proposal is supportive of numerous policy directions set out in the Provincial Policy Statement, the Regional Plan and the Beaverbank, Hammonds Plains and Upper Sackville Municipal Planning Strategy, all of which promote the efficient use of infrastructure and land within serviced area.

4.1 Provincial Statement of Interest (Housing) (1998-2013)

The province of Nova Scotia has several areas where direction is provided to municipalities relating to development of land and water, agricultural lands and specific to housing. These statements made under the Municipal Government Act are relevant to the Halifax Regional Municipality Charter. The Statements (Appendix E) identify:

“Nova Scotia’s land and water resources are fundamental to our physical, social and economic well-being. But they are finite resources and using them in one way can mean the exclusion of other uses forever. Therefore, it is important that decisions about Nova Scotia’s land and water be made carefully. Ill-advised land use can have serious consequences for the physical, economic and social well-being of all Nova Scotians.

These statements of Provincial interest recognize the importance of our land and water resources. The statements also address issues related to the future growth of our communities. They are intended to serve as guiding principles to help Provincial Government departments, municipalities and individuals in making decisions regarding land use. They are supportive of the principles of sustainable development.

Development undertaken by the Province and municipalities should be reasonably consistent with the statements.

As the statements are general in nature, they provide guidance rather than rigid standards. They reflect the diversity found in the Province and do not take into account all local situations. They must be applied with common sense. Thoughtful, innovative and creative application is encouraged.”

The policies promote enabling higher densities, smaller lot sizes and reduced yard requirements that encourage a range of housing types.

The statement also identifies:

”Reasonably consistent is defined as taking reasonable steps to apply applicable statements to a local situation. Not all statements will apply equally to all situations. In some cases, it will be impractical because of physical conditions, existing development, economic factors or other reasons to fully apply a statement. It is also recognized that complete information is not always available to decision makers. These factors mean that common sense will dictate the application of the statements. Thoughtful innovation and creativity in their application is encouraged.”

It is our opinion that the proposal accommodates local conditions and provides a practical and common sense solution which enables the goals of the statement to enable higher densities, smaller lot sizes and reduced yard requirements that encourage a range of housing types.



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4.2 Regional Municipal Planning Strategy (2014)

The Regional Plan came into effect in 2006 and was updated in 2014 and came into effect on October 18, 2014. The plan is currently under review and a revised plan is expected in the coming year.

The Regional Plan “establishes long-range, region-wide planning policies outlining where, when, and how future growth and development should take place between now and 2031.” The vision of the Regional Plan is to “enhance our quality of life by fostering the growth of healthy and vibrant communities, a strong and diverse economy, and sustainable environment. The plan seeks to address the needs and view of all sectors of the region, recognizing the diversity of its citizens, community and geography.”

The focus of the Regional Plan is to improve Urban and Rural Community Design by introducing new design standards that create more attractive and sustainable communities and more beautiful, walkable and complete communities. Further it intends to direct new growth to areas where infrastructure and services already exist and ensuring that new development pays its fair share to protect the tax rate.

Excerpts from Regional Plan Principles	Notes relative to the proposal
Supports development patterns that promote a vigorous regional economy.	The proposal is an extension of the existing development pattern over lands where existing development rights exist. The requested variation provides housing options for attainable and more affordable housing than could be achieved through existing land use regulations while maintaining existing development densities. The proposed lot form enables housing options which activate a portion of the housing market which is severely limited by supply constraints.
Manages development to make the most effective use of land, energy, infrastructure, public services and facilities, and foster healthy lifestyles.	As the subject lands are currently serviced, the proposal for smaller lots is the most efficient use of road resources while maintaining overall site densities enabled within the sewer and water (service) boundary. Development of additional housing (which is already permitted) also enables effective use of municipal services (plowing, road maintenance, fire, police and school services) in the area. The reduction in road frontage will minimize the amount of new road, minimizing long term costs to the municipality.
Ensures opportunities for the protection of open space, wilderness, natural beauty and sensitive environmental areas.	The proposed reduction in lot size, minimizes the impact of the development on the on-site wetland by allowing the concentration of housing ways from sensitive areas.



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Target at least 75% of new housing units to be located in the Regional Centre and urban communities with at least 25% of new housing units within the Regional Centre over the life of this Plan;	The Regional Plan recognizes that all development cannot take place in the Regional Centre and identifies that a portion of development will take place in the serviced suburbs. The proposal is part of this allotment for serviced suburban development.
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Settlement and Housing

The Settlement and Housing section of the Regional Plan identifies goals of the plan related to housing and settlement. The following table identifies some of the goals and corresponding note related to the proposed development.

Excerpts from Settlement and Housing Objectives	Notes relative to the proposal
Direct growth so as to balance property rights and life style opportunities with responsible fiscal and environmental management.	Growth within the Regional Plan is spread around the Municipality, while the proposal does not enable new growth, as that growth is already enabled, it reconfigures the form to be more fiscally responsible by minimizing road frontage and long term carrying and maintenance costs.
Focus new growth in centres where supporting services and infrastructure are already available;	While the subject site is not within a centre as defined by the Regional Plan, growth is enabled and suburban style development is promoted as the lands have existing municipal sewer and water services.
Target at least 75% of new housing units to be located in the Regional Centre and urban communities with at least 25% of new housing units within the Regional Centre over the life of this Plan	See note above in previous table.
Design communities that: (a) are attractive, healthy places to live and have access to the goods, services and facilities needed by residents and support complete neighbourhoods as described in 6.2.2A (v) of this Plan; (b) are accessible to all mobility needs and are well connected with other communities; (c) protect neighbourhood stability and support neighbourhood revitalization; (d) preserve significant environmental and cultural features; (e) promote community food security; (f) provide housing opportunities for a range of social and economic needs and promote aging in place;	Highlights of the proposal include protecting adjacent neighbourhood stability by limiting the proposal to the subject lands, maintaining separation distances as required by existing regulations and maintaining development lot yields the same as current regulations. Further the proposal allows the protection of the wetland on the site. The most significant impact of the proposal is providing housing that is attainable and more affordable than the existing development rights on the subject lands.
Maintain the integrity of rural communities;	This proposal is in a service area where suburban development is enabled. The proposal maintains the integrity of rural lands located outside of this serviceable area.



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Support housing affordability.	The proposed decrease in road frontages is directly correlated to the costs of development and thus will lead to the subject lands and associated lots being more affordable than if they were developed with the existing frontage requirements.
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Municipal Water Services, Utilities and Solid Waste

The Municipal Water Services, Utilities and Solid Waste section of the Regional Plan identifies goals of the plan related to servicing of development. The key takeaway from this section is that the Municipality should:

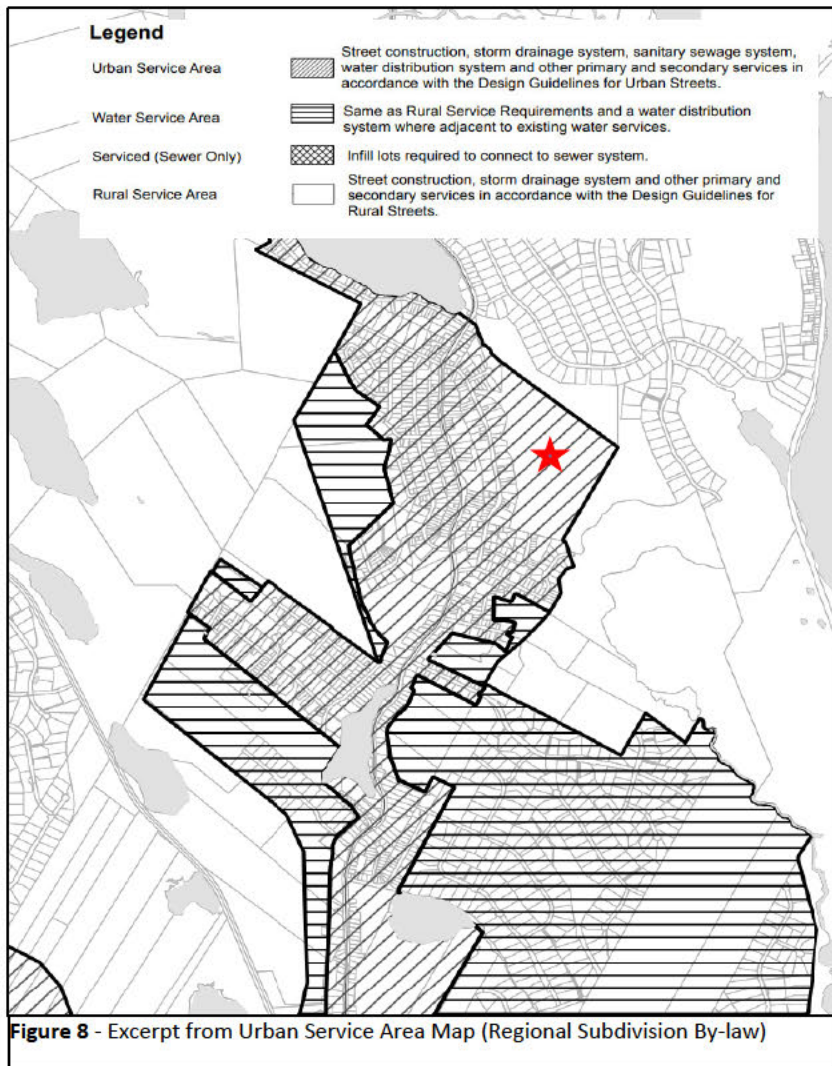
“Manage growth to make the best use of existing water, wastewater and storm infrastructure and avoid unnecessary or premature expenditures”

Further the Regional Plan identifies in Policy SU-2, establishes the Urban Service Area under the Regional Subdivision By-law to “designate those areas within the Urban Settlement Designation and the Harbour Designation where municipal wastewater collection and water distribution systems are to be provided. The Area shall initially include all lands within existing service boundaries established under secondary planning strategies at the time of adoption of this Plan. Lands within the Urban Service Area shall only be developed with municipal wastewater collection and water distribution systems.”

This policy states the Urban Service area “shall initially include all lands within existing service boundaries established under secondary planning strategies at the time of adoption of this Plan. Lands within the Urban Service Area shall only be developed with municipal wastewater collection and water distribution systems



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Housing Diversity and Affordability

The Housing Diversity and Affordability Section identified that “HRM can also play an important role in supporting housing affordability”. Policy S-30 also identifies that “when preparing new secondary planning strategies or amendments to existing secondary planning strategies to allow new developments, means of furthering housing affordability and social inclusion shall be considered including: creating opportunities for a mix of housing types within designated growth centres and encouraging growth in locations where transit is or will be available...reducing lot frontage, lot size and parking requirements”. The proposed site is served with Transit and the proposal is seeking to reduce lot frontage and sizes.

Economy and Finance

The Economy and Finance section “focuses on policies and programs in support of the economic contributions of the Regional Centre, Halifax Harbour, business parks, growth centres and the rural areas of HRM.



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The objectives of this section promote identify goals which support success of the city. One of these goals is to “prepare financial plans and strategies that support and encourage the outcomes of this Plan, including environmental conservation, housing affordability, economic competitiveness, revitalization of the Regional Centre and neighbourhood stability. The proposal seeks to create housing affordability which directly leads to making Halifax more economically competitive.

For the reasons set out in Section 5 of this report, it is our opinion that the proposal and, more particularly, the requested Zoning By-law Amendment confirms with the Growth Plan, and in particular policies encouraging intensification.

4.3 Beaverbank, Hammonds Plains and Upper Sackville Municipal Planning Strategy (MPS)

The Beaver Bank, Hammonds Plains and Upper Sackville Municipal Planning Strategy was approved by the Minister of Municipal Affairs on May 4, 2000.

The subject site is designated Residential (Map 1C – Beaver Bank, Hammonds Plains and Upper Sackville Generalized Future Land Use Map). The nearby Beaverbank Road is identified as a Collector Road (Map 2 Hammonds Plains, Upper Sackville and Beaver Bank Transportation).

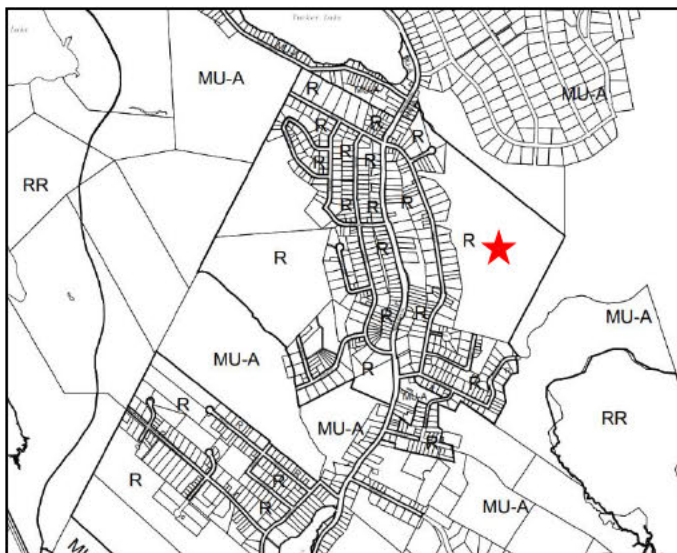


Figure 9 - Excerpt from Beaver Bank, Hammonds Plains and Upper Sackville Generalized Future Land Use Map

The MPS in its preamble identifies the Residential designation:

- has been applied to the larger suburban-type residential subdivisions. on local subdivision roads which extend back from the highway system.
- recognizes and supports the predominantly suburban residential character of these subdivision areas and supports their protection from non-residential land uses.
- desires to preserve and protect the low density environment by restricting new residential development to single unit dwellings.

Further to the preamble, detailed policies further articulate the goals of the designation directly and succinctly. The policies state:

P-33 It shall be the intention of Council to establish a Residential Designation as shown on the Generalized Future Land Use Maps. Within this designation, it shall be the intention of Council to support and protect the existing low

density residential environment.

P-34 Within the Residential Designation, it shall be the intention of Council to establish a residential zone which permits single unit dwellings, existing two unit and mobile dwellings, open space uses, offices and day care facilities operated by a resident of the dwelling, bed & breakfasts, as well as activities related to traditional arts and crafts and domestic arts, provided that controls are established on the scale of the business and that no outdoor storage or display are permitted and



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signs are regulated through provisions of the Land Use By-law, in order to ensure that the external appearance is compatible with the residential environment.

Through the existing policies, Clayton Developments applied for an amendment to the Land Use By-law to amend the lot frontage requirement for the existing R-1 zone. While this process is not complete, we understand that staff may have issues with the statement “existing low density residential environment” in Policy P-33 and how the proposed change will create risks to the greater R-1 zoned area in Beaverbank. Despite significant attempt to quantify and identify that the risks were minimal and mostly perceived, concerns remain.

In discussions with Municipal staff, it was identified that an MPS amendment which enabled 40 foot lots on the subject property only, would significantly limit identified risks and likely be more acceptable to staff.

As a result, Clayton Developments Limited has decided to follow the direction of staff and request a site-specific MPS amendment to enable 40 foot/4000 sq. ft. lots on the subject lands with a control on density to ensure existing lot yields, under existing regulations, are not exceeded (270 lots).

4.4 Beaverbank, Hammonds Plains and Upper Sackville Land Use By-law (LUB)

The Beaver Bank, Hammonds Plains and Upper Sackville Land Use By-law was approved by the Minister of Municipal Affairs on May 4, 2000.

The subject site is zoned R-1 (Single Unit Dwelling) Zone on the Zoning Map (Map 1C – Beaver Bank, Hammonds Plains and Upper Sackville Zoning Map). The zone enables serviced subdivision lots with a minimum of 60 feet of lot frontage and 6,000 square feet of area on the subject lands. Further details on the existing zone can be found below.



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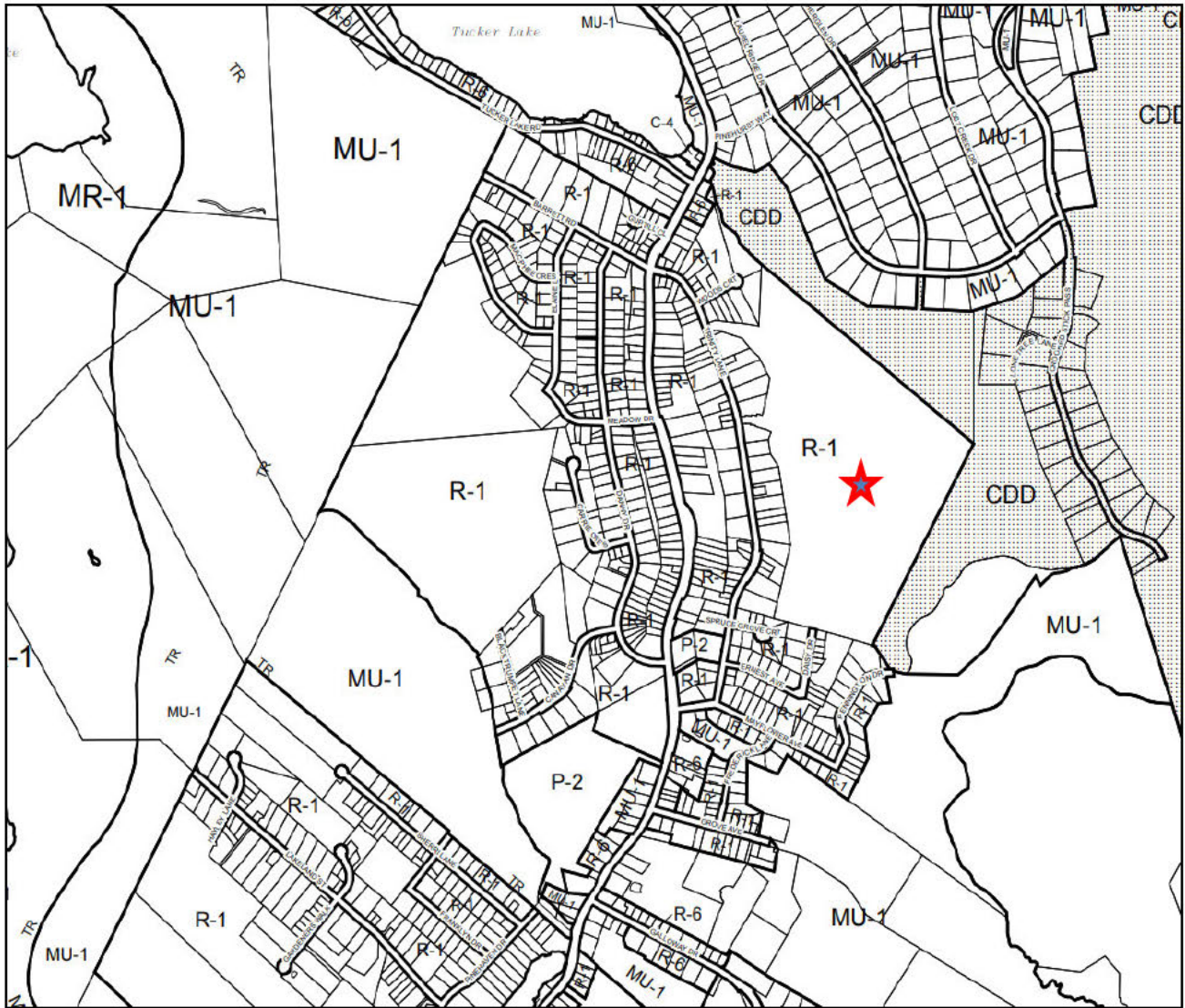


Figure 10 - Excerpt from Beaver Bank, Hammonds Plains and Upper Sackville Zoning Map



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PART 6: R-1 (SINGLE UNIT DWELLING) ZONE

6.1 R-1 USES PERMITTED

No development permit shall be issued in any R-1 (Single Unit Dwelling) Zone except for the following:

- Single unit dwellings
- Existing two unit dwellings
- Existing mobile dwellings
- Day care facilities for not more than seven (7) children and in conjunction with permitted dwellings
- Offices in conjunction with permitted dwellings
- Bed & Breakfasts
- Open space uses

6.2 R-1 ZONE REQUIREMENTS

In any R-1 Zone, no development permit shall be issued except in conformity with the following:

Minimum Lot Area:	on-site services	29,064 square feet (2700 m ²)
	central water	12,000 square feet (1118 m ²)
	central sewer	10,000 square feet (929 m ²)
	Sewer and water services	6,000 square feet
Minimum Frontage:	on-site services	100 feet (30.5 m)
	central sewer	75 feet (23 m)
	Sewer and water services	60 feet
Minimum Front or Flankage Yard		20 feet (6.1 m)
Minimum Side or Rear Yard		8 feet (2.4 m)
Maximum Lot Coverage		35 per cent
Maximum Height of Main Building		35 feet (10.7 m)

6.3 R-1 ZONE REQUIREMENTS: OPEN SPACE USES

In any R-1 Zone, where open space uses are permitted, no development permit shall be issued except in conformity with the provisions of Part 22.

6.4 OTHER REQUIREMENTS: OFFICE USES

Where offices are permitted in any R-1 Zone, the following shall apply:

- (a) Any office shall be wholly contained within the dwelling which is the principle residence of the operator of the office.
- (b) No individuals who are not residents in the dwelling shall be employed in the office.
- (c) No more than twenty-five (25) per cent of the gross floor area shall be devoted to any office, and in no case shall any office occupy more than three hundred (300) square feet (28 m).
- (d) No open storage or outdoor display shall be permitted.
- (e) Not more than one (1) business sign shall be permitted and no such sign shall exceed two (2)



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square feet (0.2 m²) in area. The height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling. (RC-Jun30/09;E-Sep 5/09)

- (f) One off-street parking space, other than that required for the dwelling, shall be provided for every one hundred and fifty (150) square feet (14 m²) of floor area devoted to any office.

6.5 OTHER REQUIREMENTS: DAY CARE FACILITIES

Where day care facilities are permitted in any R-1 Zone, the following shall apply:

- (a) With the exception of outdoor play space, any day care facility shall be wholly contained within the dwelling, which is the principle residence of the operator of the facility.
- (b) No open storage or outdoor display shall be permitted.
- (c) Not more than one (1) business sign shall be permitted and no such sign shall exceed two (2) square feet (0.2 m²) in area. The height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling. (RC-Jun 30/09;E-Sep 5/09)
- (d) One off-street parking space, other than that required for the dwelling, shall be provided.

6.6 OTHER REQUIREMENTS: BED AND BREAKFASTS

Where a bed & breakfast is permitted in any R-1 Zone, the following shall apply:

- (a) The bed & breakfast shall be wholly contained within the dwelling which is the principle residence of the operator of the establishment;
- (b) Not more than three (3) rooms may be let;
- (c) No window display and not more than one (1) business sign shall be permitted and no such sign shall exceed two (2) square feet (0.2 m²) in area; and
- (d) One off-street parking space in addition to that required for the dwelling shall be provided for each room to be let.

6.7 OTHER REQUIREMENTS: COMMERCIAL MOTOR VEHICLES

In any R-1 Zone, not more than one commercial vehicle shall be kept on any lot and no such commercial motor vehicle shall exceed a registered vehicle weight of five (5) tons nor be kept less than ten (10) feet from any front lot line.

6.8 EXISTING HOME BUSINESS USES

Notwithstanding Section 4.9 and 6.1, the existing home businesses identified in Appendix B shall be permitted to the extent they are in existence at the time the land use by-law is adopted.

6.9 EXISTING TWO UNIT DWELLINGS

Notwithstanding Section 4.9, any existing two unit dwellings shall not be permitted to convert into a multi-unit dwelling.

6.10 SENIOR CITIZENS HOUSING

Notwithstanding Section 6.1, senior citizens housing shall be permitted within the R-1 zone on the property in Uplands Park identified by LIC Property Number 420927.

6.11 FRONTAGE ON A STREET



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No development permit shall be issued in an R-1 Zone unless the lot or parcel intended to be used or upon which the building or structure is to be erected abuts and fronts upon a public street or highway.

6.12 SUBDIVISION OF EXISTING TWO UNIT DWELLINGS - UPLANDS PARK

Notwithstanding Section 6.2, the minimum lot area per dwelling unit for existing two unit dwellings on the following properties shall be 3,000 square feet and the minimum lot frontage shall be 30 feet: Patricia Foran, LIC Number 420265; Lawrence Leslie, LIC Number 420224; Sarah Martin, LIC Number 420398.



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PLANNING & DESIGN ANALYSIS



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5.1 Provincial Statements of Interest

The Province of Nova Scotia has several areas where direction is provided to municipalities relating to development of land and water, agricultural lands and specific to housing. These statements made under the Municipal Government Act are relevant to the Halifax Regional Municipality Charter.

The housing statement (Appendix E) is relevant to decisions by the municipality. The policies promote enabling higher densities, smaller lot sizes and reduced yard requirements that encourage a range of housing types. While the existing Beaverbank, Hammonds Plains and Upper Sackville MPS, theoretically enables the consideration of many of these themes, the risks of densifying to existing residential neighbourhoods has been a strong underlying concern.

The proposed amendment substantially limits, if not totally manages the risk to the greater community, and further achieve the statement of interest goal of ensuring “new municipal planning documents as well as amendments made after these statements come into effect must be reasonably consistent with them.” Further the statement encourages Councils to “amend existing planning documents to be reasonably consistent with the statements.”

It is our opinion that the proposal accommodates local conditions and provides a practical and common-sense solution which enables the goals of the statement to enable higher densities, smaller lot sizes and reduced yard requirements that encourage a range of housing types.

5.2 Regional MPS

The Regional Plan’s long-range policies support the proposal by supporting:

- The introduction of new design standards that create more attractive and sustainable communities and more beautiful, walkable and complete communities;
- Directing new growth to areas where infrastructure and services already exist and ensuring that new development pays its fair share to protect the tax rate and is fiscally responsible;
- intensification via modern lot standards to make the most effective use of land, energy, infrastructure, public services and facilities, and foster healthy lifestyles;
- Expanding opportunities for the protection of sensitive environmental areas;
- The placement of housing in a variety of urban, suburban and rural locations;
- The focusing of growth in areas where existing infrastructure exists; and
- Housing affordability

It is our opinion that the Regional Plan generally supports the proposed amendments.

5.3 Beaverbank, Hammonds Plains and Upper Sackville MPS

The MPS supports existing low density residential environment in policy. The preamble goes on to identify that the goal is to be achieved by restricting new residential development to single unit dwellings.

The policy is not explicit in identifying what form of single unit dwellings is considered acceptable, however the policy has enabled a reduction from large unserviced lots to the existing standard for serviced lots when services were brought into the Beaverbank area in the early 2000’s. Through the review of the previously proposed LUB amendment, staff identified they had issues with the proposal affecting a large area of Beaverbank. Thus a site specific MPS amendment is being requested to isolate the request to the subject lands and reduced the perceived risk.



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5.4 Intensification

While the proposal is to reduce lot frontages and sizes which would typically lead to intensification, the proposal includes a cap on development rights to limit the number of lots that can be developed to 270 lots/dwelling units, the existing development rights. The proposed lot sizes and frontages are commonplace in modern serviced subdivisions.

As the proposed change in lot size will not impact the number of lots that can be approved, no impact over and above existing development rights is expected.

5.5 Servicing

The local sewer and water system was designed to handle the existing and proposed densities of development. There does not appear to be any servicing issue which would preclude the development of the proposal.

5.6 Schools

In discussions with the HRCE, they identified that secondary and high schools in the area are under capacity and capable of handling the proposed development. They identified that the local elementary school is near capacity, but demographic projections showed that enrollment was projected to decrease on a go forward basis.

Should there be issues with enrollment numbers, the HRCE has protocols to ensure the safe and effective education of students. Some techniques the HRCE uses include, adjusting school boundaries to even out the distribution of students, adding portable classrooms, redistribution of students between schools in a family of schools or in severe case, busing students to non-local schools. Based on discussions with HRCE, it is not anticipated that extreme measures will be required and that only routine measures for managing school capacities would be used if required.

Given the smaller percentage of students that attend CSAP schools, no issues are anticipated.

5.7 Protection of Natural Features

Existing Land Use By-law rules require riparian buffers (setbacks and non-disturbance) around wetlands and watercourses. There is a watercourse and a large wetland known to be on the site and the existing regulations provide protection of these features.

The implementation of the proposed lot frontages and sizes will allow more flexibility when designing the lot fabric and siting homes on the site so that greater setbacks may be able to be achieved than with the existing regulations.

5.8 Land Use

The proposal proposes the same land use as exists in much of the Beaverbank area. Residential single unit dwellings are the permitted land use that is predominately available in Beaver Bank. The R-1 Zone is how this has been established. Policy P-33 and P-34 set up the primary area where single unit dwellings are enabled.

P-33 It shall be the intention of Council to establish a Residential Designation as shown on the Generalized Future Land Use Maps. Within this designation, it shall be the intention of Council to support and protect the existing low density residential environment.

P-34 Within the Residential Designation, it shall be the intention of Council to establish a residential zone which permits single unit dwellings, existing two unit and mobile dwellings, open space uses, offices and day care facilities operated by a resident of the dwelling, bed & breakfasts, as well as activities related to traditional arts and crafts and domestic arts, provided that controls are established on the scale of the business and that no outdoor storage or display are permitted and signs are regulated through provisions Beaver Bank, Hammonds Plains and Upper Sackville MPS Page 48 of the Land Use By-law (RC-Jun 30/09;E-Sep 5/09), in order to ensure that the external appearance is compatible with the residential environment.

Within the residential designation, single unit dwellings are undeniably the predominant land use. While the land use is consistent, the manner in which single unit dwellings are situated is variable. While parameters establish minimums, there is great variety in how single unit dwellings have been established over the landscape.

5.9 Land Use Compatibility

In terms of land use compatibility, the proposed residential development does not affect the current residential land use form as the existing and proposed form are single unit dwellings, the same form.

In discussing compatibility, six key factors are usually reviewed, they are noise, vibration, air quality, safety, wind and sun shadowing. It is anticipated that there will be no adverse impact in regard to noise, vibration, air quality, safety, wind and sun shadowing.

- Noise: Noise levels are anticipated to be similar to the surrounding residential area once constructed.
- Vibration: No adverse vibration is anticipated to be created as uses generating non-compatible vibration is not being proposed.
- Air quality: No adverse air quality is anticipated to be created as uses generating poor air quality is not being proposed.
- Safety: The proposed development is somewhat secluded from adjacent developments. The siting of the dwellings will ensure “eyes on the street” i.e. natural surveillance, No other safety issues were identified.
- Wind: No abnormal or adverse wind effects are anticipated due to the proposed height, scale and massing of the buildings.
- Sun shadowing: The height and bulk of the buildings, as well as their separation distances from neighbouring buildings, will mitigate sun-shadow impacts.

5.10 Spatial Relationships

Minimum relationships between a home and neighbouring homes, and the street, are one of the most important elements to regulate. The Land Use By-law only regulates minimum relationships only preventing a new building from getting too close to encourage privacy and enhance the equitable enjoyment of individual properties.

Below is a discussion of each individual relationship which can be expected with the proposal.



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Minimum Front Yard Setbacks

The front yard setback of buildings from the property line influences a range of issues that give an area a particular character. These include the perception of the streetscape and the experience of being in that street, the level of activity conveyed by the building onto the street, and the relationship of building's occupants to the street (i.e. the privacy of internal spaces and the potential for occupants to overlook the street).

Setbacks help to maintain and enhance an area's character. In new areas it will help to establish the character of the street by providing a consistent building line for adjacent buildings to align with. In residential streets front yards provide privacy for the dwelling. Passersby and vehicles are kept away from windows and the front yard allows for some landscape screening. Minimum setbacks can also ensure there is adequate parking in front of a dwelling unit.

Existing: In Beaver Bank there is great variation among front yard setbacks. On newer smaller lots, the front yard setbacks are more consistent with the minimum and older properties are quite variable and, in many cases, significantly exceed minimum setbacks.

Proposed: The proposal does not change the minimum front yard setbacks for future dwellings and maintains minimum yards required in the R-1 (Single Unit Dwelling) Zone under the existing Land Use Bylaw. With the proposal, existing and new properties generally are not located across from each other. The proposal will have no impact on these matters and thus has no impact on this element of neighbourhood character.

Minimum Side Yard Setbacks: The side yard serves several important functions. It maintains light, air, sun and privacy; can provide a space for landscaping between developments; allows windows and articulation on the side of the building; and provides a transition space between different buildings, particularly if they are different heights. This helps to prevent the dominance of larger buildings over smaller ones.

The setback can also continue or create a pattern of development that positively defines the rhythm of the streetscape. Ideally, the spaces between buildings should be designed to be organized and coherent, and not determined by what is left over around the building form.

Existing: In Beaver Bank there is variety in side yard setbacks. On newer smaller lots which are adjacent to the site, the side yard setbacks are more consistent and closer to the minimum. On older properties (Trinity Drive) the side yards are quite variable and, in many cases, exceed minimum setbacks. An example below demonstrates the relationships anticipated (Figure 3 and 4).



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Figure 11 - 40 ' lots Westfield Dr, Dartmouth Figure 4 – 60 ' lots Danny Drive, Beaver Bank

Proposed: The proposal does not change the minimum side yard relationship between any future dwellings and maintains minimum yards required in the R-1 (Single Unit Dwelling) Zone under the existing Land Use Bylaw. The proposal will have no impact on these matters and thus has no impact on spatial relationships.

Minimum Rear Yard Setbacks : The 'back to back' distance between buildings should maximize sunlight, privacy and the amount of usable open space appropriate to the desired development. A large rear setback allows for more planting, including mature trees.

Existing: In the immediate area there is variety in rear yard setbacks. On newer smaller lots, the rear yard setbacks are more consistent with the minimum and older properties they are quite variable and, in many cases, greatly exceed minimum setbacks. Properties on Trinity Drive typically have about a 60m (200 ft) setback to the closest property line provided much built in protection from close neighbours.

Proposed: The proposal does not change the minimum rear yard setbacks between any future single unit dwelling and maintains existing yards required in the R-1 (Single Unit Dwelling) Zone under the existing Land Use Bylaw. For reference the concept design anticipates approximately a 20 m (66 feet) setback which in total exceeds the minimum combined required setback of 40 feet by 226 feet.

Maximum Building Height:

The height of a building in relation to its overall configuration or massing is one of the more significant factors in determining the impact a building will have on its surrounding environment. Building height for the R-1 Zone and the proposed zone is the same and is set at a maximum of 35 feet.

Existing: In Beaver Bank most single unit dwellings in residential areas of HRM vary between 1 and 2 storeys. Beaver Bank has a variety of these heights and the heights vary from lot to lot based on the preferences of the day or the preferences of the original builder.

Proposed: It is anticipated that proposed buildings will be typically 2 storeys which is in the accepted norm for the Beaver Bank area or any residential subdivision. The proposal does not change the maximum height of single unit dwellings and has no impact on heights proposed for any future single unit dwelling as required in the R-1 (Single Unit Dwelling) Zone under the existing Land Use Bylaw or the proposed zone. The proposal will have no impact on these matters and thus has no impact on surrounding properties.

Maximum Lot Coverage (Massing):

Lot coverage is essentially the building footprint and is measured as a percentage of the site. This standard ensures the site has an appropriate physical built form density. Building coverage may vary from zone to zone. Along with height limits, it manages the bulk or size of buildings and therefore influences the character and appearance of an area.

35 percent is the lot coverage enabled under the R-1 Zone in the Land Use By-law. While the proposal does not change the lot coverage requirement, lot coverage directly relates to minimum lot size. The smaller the lot, the smaller the size of building that would be enabled. As the proposal is to reduce the



lot size to 4000 square feet, it is reasonable to ask what the impact would be. See the table below for a comparison of a 60000 square foot lot and a 4000 square foot lot:

	Proposed Zone	Existing Zone
Lot Size	4000 sq ft	6000 sq ft
35% lot coverage	1400 sq ft	2100 sq ft

Essentially the impact of the change in lot size is that the maximum buildable area on the smallest lot (4000 sq. ft./ 40 feet frontage) would force a smaller footprint. Typically, a two-storey building is built on the proposed lot size. The scale of house is consistent with what you would see built in the Beaver Bank area today.

Existing: Beaver bank has a range of lot sizes, and therefore a range of building sizes and coverage formats. The larger lots (Trinity Drive) tend to have lower coverages; however the building forms and coverages vary considerably throughout the community. See Appendix A for a variety of house examples, ranging from approximately 23 feet to 40 feet wide; some set back and buffered from the street and other homes, and others placed in close proximity.

Proposed: The proposal does not change the maximum lot coverage of single unit dwellings and has no impact on lot coverages for any future single unit dwelling as required in the R-1 (Single Unit Dwelling) Zone under the existing Land Use Bylaw or the proposed zone. While the proposal will reduce the maximum lot size, the footprint of any homes constructed will be within a range that you would typically see in the greater community. The proposal will have no impact on the surrounding area.

Minimum Lot Width and Lot Area:

Minimum lot width and area contribute to the character by limiting the density of residences along a given length of street. Narrower lots result in a relatively fine-grained built form. Though a larger minimum lot width does not preclude the construction of narrow homes, those homes would have larger than minimum side yards as a result, than the same home placed on a narrower lot.

Existing: The Beaver Bank area is comprised of diverse lot forms, which have emerged as a result of evolving lifestyles of residents and local regulations over a span of many decades. While there does not appear to be lots narrower than 40 feet wide, or smaller than 4000 square feet at present, there is no consistent size that characterizes the area. Immediate properties are characterized in the photos below.





Figure 12 - Splinter Court



Figure 13 - Daisy Drive





Figure 14 – Trinity Drive Homes

Proposed: The proposal is to reduce minimum lot width from 60 feet to 40 feet and reduce lot area from 6000 sq. ft. to 4000 sq. ft.

Where widely implemented, the intensity of development would likely feel greater with a consistent 40' lot fabric, despite physical built form density (size of homes) being less when compared to a similar street with 60' lots. The proposal does not seek to extend the proposed smaller lots outside of the subject lands and given the relationship with Trinity Drive (backing on) the form would only be substantially noticeable within the subject lands. Along Daisy Drive and adjacent to Splinter Court the transition is more subtle and would be considered a minor impact. Residents of the proposed subdivision would choose to live with this form of housing.

5.11 Compatibility of Land Use Form

This section provides a discussion on design compatibility and the discussion evolves around the issues of built form and building quality.

As far as existing built form, the history of development in Beaverbank is relevant to today's current built form.

History of Development in Beaver Bank

The Beaver Bank area is comprised of a mix of land uses within a serviced, semi-urban, and suburban form. Historically the area developed in a rural form along Beaver Bank Road. This type of development was characterized by large tracts of land and single unit dwellings as part of the homestead. Traditional farming and resource-based activities were the main economic drivers. Over time, these tracts of land were further subdivided into smaller parcels typically to provide housing to family members.

Beaver Bank and surrounding areas became attractive to others because of the ease of access to employment areas, the areas scenic value, its availability of land for development and the value or affordability of the land.

Up until the early 2000's, all development in the Beaver Bank area was through unserviced lots of various sizes on well and septic. In 2001/2002 services were extended to the Beaver Bank area in response to issues identified with older septic technology on smaller lots (typically 20-30,000 sq feet in area) used in the area. A service area was established where sewer and water services would be installed, and in some instances lands for future development were included. Beyond this area, a water only services area was established. New lots in the water only area reflected newer septic regulations which typically require a minimum area of 29,063 sq. ft. up to 96,878 sq. ft.

After the installation of sewer and water services, the expectation was that the Beaver Bank area would further develop. The availability of services brought with it the ability to develop lots in a serviced urban form where the zone so permitted. The serviced lot sizes permitted in Beaver Bank are identical to minimum lot sizes enabled in many other urban areas of the plan such as Halifax, Dartmouth, Bedford and Sackville (minimum 6000 sq. ft. and 60' frontage).

The continued build out of the newly serviced areas progressed in form typical to the urban serviced area with sewer and water. Existing development gradually saw infill of a smaller scale creating a mix of lot sizes and new communities were uniformly urban residential. This process has been gradual over the past 20 years.

There is no singular style of housing form that make up the surrounding Beaverbank area except that they are all generally single unit dwellings. It is noted that buildings in the surroundings neighbourhoods range in size and style based on the preferences of home buyers and the style in fashion when the lot was created or built upon. Lots in Beaverbank can be described as a patchwork of single unit dwellings styles, sizes and lot sizes.

The proposed subdivision and homes will be developed using best current practices of development. The proposed forms will be consistent within the development and reasonably comparable with homes found within the greater community. A smaller lot housing form will see narrower and possibly smaller footprint homes of high-quality materials and construction.

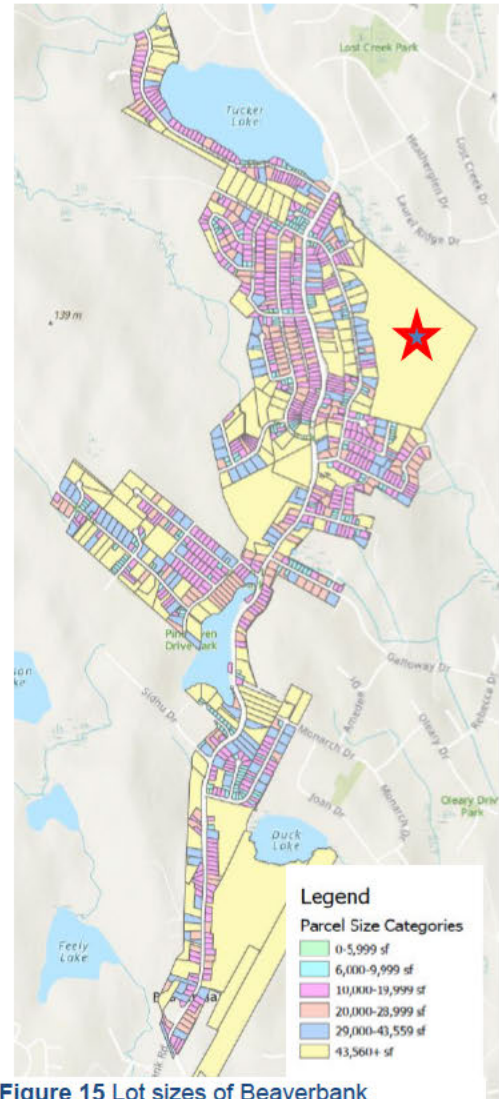


Figure 15 Lot sizes of Beaverbank
Source: zzap Architecture and Planning

5.12 Affordability / Attainability

One of the greatest impacts of the proposal is an increase in the affordability and attainability of the proposed subdivision lots and homes. A decrease in road frontage specifically is directly linked to a decrease in associated costs of a lot and the home which is built upon it.

Based on historical market sales data, 60' status quo lots, will result in a home that is between **\$550,000** and **\$650,000**. The following are recent sales for suburban serviced lots with 60-foot frontages:



514 Astral Drive \$559,000



593 Astral Drive \$679,000



572 Astral Drive \$649,000

Historically a home with reduced frontage (40 feet), such as is being proposed, could be significantly lower in price than a home with 60 feet of frontage. 40' lots would result in a home at approximately **\$350,000** and **\$400,000**.

Given the current real estate home and lot supply shortage, increased demand and dramatically increased average house price, the affordability impacts should not be discounted. It is anticipated that these homes would be \$200,000 to \$250,000 more affordable than homes with larger street frontages.



CARRIAGEWOOD
ESTATES

6.0

CONCLUSION



CARRIAGEWOOD
ESTATES

PLANNING & DESIGN RATIONALE
CARRIAGEWOOD ESTATES
BEAVERBANK

6.1 Conclusion

The proposed changes:

- are supportive of numerous policy directions articulated in the Provincial Statements of Interest relating to housing, the Regional Plan, and the Beaverbank, Hammonds Plains and Upper Sackville MPS;
- are compatible in massing, bulk and scale;
- are compatible in building form;
- supports the greater protection of natural features such as wetlands and watercourse;
- maintains minimum required building relationships;
- enables development capable of being serviced by existing sewer and water within existing capacities;
- are of a development density which is the same as existing development rights;
- creates a housing form which improves the affordability and attainability of single unit dwellings; and
- has limited impact on surrounding suburban and rural neighbourhoods.

The subject site is one of the last large parcels of undeveloped serviced residential land in Beaverbank. This proposal will largely complete the serviced residential community and will provide Beaverbank with a new community to support local business and services, transit and amenities.

The proposed Carriagewood Estates will be a valuable addition to the Beaverbank community. It creates a compatible community which will enhance the neighbourhood, causes no new adverse impacts, and will provide more affordable and attainable single unit housing.

Based on the above, this report concludes that the proposed development represents good planning and design and is supported by numerous policy directions. Further, the lot form supports housing affordability which is a significant concern in the Halifax real estate market. Accordingly, it is our opinion that the proposed amendments to the MPS and LUB draft are appropriate, desirable and should be approved.



CARRIAGEWOOD
ESTATES

PLANNING & DESIGN RATIONALE
CARRIAGEWOOD ESTATES
BEAVERBANK

APPENDIX A:

Sample MPS Amendment

A large, bold, yellow letter 'A' is positioned in the bottom right corner of the page. It is set against a dark blue rectangular background that extends from the right edge of the page.

Appendix A:
**Sample Amendment to the Municipal Planning Strategy for Beaverbank, Hammonds
Plains and Upper Sackville**

BE IT ENACTED by the Regional Council of the Halifax Regional Municipality that the Municipal Planning Strategy for Beaverbank, Hammonds Plains and Upper Sackville is hereby further amended as follows:

1. Within Section II, Residential Designation Sub-section, the text shown below shall be added immediately after policy P-41 and before the Glen Arbour Integrated Golf Course and Residential Community Sub-section:

Within the Residential Designation and within the Beaverbank area there is a parcel of land, east of Trinity Drive, where a small-lot single unit dwellings subdivision is appropriate to promote appropriate use of infrastructure, protection of adjacent wetlands and housing affordability. To limit the impact on the surrounding community, the development shall be limited to 270 lots to maintain the previously existing development yield and not increase the impact of development on the greater community.

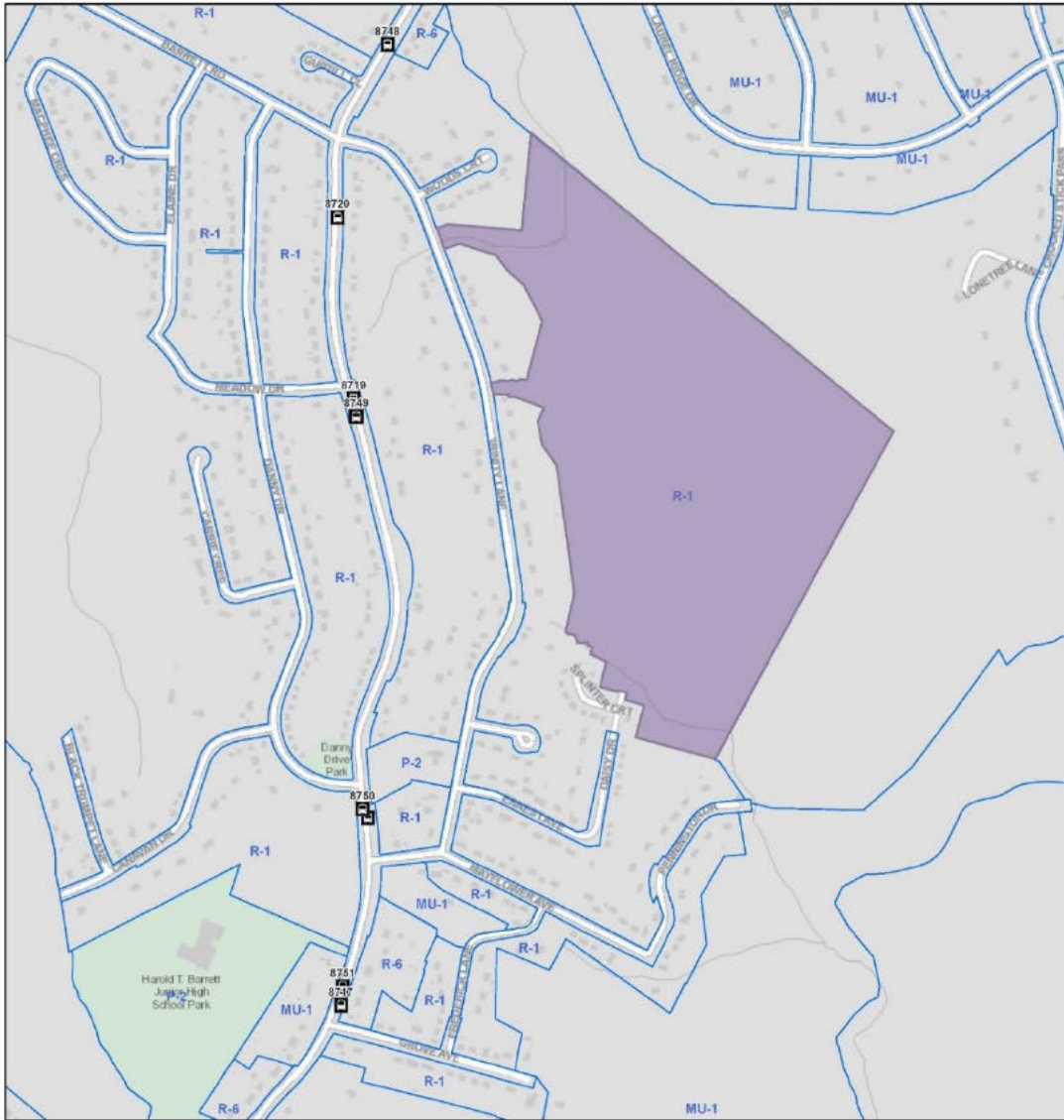
P-42 Within the Residential Designation, and within lands shown on Schedule Res-1, it shall be the intention of Council to establish a residential zone which permits small lot single unit dwellings, open space uses, offices and day care facilities operated by a resident of the dwelling, bed & breakfasts, as well as activities related to traditional arts and crafts and domestic arts, provided that controls are established on the scale of the business and that no outdoor storage or display are permitted and signs are regulated through provisions in order to ensure that the external appearance is compatible with the residential environment. The maximum number of permitted lots on the lands shall be 270.

2. Within Section II, Residential Designation Sub-section, Schedule Res-1 shall be added after Policy P-42, as shown on the attached Schedule A.

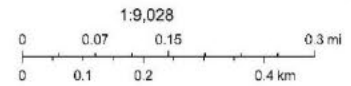
I, Iain MacLean, Municipal Clerk for the Halifax
Regional Municipality, hereby certify that the
above-noted amendment was passed at a
meeting of the Regional Council held on [DATE], 2022.

Iain MacLean
Municipal Clerk

Schedule A Schedule Res-1 - Small Lot Single Subdivision



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Halifax Regional Municipality

Halifax Regional Municipality |

APPENDIX B:

Sample LUB Amendment



B

Appendix B:
Sample Land Use By-law Amendment

BE IT ENACTED by the Regional Council of the Halifax Regional Municipality that the Land Use By-law for Beaverbank, Hammonds Plains and Upper Sackville is amended as follows:

1. Adding the Part 7B, R-1C (Single Unit Dwelling) Zone after Part 7A and before Part 8 as follows:

PART 7B: R-1C (SMALL LOT SINGLE UNIT DWELLING) ZONE

7B.1 R-1C USES PERMITTED

No development permit shall be issued in any R-1C (Small Lot Single Unit Dwelling) Zone except for the following:

Single unit dwellings
Day care facilities for not more than seven (7) children and in conjunction with permitted dwellings
Offices in conjunction with permitted dwellings
Bed & Breakfasts
Open space uses

7B.2 R-1C ZONE REQUIREMENTS

In any R-1C Zone, no development permit shall be issued except in conformity with the following:

Minimum Lot Area:	Sewer and water services	4,000 square feet
Minimum Frontage:	Sewer and water services	40 feet
Minimum Front or Flankage Yard		20 feet (6.1 m)
Minimum Side or Rear Yard		8 feet (2.4 m)
Maximum Lot Coverage		35 per cent
Maximum Height of Main Building		35 feet (10.7 m)

7B.3 R-1C ZONE REQUIREMENTS: OPEN SPACE USES

In any R-1C Zone, where open space uses are permitted, no development permit shall be issued except in conformity with the provisions of Part 22.

7B.4 OTHER REQUIREMENTS: OFFICE USES

Where offices are permitted in any R-1C Zone, the following shall apply:

- (a) Any office shall be wholly contained within the dwelling which is the principle residence of the operator of the office.
- (b) No individuals who are not residents in the dwelling shall be employed in the office.
- (c) No more than twenty-five (25) per cent of the gross floor area shall be devoted to any office, and in no case shall any office occupy more than three hundred (300) square feet (28 m).
- (d) No open storage or outdoor display shall be permitted.
- (e) Not more than one (1) business sign shall be permitted, and no such sign shall exceed two (2) square feet (0.2 m²) in area. The

height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling.

- (f) One off-street parking space, other than that required for the dwelling, shall be provided for every one hundred and fifty (150) square feet (14 m²) of floor area devoted to any office.

7B.5 OTHER REQUIREMENTS: DAY CARE FACILITIES

Where day care facilities are permitted in any R-1 Zone, the following shall apply:

- (a) With the exception of outdoor play space, any day care facility shall be wholly contained within the dwelling, which is the principle residence of the operator of the facility.
- (b) No open storage or outdoor display shall be permitted.
- (c) Not more than one (1) business sign shall be permitted, and no such sign shall exceed two (2) square feet (0.2 m²) in area. The height of the sign shall be restricted to eight (8) feet or less and not be attached to a dwelling.
- (d) One off-street parking space, other than that required for the dwelling, shall be provided.

7B.6 OTHER REQUIREMENTS: BED AND BREAKFASTS

Where a bed & breakfast is permitted in any R-1C Zone, the following shall apply:

- (a) The bed & breakfast shall be wholly contained within the dwelling which is the principle residence of the operator of the establishment;
- (b) Not more than three (3) rooms may be let;
- (c) No window display and not more than one (1) business sign shall be permitted and no such sign shall exceed two (2) square feet (0.2 m²) in area; and
- (d) One off-street parking space in addition to that required for the dwelling shall be provided for each room to be let.

7B.7 OTHER REQUIREMENTS: COMMERCIAL MOTOR VEHICLES

In any R-1C Zone, not more than one commercial vehicle shall be kept on any lot and no such commercial motor vehicle shall exceed a registered vehicle weight of five (5) tons nor be kept less than ten (10) feet from any front lot line.

7B.8 FRONTAGE ON A STREET

No development permit shall be issued in an R-1C Zone unless the lot or parcel intended to be used or upon which the building or structure is to be erected abuts and fronts upon a public street or highway.

7B.8 MAXIMUM DENSITY ON PID#00468694

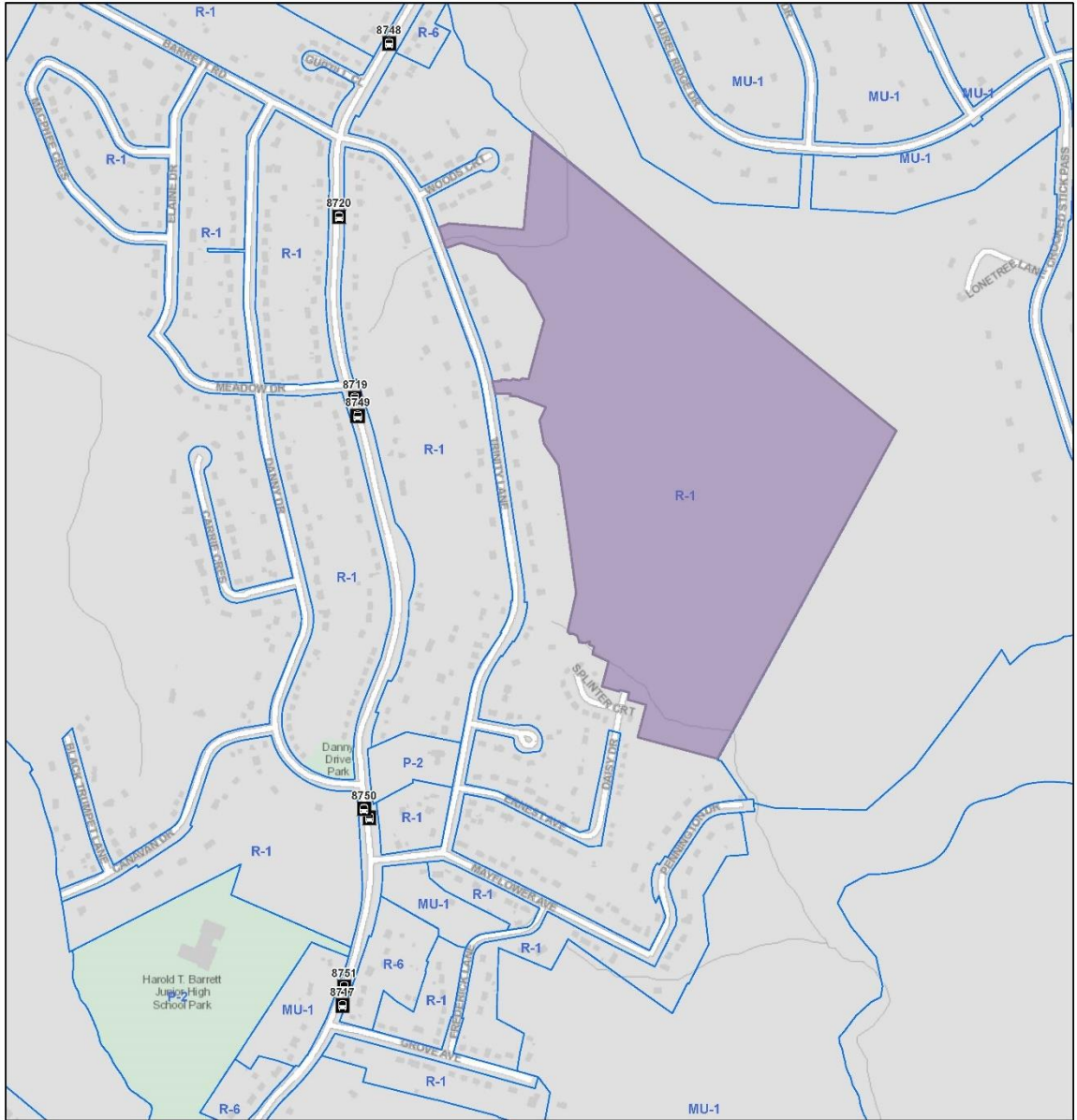
No development permit for greater than 270 lots shall be issued in an R-1C Zone and within the area identified on Schedule I.

2. The Zoning Map, shall be amended by rezoning specific lands in Beaverbank from R-1 (Single Unit Dwelling) Zone to R-1C (Small Lot Single Unit Dwelling) Zone, as shown on the attached Schedule A.

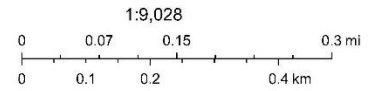
3. Schedule I – Lands of Pid # 00468694 shall be added after Schedule H: Wind Energy Zoning, as shown on the attached Schedule B.

I, Iain MacLean, Municipal Clerk for the Halifax Regional Municipality, hereby certify that the above-noted by-law was passed at a meeting of the Regional Council held on [DATE], 2022.

Schedule A - Lands to be rezoned from R-1 to R-1C



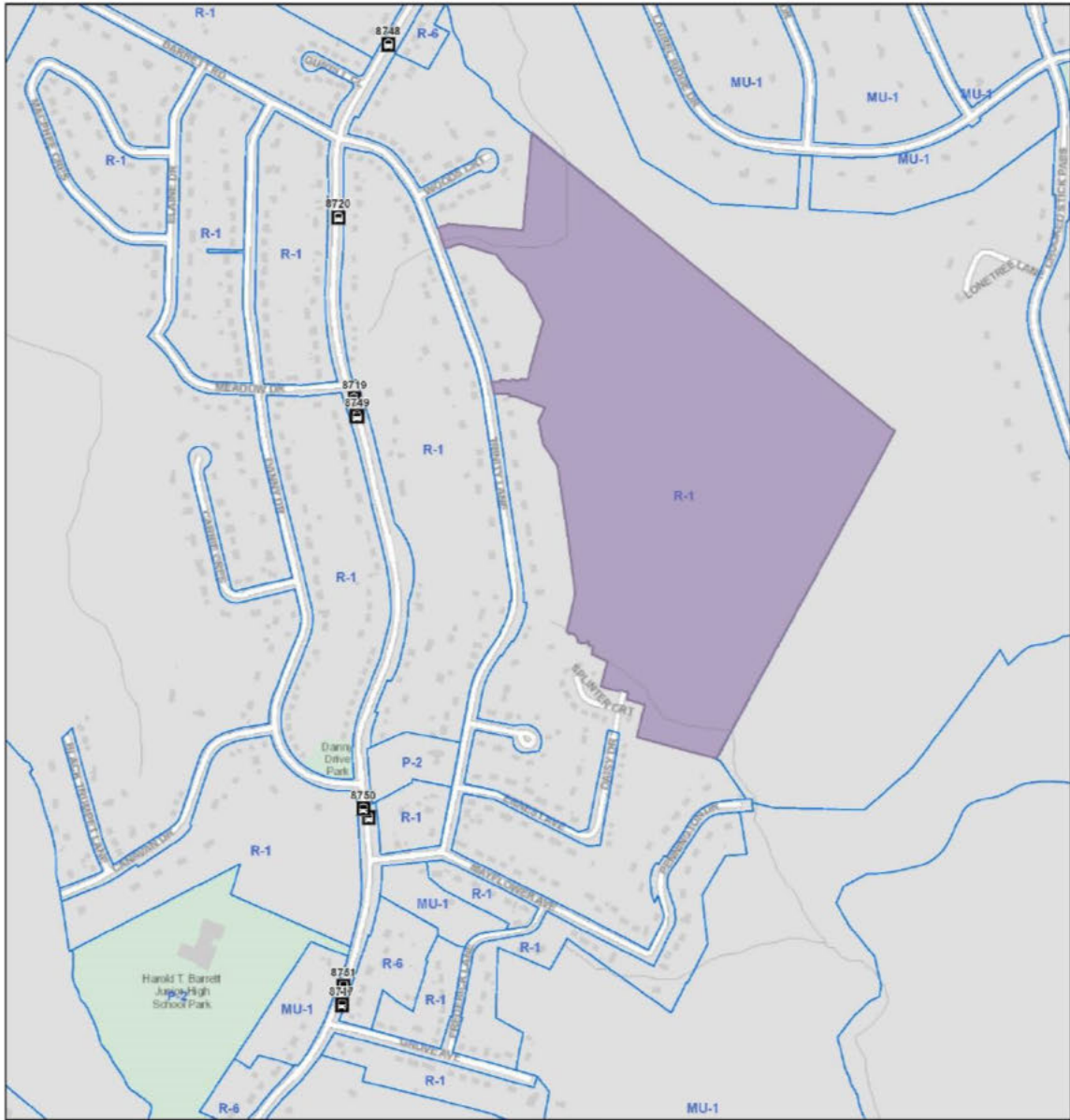
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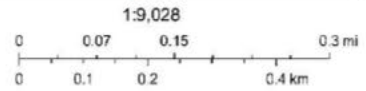
Halifax Regional Municipality

Halifax Regional Municipality |

Schedule B – Schedule I – Lands of Pid # 00468694



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Halifax Regional Municipality

Halifax Regional Municipality |

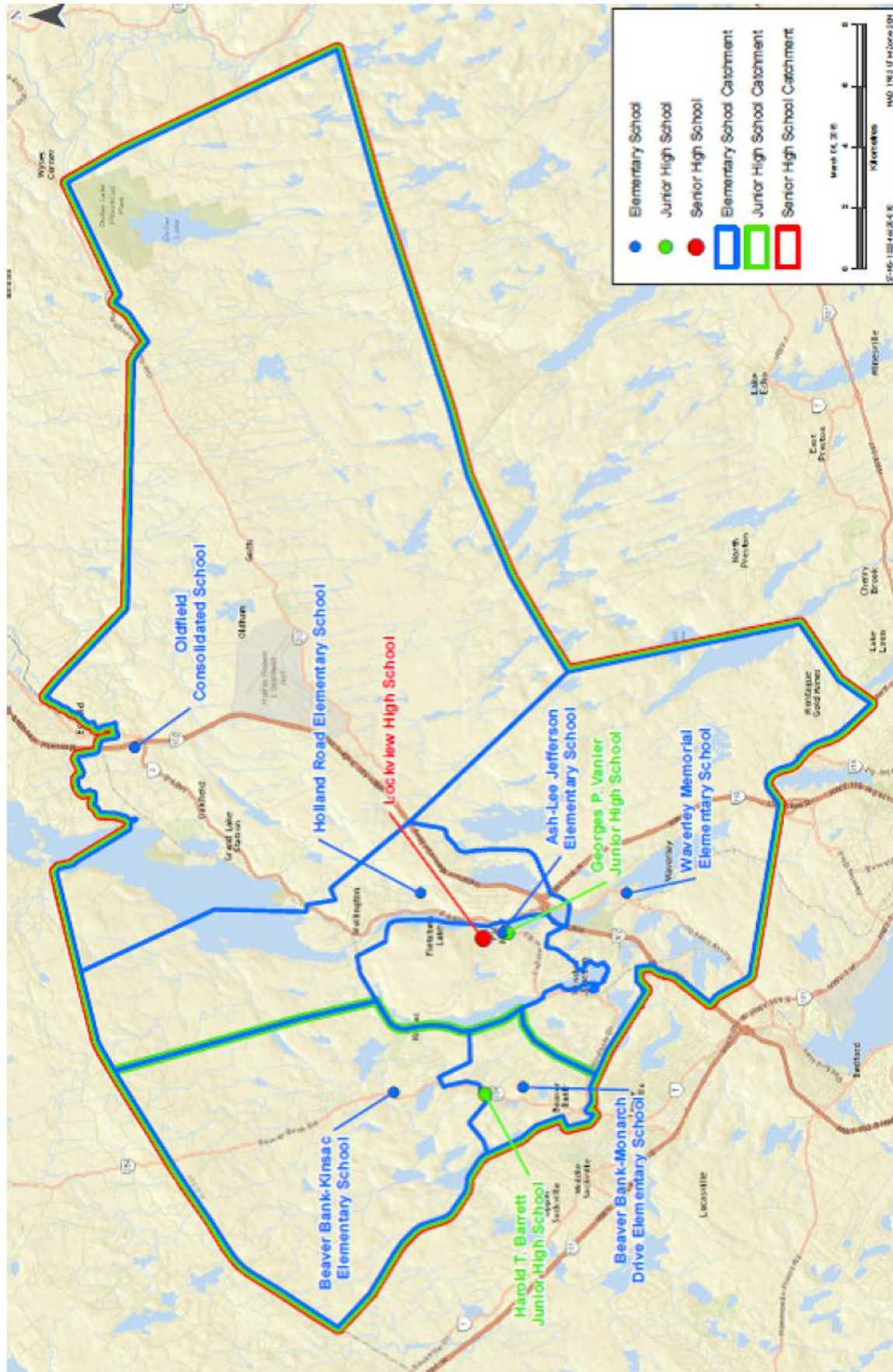
APPENDIX C:

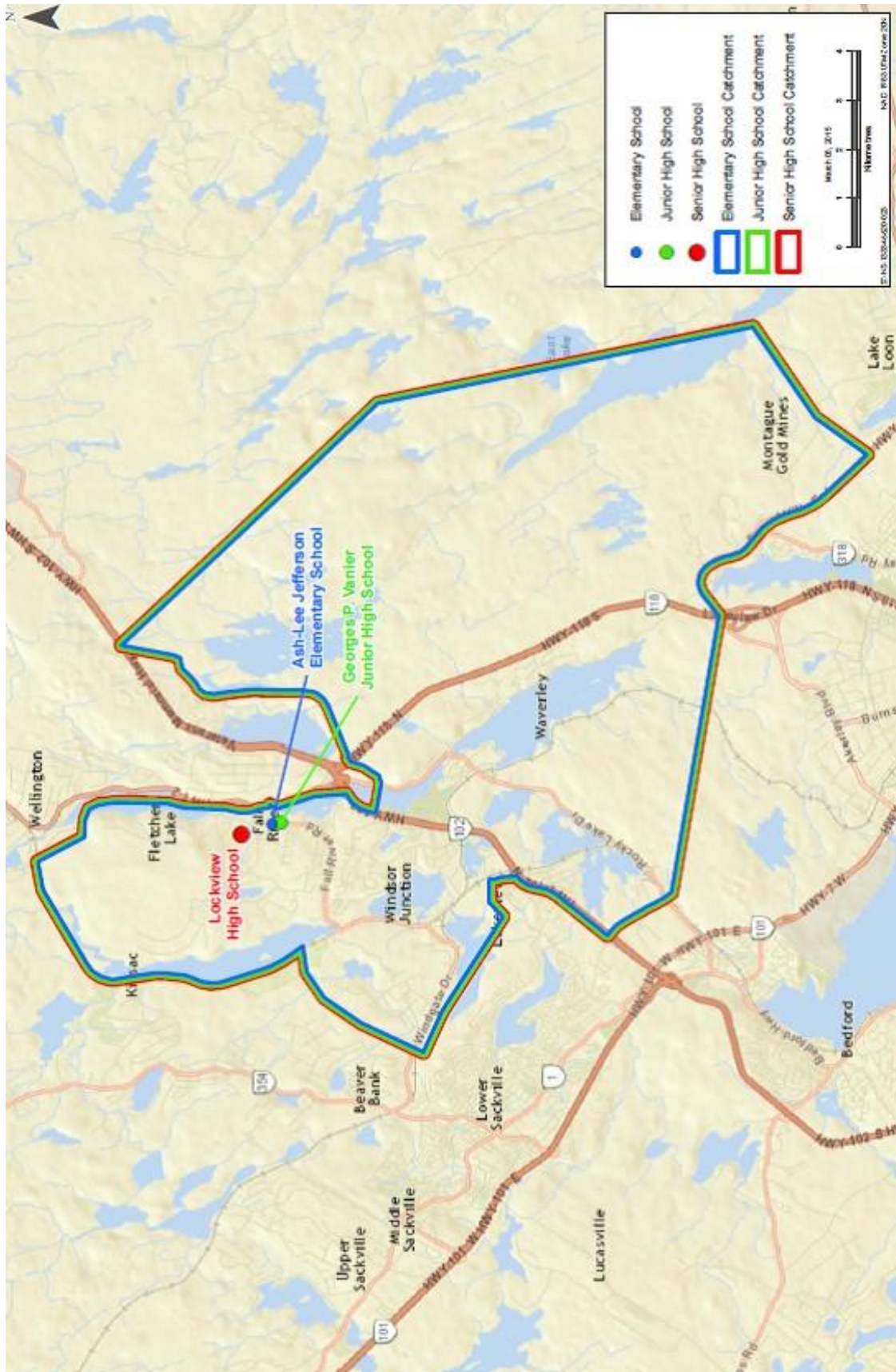
Excerpts from HRCE Long Range Outlook 2019



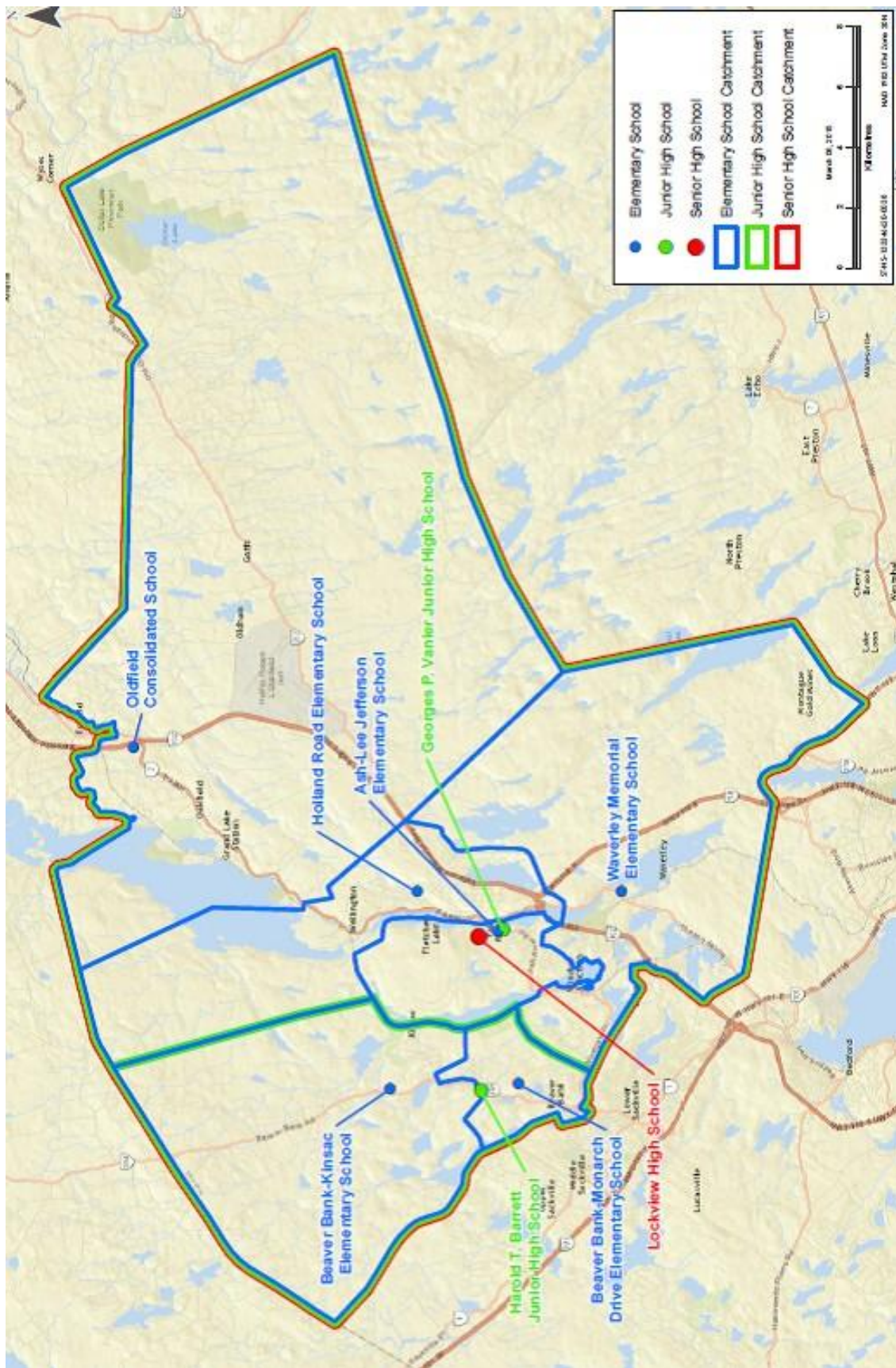
C

Lockview High School Family of Schools English Boundary Map





Lockview High School Family of Schools Early French Immersion Boundary Map



Lockview High School Family of Schools Late French Immersion Boundary Map

Lockview High	
148 Lockview Rd, Fall River, B2T 1J1	
Grade configuration:	9-12
Year of Construction/Renovation:	2000
Total Floor Area (ft2):	152,153
Number of storeys:	2
Number of portable classrooms:	0
Current school capacity:	1479
School utilization:	83%



Historic enrollment (past 10 years):

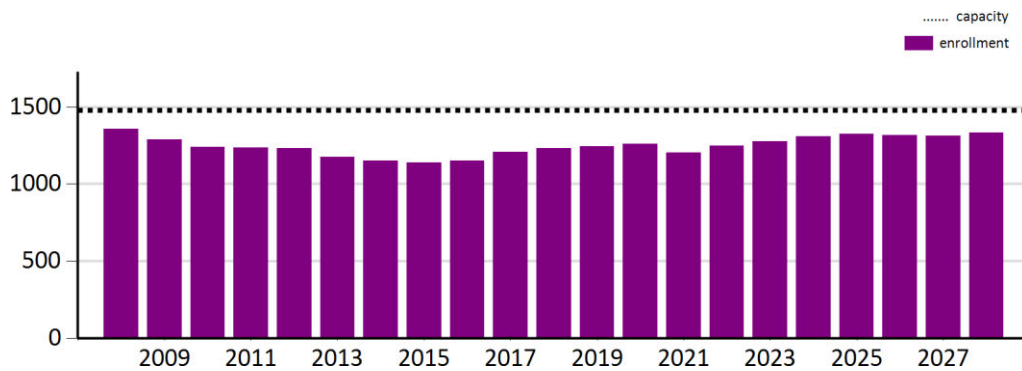
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Enrollment	1,356	1,289	1,241	1,237	1,232	1,176	1,151	1,140	1,153	1,207

Current enrollment (as of Sept. 30):

Year	2018
Enrollment	1,234

Enrollment Projection (next 10 years):

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Enrollment	1,244	1,261	1,205	1,247	1,278	1,309	1,324	1,318	1,315	1,332



Specific (specialized) programming offered at the school:

Program	Yes/No	Comment
Advanced Placement	yes	
International Baccalaureate	no	
French Immersion	yes	Early and Late French Immersion
Schools Plus or Early Years	no	
Co-op	yes	
Auto Body/ Auto Maintenance	no	
Options & Opportunities (O2)	yes	
Breakfast Program	no	
Excel	no	
Skilled Trades	no	
Other:	no	

Provincially approved Addition and Alteration Projects or other major capital upgrades, including dates completed (if applicable):

- N/A

Future considerations related to building condition:

A summary of building systems is provided in the table below. This summary is intended as a preliminary indication of the state of the physical building and is not intended as a comprehensive evaluation of the facility. A projection of the need for upgrades in the next 10 years is provided with each system.

Building System:	Required	Recommended	Not Required	More Data Required	Comments
Roof			X		
Exterior Walls		X			Mortar upgrades
Windows/Doors			X		
Driveway/Parking Lot			X		
Electrical			X		
Security Systems		X			Security alarm system upgrade
Plumbing			X		
Heating			X		
Ventilation			X		wood shop dust collection system completed 2015-16
Interior Finishes			X		
Elevator/Wheelchair Lift			X		

Information about reviews of the school previously conducted:

- N/A

Any other factors relevant to the school:

- Lockview High is a P3 school operated by Scotia Learning Centers.
- The school is approaching the end of the 20 year lease between EECD and Scotia Learning Centres Inc.
- The province has announced that this P3 school will be purchased at the end of its lease term.

Factor	Data	Comment
Auditorium	No	
Cafeteria	Yes	Cafetorium (with stage)
Community Space	No	
Daycare	No	
Department office e.g. Student Services/Apsea	No	
Other:	No	
Sports Field	Yes	Soccer field
Students bussed	81%	Based on the 2018-19 school year
Total annual "after hours" booked	934	Based on the 2017-18 school year

Harold T. Barrett Junior High	
862 Beaver Bank Rd, Beaver Bank, B4G 1A9	
Grade configuration:	7-8
Year of Construction/Renovation:	1984
Total Floor Area (ft2):	40,837
Number of storeys:	2
Number of portable classrooms:	0
Current school capacity:	270
School utilization:	64%



Historic enrollment (past 10 years):

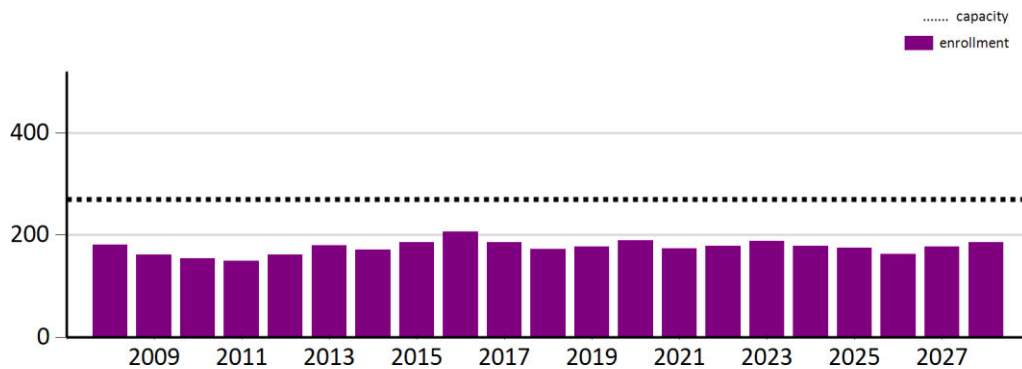
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Enrollment	181	161	154	149	162	180	171	186	207	186

Current enrollment (as of Sept. 30):

Year	2018
Enrollment	172

Enrollment Projection (next 10 years):

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Enrollment	177	189	174	178	188	179	175	163	177	186



Specific (specialized) programming offered at the school:

Program	Yes/No	Comment
Advanced Placement	no	
International Baccalaureate	no	
French Immersion	yes	Late French Immersion
Schools Plus or Early Years	no	
Co-op	no	
Auto Body/ Auto Maintenance	no	
Options & Opportunities (O2)	no	
Breakfast Program	yes	
Excel	no	
Skilled Trades	no	
Other:	no	

Provincially approved Addition and Alteration Projects or other major capital upgrades, including dates completed (if applicable):

- Energy upgrades were completed 2012-16.

Future considerations related to building condition:

A summary of building systems is provided in the table below. This summary is intended as a preliminary indication of the state of the physical building and is not intended as a comprehensive evaluation of the facility. A projection of the need for upgrades in the next 10 years is provided with each system.

Building System:	Required	Recommended	Not Required	More Data Required	Comments
Roof	X				Upgrade one section of roof
Exterior Walls			X		
Windows/Doors	X				Upgrade windows
Driveway/Parking Lot	X				Resurface asphalt
Electrical			X		
Security Systems			X		
Plumbing			X		
Heating			X		
Ventilation			X		
Interior Finishes			X		
Elevator/Wheelchair Lift			X		

Information about reviews of the school previously conducted:

- N/A

Any other factors relevant to the school:

Factor	Data	Comment
Auditorium	No	
Cafeteria	yes	
Community Space	No	
Daycare	No	
Department office e.g. Student Services/Apsea	No	
Other:	No	
Sports Field	Yes	Soccer field and basketball court
Students bussed	55%	Based on the 2018-19 school year
Total annual "after hours" booked	639	Based on the 2017-18 school year

Beaver Bank-Monarch Drive Elementary	
38 Monarch Dr, Beaver Bank, B4E 3A5	
Grade configuration:	P-6
Year of Construction/Renovation:	1988
Total Floor Area (ft2):	33,700
Number of storeys:	2
Number of portable classrooms:	1
Current school capacity:	337
School utilization:	96%



Historic enrollment (past 10 years):

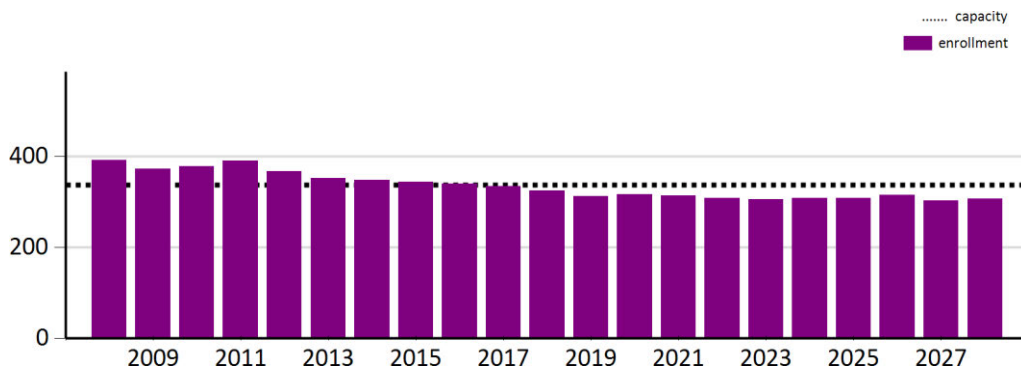
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Enrollment	392	373	378	391	367	353	349	344	340	335

Current enrollment (as of Sept. 30):

Year	2018
Enrollment	325

Enrollment Projection (next 10 years):

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Enrollment	313	317	314	309	306	309	308	316	303	307



Program	Yes/No	Comment
Advanced Placement	no	
International Baccalaureate	no	
French Immersion	no	
Schools Plus or Early Years	no	
Co-op	no	
Auto Body/ Auto Maintenance	no	
Options & Opportunities (O2)	no	
Breakfast Program	yes	
Excel	yes	
Skilled Trades	no	
Other:	no	

Provincially approved Addition and Alteration Projects or other major capital upgrades, including dates completed (if applicable):

- Upgrades to building automation system were completed 2015-16

Future considerations related to building condition:

A summary of building systems is provided in the table below. This summary is intended as a preliminary indication of the state of the physical building and is not intended as a comprehensive evaluation of the facility. A projection of the need for upgrades in the next 10 years is provided with each system.

Building System:	Required	Recommended	Not Required	More Data Required	Comments
Roof		X			Roof section replacement
Exterior Walls			X		
Windows/Doors			X		
Driveway/Parking Lot		X			Resurface asphalt
Electrical			X		
Security Systems			X		
Plumbing			X		
Heating			X		
Ventilation			X		
Interior Finishes			X		
Elevator/Wheelchair Lift			X		

Information about reviews of the school previously conducted:

N/A

Any other factors relevant to the school:

Factor	Data	Comment
Auditorium	No	
Cafeteria	No	
Community Space	No	
Daycare	No	
Department office e.g. Student Services/Apsea	No	
Other:	No	
Sports Field	Yes	Soccer field
Students bussed	51%	Based on the 2018-19 school year
Total annual "after hours" booked	614	Based on the 2017-18 school year

APPENDIX D:

TIS Addendum



D

February 19, 2021

Ms. Stephanie Mah, MES Planning, MCIP, LPP
 Planner, Urban Designer
 Clayton Developments

[via email: smah@claytondev.com]

RE: Review of Traffic Impacts from Land Use By-Law Modifications for Zone R-1 and Revision Carriagewood Estates Development Layout - Daisy Drive, Beaver Bank, Nova Scotia

Dear Ms. Mah:

Plans to modify the land use by-law for R-1 zoned lots within the Beaver Bank, Hammonds Plains and Upper Sackville plan area are being reviewed. This consists of adjusting the minimum lot area from 6,000 square feet and a frontage of 60ft to a minimum size of 4,000 square feet with a frontage of 40ft, providing a potential opportunity for the R-1 zoned lots to be subdivided and increase the density in the area.

WSP reviewed the market analysis report completed by Turner Drake and Partners who looked at the potential impacts to the modified land use by-law for R-1 zoned lots. This included the review of surrounding properties and potential for additional subdivision and increased number of units in the area. This could occur where an existing 80ft lot is divided into two 40ft lots as well as two 60ft lots being subdivided into three 40ft lots. Turner Drake and Partners concluded that a large commercial undertaking for developments is not expected from lowering the R-1 Zone lots to a 40ft frontage.

Clayton Developments has revised the concept plan for Carriagewood Estates to include both 60ft frontage lots and 40ft frontage lots for single family homes as shown in Figure 1.



Figure 1 - Revised Concept Plan for Carriagewood Estates



**Traffic Impacts from Land Use By-Law Modifications for Zone R-1
Carriagewood Estates Development - Daisy Drive, Beaver Bank, Nova Scotia**

The proposed concept change will adjust the overall layout of the site however site access points will remain the same as well as the number of units within the new development. A Traffic Impact Study was completed for the development in 2014. The area development has also been reviewed in 2021 with an Addendum Traffic Impact Study completed to consider an update to the site plan and to review changes to the transportation network that may have changed since 2014. A copy of this Addendum is attached.

CONCLUSIONS:

- 1 - Since the changes to the lot frontage has not changed the number of units planned in the Carriagewood Estates Development, the conclusions reached in the Traffic Impact Study and Addendum remain valid.
- 2 - Since the expected uptake for subdivision of existing land parcels is expected to be low and occur over a long duration with potential for few units per year, traffic generated by these additional units is included as part of the ongoing background volume growth. Background volume growth has been considered in the Carriagewood Estates Traffic Impact Study and Addendum.

If you have any questions or comments, please contact me by email at greg.obrien@wsp.com or by telephone at 902-444-8347.

Sincere



Greg O'Brien, P.Eng.
Atlantic Practice Manager, Traffic Engineering and Transportation Planning
WSP Canada Inc.



Attachment –Traffic Impact Study - Addendum, Carriagewood Estates Development, February 2021

February 19, 2021

Mr. Scott MacCallum, P.Eng., MBA
Director of Operations
Clayton Developments

[via email: smacallum@claytondev.com]

RE: Traffic Impact Study – Addendum
Carriagewood Estates Development - Daisy Drive, Beaver Bank, Nova Scotia

Dear Mr. MacCallum:

In October 2014, WSP completed a Traffic Impact Study for the proposed Carriagewood Estates development in Beaver Bank, NS. The Traffic Impact Study reviewed the following concepts for the proposed site development: site access, estimate of generated trips, intersection level of service analysis, intersection signal warrant analysis and the warrants for left and right-turn lanes at the intersections of Beaver Bank Road and Trinity Lane, as well as Beaver Bank Road and Mayflower Avenue.

In 2014, it was determined that a right-turn lane on the northbound approach to Mayflower Avenue was warranted based on projected PM peak hour volumes for 2024. It was recommended to continue to review the need for a right-turn lane periodically and that consideration be given to adding a paved surface to the existing gravel section of Trinity Lane.

Since the previous Traffic Impact Study was completed in 2014, paving on Trinity Lane has been completed, the concept plan for the proposed site development has been modified, as shown in Figure 1, and Phase 1B has completed construction. This addendum is a follow up to the 2014 Traffic Impact Study and will review current and projected traffic volumes based on the planned modifications for Carriagewood Estates.

EXISTING CONDITIONS

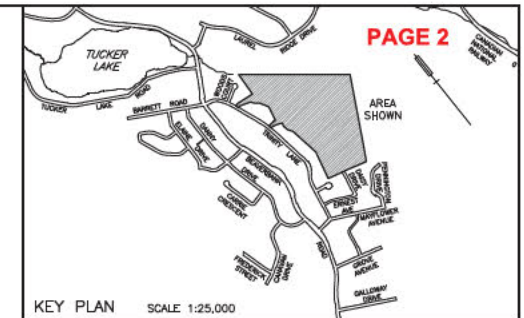
SITE DESCRIPTION AND ACCESS POINTS

The latest concept layout is shown in Figure 1. Although it displays an alternate road network within the proposed development area compared to the previous 2014 concept design, the site access locations and overall number of units remain the same. Similarly, to the previous concept design in 2014, the 2021 concept design will provide access to Carriagewood Estates will be from an extension on Daisy Drive and a proposed connection to Trinity Lane as shown in Figure 1. Access to Beaver Bank Road will remain being from the Mayflower and Beaver Bank Intersection as well as the Trinity Lane and Beaver Bank intersection.

The proposed development includes a total of 270 single family homes for Carriagewood Estates with 14 units completed in Phase 1B on Splinter Court, shown in Figure 2. This leaves a total of 256 homes remaining to be built.



Figure 2 - Phase 1B: Splinter Court



- LEGEND
- PERIMETER OF LANDS SURVEYED
 - HCLRO HALIFAX COUNTY LAND REGISTRATION OFFICE
 - PID PARCEL IDENTIFICATION NUMBER
 - SQ.M SQUARE METERS
 - WETLAND: FIELD DELINEATED BY ENGLOBE IN 2020
 - WATERCOURSE - WETLAND BUFFER
 - TRAIL

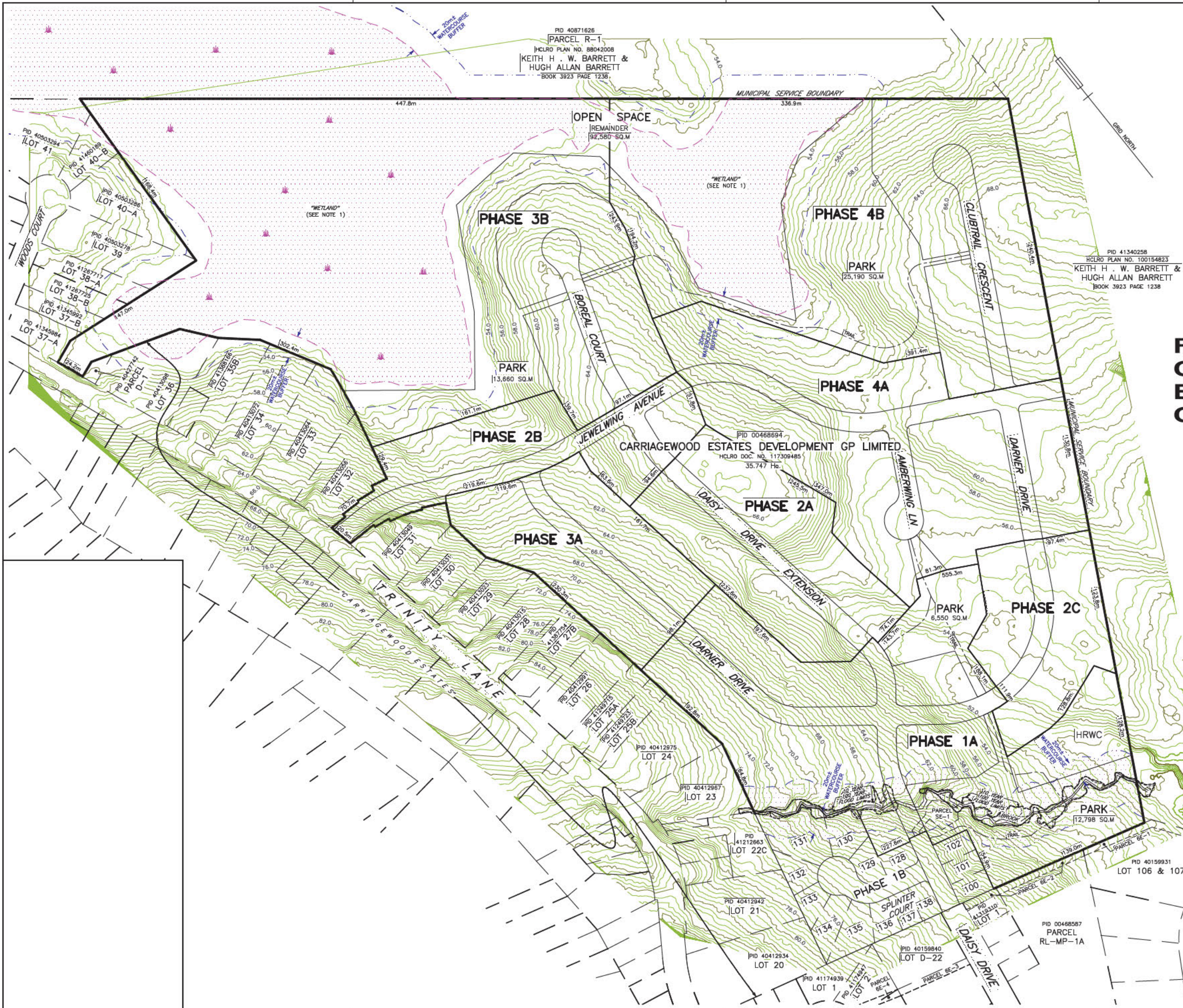


FIGURE 1 - CARRIAGEWOOD ESTATES CONCEPT PLAN

PARK DEDICATION TABLE:

TOTAL AREA OF PID 00468587 =	357,470 SQ.M
OPEN SPACE REMAINDER AREA =	92,580 SQ.M
TOTAL ROAD & WALKWAY AREA =	38,400 SQ.M
TOTAL AREA OF 256 NEW LOTS =	226,490 SQ.M
TOTAL PARK DEDICATION =	58,190 SQ.M (26%)



CONCEPT PLAN - 256 LOTS
CARRIAGEWOOD ESTATES
 LANDS REGISTERED TO
CARRIAGEWOOD ESTATES DEVELOPMENTS GP LIMITED
 DAISY DRIVE & TRINITY LANE
 BEAVER BANK, HALIFAX COUNTY, NOVA SCOTIA

SDMM
 Servant, Dunbrack, McKenzie & MacDonald Ltd.
 NOVA SCOTIA LAND SURVEYORS & CONSULTING ENGINEERS
 36 OLAND CRESCENT PHONE: (902) 455-1537
 BAYERS LAKE BUSINESS PARK FAX: (902) 455-8479
 HALIFAX, NS B3S 1C6 WEB: www.sdmm.ca

DATE: JANUARY 18, 2021
 SCALE 1 : 1500 (METRIC)
 FILE No. 1-14-5 (35622)
 PLAN No. 14-1906-0



DESCRIPTION OF STREETS AND INTERSECTIONS

Streets and accesses remain the same as described in the 2014 Traffic Impact Study with the exception of Trinity Lane and Splinter Court.

Trinity Lane is a 2-lane residential street that runs North-South approximately 1.3km between Mayflower Avenue and Beaver Bank Road. Though not posted, it has an assumed speed limit of 50km/h. This road has been paved since the 2014 Traffic Impact Study completed for this area as shown in Photo 1.



Photo 1 - Trinity Lane at Mayflower Avenue

Splinter Court is a new street that was developed as part as Phase 1B, shown in Photo 2.



Photo 2 - Splinter Court from Daisy Drive

TRAFFIC VOLUME DATA

WSP collected turning movement counts at the intersection of Beaver Bank Road and Mayflower Avenue in February of 2021. Counts are summarized in Table A-1, Appendix A, with peak hours indicated by shaded areas. Trips generated by the existing 14 units on Splinter Court have been captured on the turning movement counts collected during February 2021.



The turning movements observed during the morning and evening peak periods at Beaver Bank Road and Mayflower Avenue are shown in Figure A-1, boxes A and B.

The projected background volumes were developed for the 2031 horizon year using a growth factor of 1% per year. A design hourly volume (DHV) factor of 5% was applied to the projected volumes 2031 to account for a decrease in travel due to the COVID-19 pandemic. Projected 2031 background volumes without site development are shown in Figure A-1, boxes C and D.

TRIP GENERATION

When using the published trip generation rates in *Trip Generation Manual, 10th Edition* (Institute of Transportation Engineers, Washington, 2017) the transportation engineer’s objective should be to provide a realistic estimate of the number of trips that will be generated. Generated trips for Single Family Homes (Land Use 210) were estimated for the AM and PM peak hours of traffic by the number of units. Trip generation estimates were prepared using *Trip Generation Manual, 10th Edition* (Institute of Transportation Engineers, Washington, 2017) for the expected build-out of Carriagewood Estates.

The Traffic Impact Study Completed in 2014 included 270 Units. While the overall development continues to include 270 units, 14 have already been constructed as discussed. Trip Generation for the remaining 256 units is included in Table 1.

It was estimated that the additional 256 single family homes for Carriagewood Estates development will generate:

- 178 two-way trips (45 entering and 133 exiting) during the AM peak hour; and,
- 238 two-way trips (150 entering and 88 exiting) during the PM peak hour.

Table 1 - Trip Generation Estimates for Proposed Residential Development

Land Use ¹	Units ²	Trip Generation Rates ³				Trips Generated ⁴			
		AM Peak		PM Peak		AM Peak		PM Peak	
		In	Out	In	Out	In	Out	In	Out
CARRIAGEWOOD DEVELOPMENT									
Single-Family Detached Housing (Land Use 210)	256 Units	Equations from Pages 3 and 4 (Residential - Land Uses 200 - 299)				47	140	158	93
		5% Reduction in Trip Estimate for Non-Auto Modes ⁵				2	7	8	5
Total Primary Trips Generated by the Proposed Site					45	133	150	88	
Notes: 1. Land Use Code 210 is from Trip Generation, 10th Edition, (Institute of Transportation Engineers, Washington, 2017). 2. 'Number of Residential Units' for Single-Family Detached Housing. 3. Trip generation rates are 'vehicles per hour unit'. 4. Trips generated are 'vehicles per hour' for AM and PM peak hours. 5. A 5% reduction for non-auto trips generated has been used for all land uses to account for transit, cycling and walking trips.									

TRIP DISTRIBUTION & ASSIGNMENT

Trips generated by the residential units for the proposed development have been distributed and assigned to the local street network based on the previous 2014 Traffic Impact Study which was reviewed and considered valid for 2021 conditions. The external trips generated by the proposed development have been distributed in the following proportions based on the review of the local street network and development surrounding the site, as well as local knowledge of the area:

- 10% - North on Beaver Bank Road
- 90% - South on Beaver Bank Road

Trips assigned to Beaver Bank Road from Mayflower Avenue are shown diagrammatically in Appendix A, Figure A-2, boxes A and B. Project 2031 volumes with site development are included in Figure A-2, boxes C and D.



TURNING LANE WARRANT ANALYSIS

LEFT TURN LANE WARRANT ANALYSIS

Analysis of left turn lane warrants were previously completed in 2014 for southbound left turns from Beaver Bank Road into Mayflower Avenue and Trinity Lane for projected 2024 volumes both without and with the addition of site generated trips. As stated in the previous Traffic Impact Study, the analysis indicated that left turn lanes are not expected to be warranted for all scenarios. Due to the minimal change in projected volumes and very low left-turning volumes from Beaver Bank Road, the previous conclusion remains valid and left-turn lanes are not considered to be warranted.

RIGHT TURN LANE WARRANT ANALYSIS

Operational problems may result at an intersection where a ‘high’ number of vehicles slow to make a right turn into a site. The *Ohio Department of Transportation State Highway Access Management Manual* contains nomographs for evaluating right turn lane warrants on two lane roads. The analysis is based on right turning and advancing volumes.

As completed in the previous Traffic Impact Study for the proposed development, a right turn lane warrant analysis was completed based on the newly projected 2031 volumes. The right turn lane warrant evaluation included in Figure A-3, Appendix A, indicates that a right turn lane is warranted on the northbound approach to Mayflower Avenue during the PM peak hour based on projected 2031 volumes both without and with added site generated trips. It is also noted that a right turn lane is warranted based on 2021 PM peak hour volumes and was previously warranted with 2014 PM peak hour volumes.

INTERSECTION PERFORMANCE ANALYSIS

An intersection performance analysis was completed for the previous study in 2014 to determine the performance level of an intersection. Level of service (LOS) is defined in terms of delay which is a measure of driver discomfort and frustration, fuel consumption, and increased travel time.

Due to the minimal change in site generated trips and projected volumes, the intersection performance analysis is still considered valid and can be referenced in the 2014 Traffic Impact Study. From the previous findings in 2014, there is a reserved intersection capacity and is expected to experience minimal delay allowing satisfactory LOS for projected 2024 volumes. While additional background growth will increase volumes for 2031, the original conclusions remain valid due to the reserved capacity of the intersection.

SUMMARY

1. A Traffic Impact Study (TIS) was completed in 2014 for a residential subdivision consisting of 270 detached single family homes in Beaver Bank, NS. Phase 1B, Splinter Court, has since been complete and includes a total of 14 units. It is anticipated that the remaining 256 units will be complete by 2031.
2. Although the layout of the proposed development has been altered, the two original site access points will remain the same. These include: (i) an extension of Daisy Drive and (ii) a connection to Trinity Lane. Access to Beaver Bank Road will be from Mayflower Avenue (at the south of the development) and Trinity Lane (north of the development).
3. Trinity Lane has been paved since the 2014 Traffic Impact Study has been completed.
4. Since traffic volumes from the previous Traffic Impact Study were completed many years ago, new counts for the Mayflower Intersection have been collected and found to be consistent with volume projections within the area.
5. The remaining portion of the development will include 256 single family residential units. Trip generation estimates, estimated using rates published in *Trip Generation Manual, 10th Edition* (Institute of Transportation Engineers, Washington, 2017), indicate that the proposed development is expected to generate:
 - 178 two-way trips (45 entering and 133 exiting) during the AM peak hour; and,
 - 238 two-way trips (150 entering and 88 exiting) during the PM peak hour.

6. External trips generated by the development have been assigned based on review of the local street network and development surrounding the site as well as local knowledge of the area. Trips were distributed as follows:
 - 10% to the North on Beaver Bank Road
 - 20% to the South on Beaver Bank Road
7. Analysis of left turn lane warrants were previously completed in the 2014 Traffic Impact Study for southbound left turns from Beaver Bank Road into Mayflower Avenue for projected 2031 volumes, both without and with the addition of site generated trips. The analysis indicated that left turn lanes are not expected to be warranted for all scenarios.
8. Right turn lane warrants were completed for northbound right turns from Beaver Bank Road into Mayflower Avenue for projected 2031 volumes both without and with the addition of site generated trips. Similar to the right turn warrant analysis completed in 2014, the warrant evaluation has indicated that a right turn lane is warranted on the northbound approach to Mayflower Avenue during the PM peak hour based on projected 2031 volumes both without and with added site generated trips. It was also noted that a right turn lane is warranted based on 2021 PM peak hour traffic volumes.
9. Intersection performance analysis was previously completed for Beaver Bank Road intersections at Mayflower Avenue in the 2014 Traffic Impact Study. Results have indicated that intersection performance is expected to be satisfactory based on 2024 AM and PM peak hour volumes both without and with site development. The intersection performance for the projected 2031 AM and PM peak hour volumes is also expected to be satisfactory both without and with site development.

CONCLUSION AND RECOMMENDATIONS

With the recent development of Phase 1B and growth of the surrounding area, traffic volumes remain consistent with predicted volumes and conclusions and recommendations of the Traffic Impact Study remain valid. Trinity Lane has been paved since the recommendations were made.

Recommendation: *The need for a right turn lane on the northbound approach to Mayflower Avenue (warranted based on projected 2024 [and 2031] PM peak hour volumes without and with development) should be reviewed periodically.*

Conclusion: Site generated trips are not expected to have a significant impact to traffic performance in the Study Area.

If you have any questions or comments, please contact me by email at greg.obrien@wsp.com or by telephone at 902-444-8347.

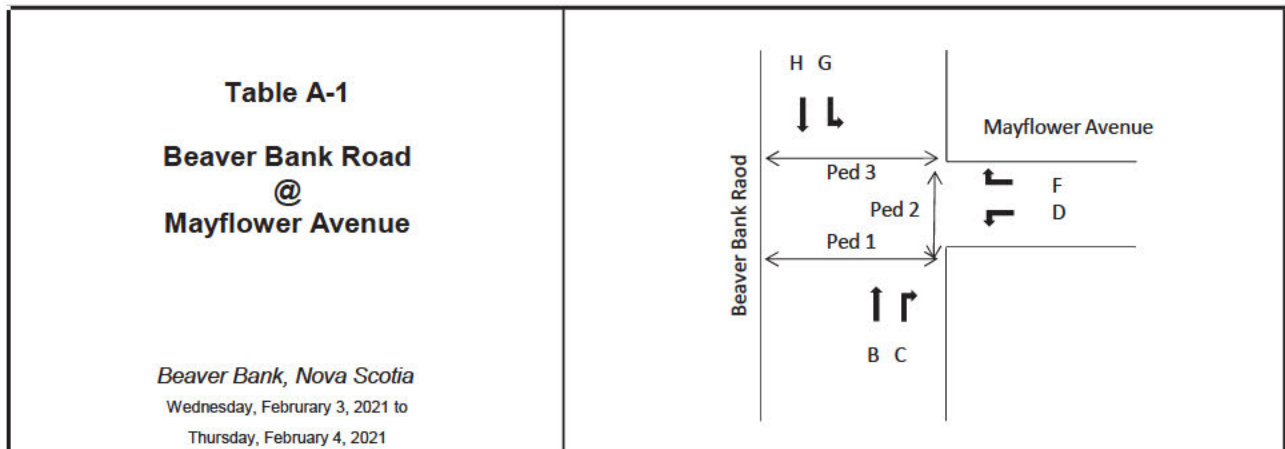
Sincerely,

Greg O'Brien, P.Eng.
Atlantic Practice Manager, Traffic Engineering and Transportation Planning
WSP Canada Inc.





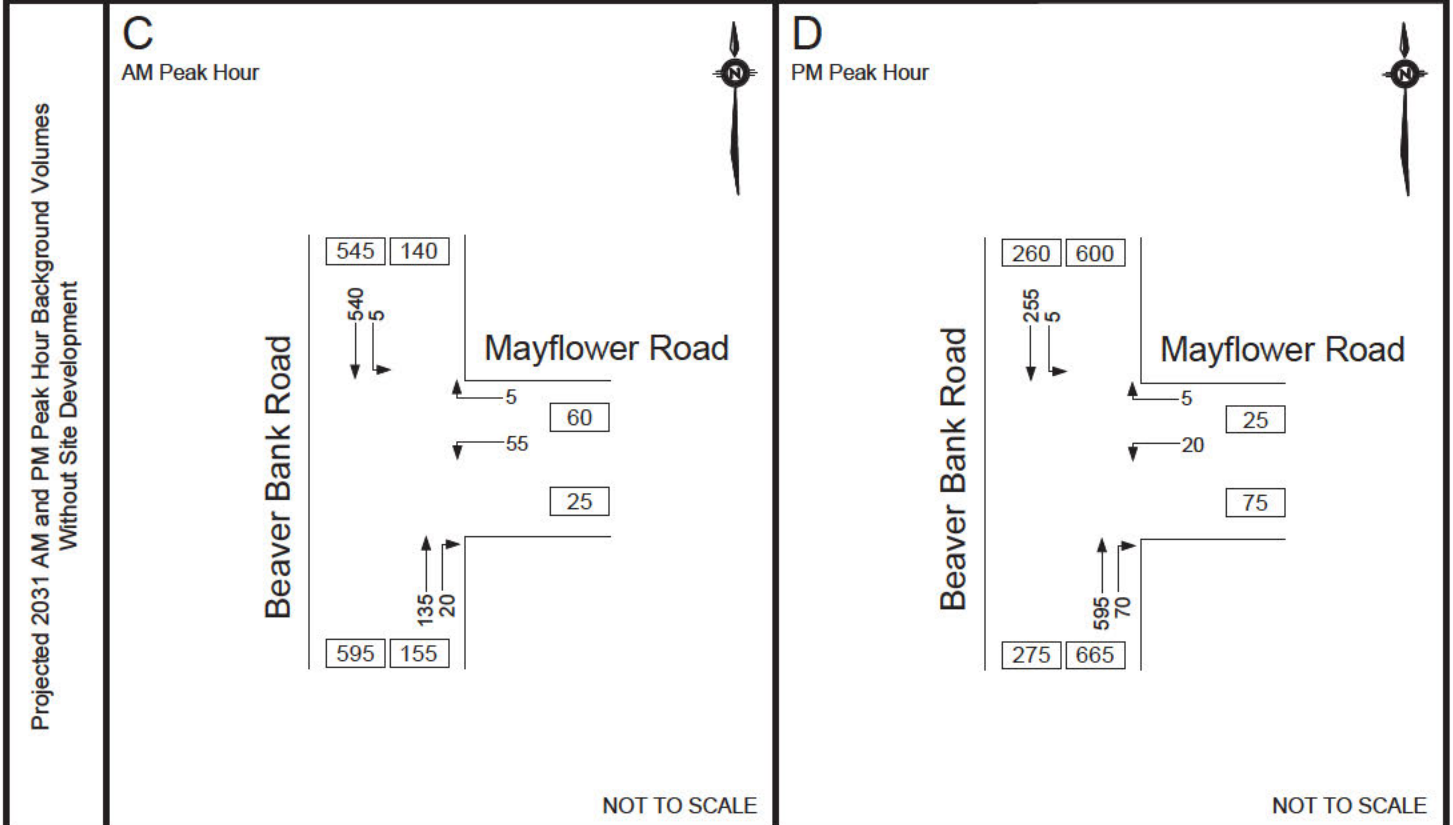
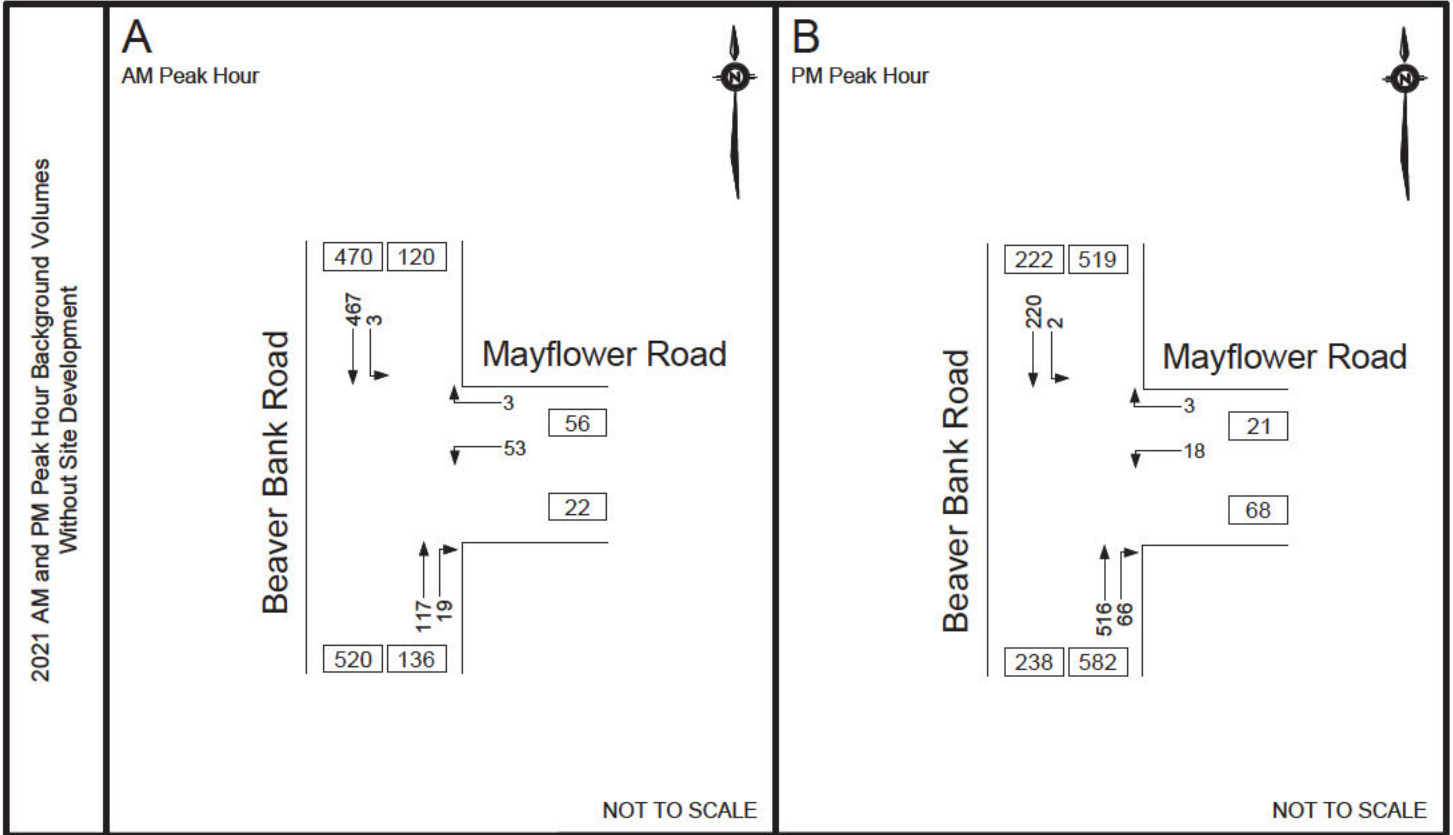
**APPENDIX A – TRAFFIC VOLUME DATA AND
WARRANTS**

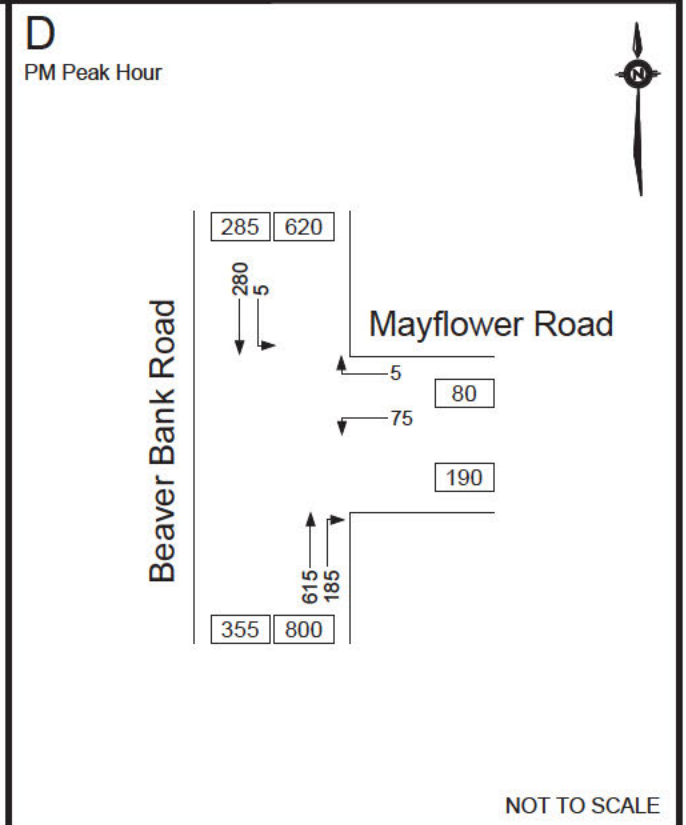
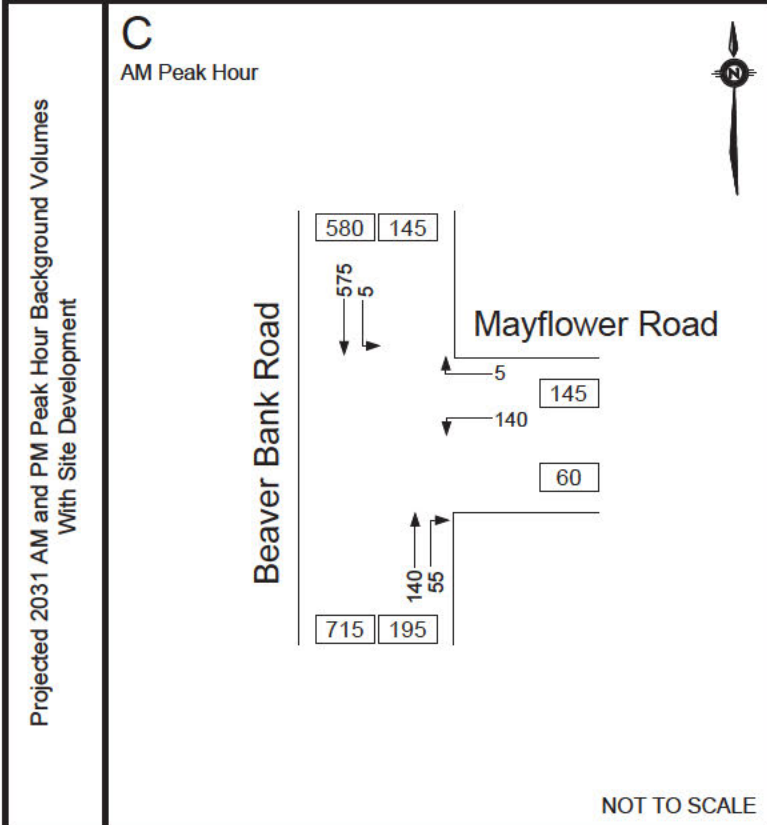
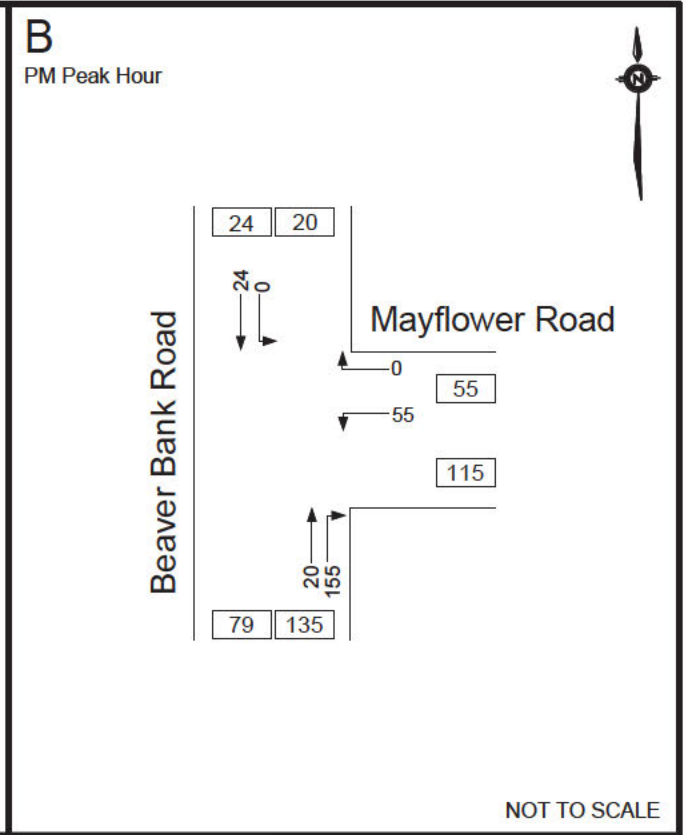
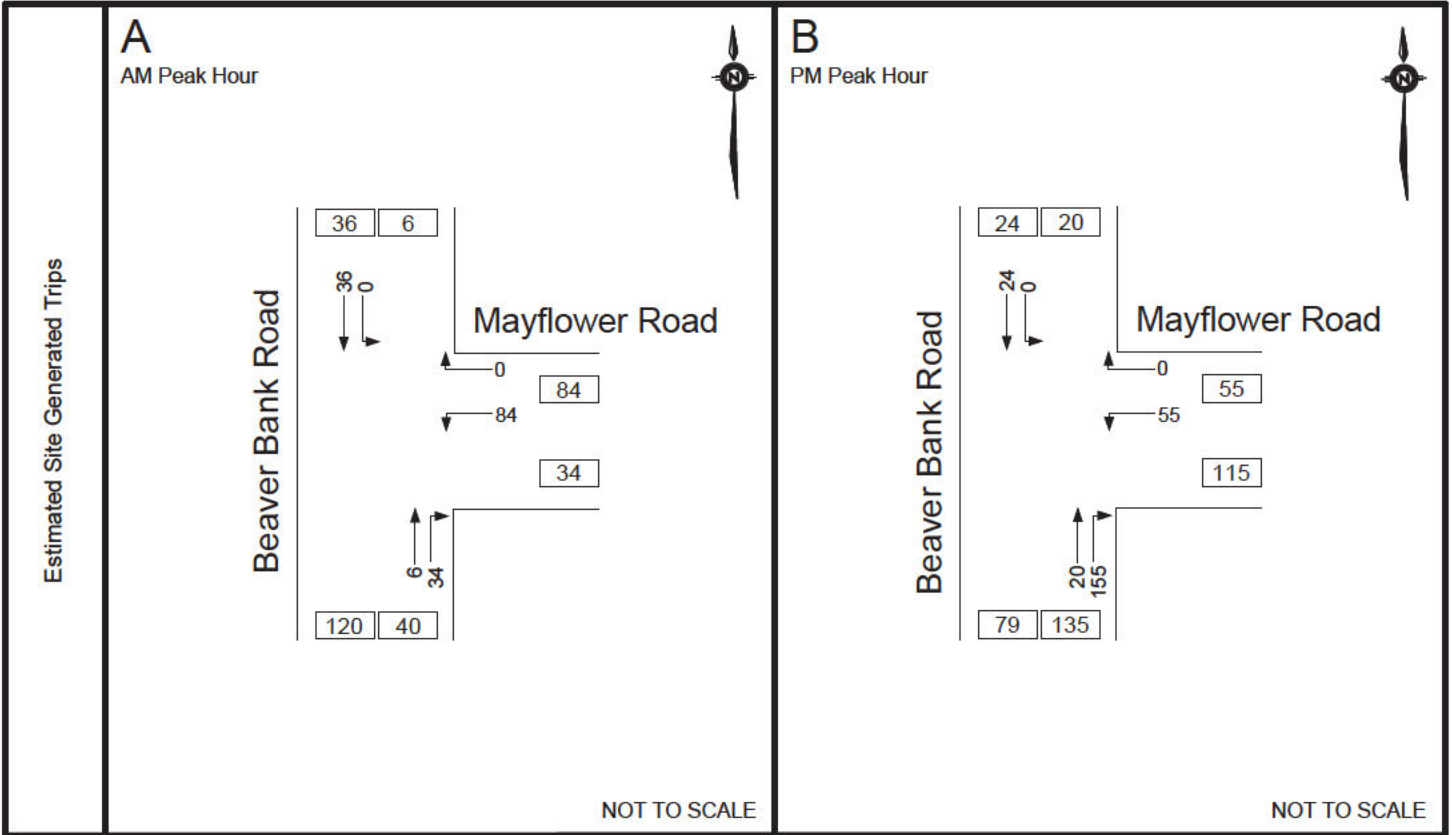


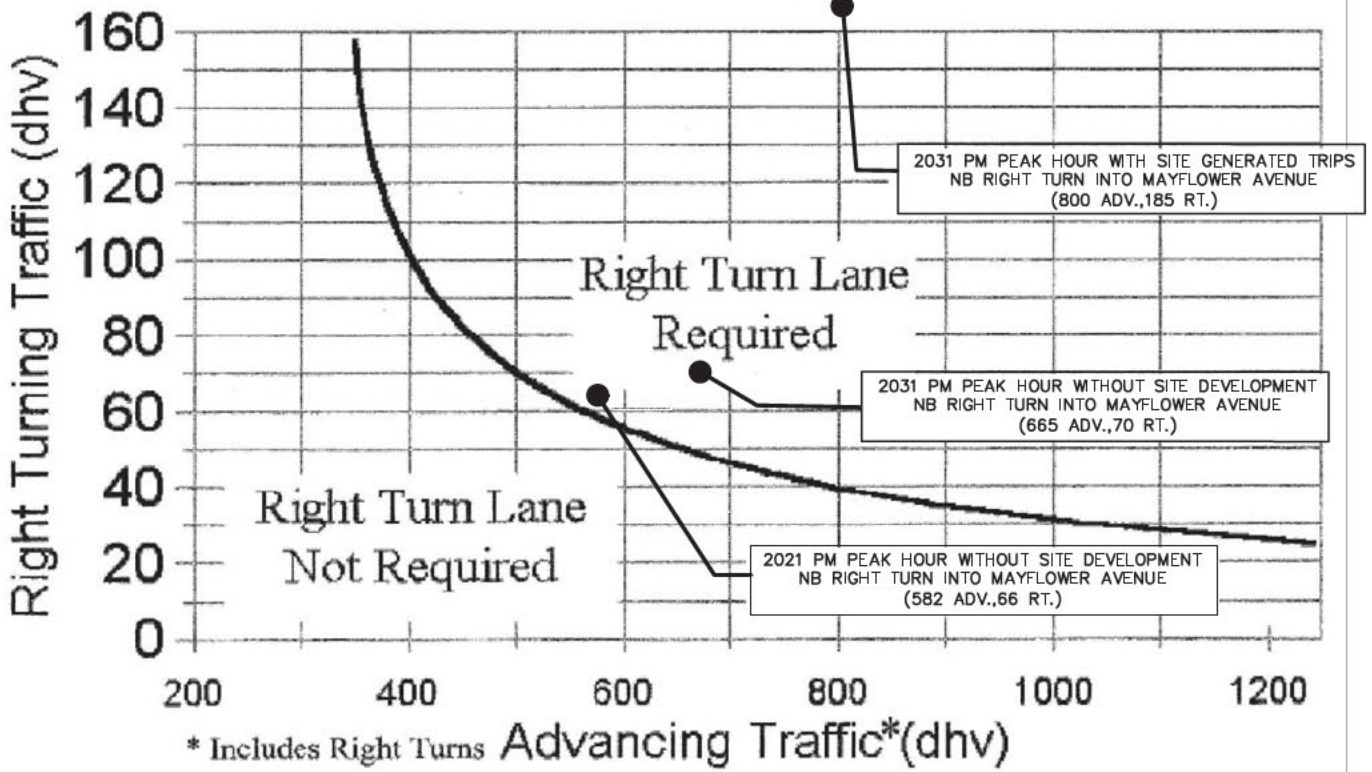
AM Peak Period Volume Data								
Time		Beaver Bank Road Northbound Approach		Mayflower Avenue Westbound Approach		Beaver Bank Road Southbound Approach		Total Vehicles
		B	C	D	F	G	H	
07:00	07:15	16	3	12	0	0	112	143
07:15	07:30	25	4	16	0	0	116	161
07:30	07:45	35	4	18	1	0	135	193
07:45	08:00	57	5	12	1	0	117	192
08:00	08:15	32	5	9	0	2	117	165
08:15	08:30	53	5	14	1	1	98	172
AM Peak Hour		177	19	53	3	3	467	722
07:00	08:00	133	16	58	2	0	480	689
08:00	09:00	85	10	23	1	3	215	337
		Ped 1		Ped 2		Ped 3		Total Peds
07:00	08:00	0		2		0		2
08:00	09:00	0		0		3		3

PM Peak Period Volume Data								
Time		Beaver Bank Road Northbound Approach		Mayflower Avenue Westbound Approach		Beaver Bank Road Southbound Approach		Total Vehicles
		B	C	D	F	G	H	
16:00	16:15	49	5	4	0	0	18	76
16:15	16:30	130	21	4	1	1	67	224
16:30	16:45	116	13	5	0	1	47	182
16:45	17:00	115	18	4	2	0	55	194
17:00	17:15	146	16	5	0	1	49	217
17:15	17:30	139	19	4	1	0	69	232
17:30	17:45	104	15	9	0	0	44	172
17:45	18:00	96	8	7	2	2	41	156
PM Peak Hour		516	66	18	3	2	220	825
16:00	17:00	410	57	17	3	2	187	676
17:00	18:00	485	58	25	3	3	203	777
		Ped 1		Ped 2		Ped 3		Total Peds
16:00	17:00	-		-		-		0
17:00	18:00	-		-		-		0

* Count completed by WSP







Traffic Impact Study - Addendum - Proposed Residential Development
 Carriagewood Estates
 Beaver Bank, NS

Figure A-3

Right Turn Lane Warrants
 Beaver Bank Road into Mayflower Avenue

February 2021

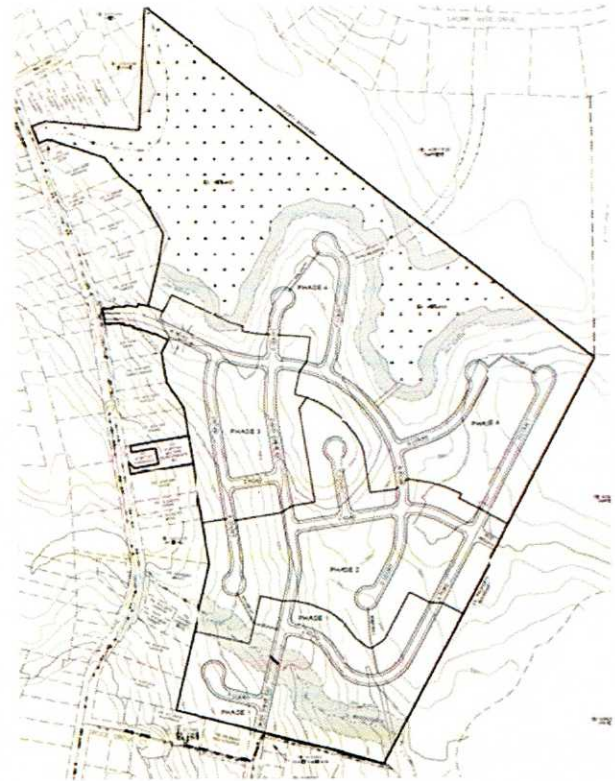
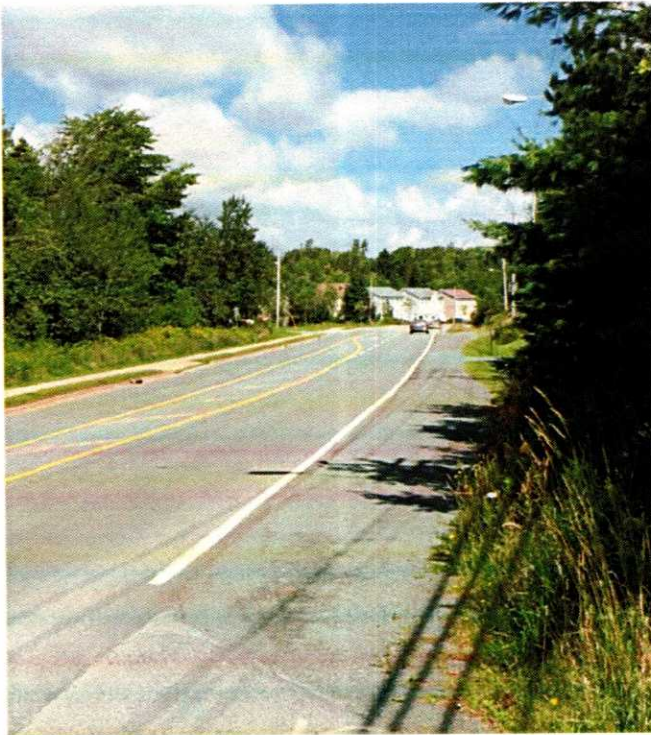
APPENDIX E:

Original TIS



E

COPY



**Traffic Impact Study:
Proposed Residential Development
Carriagewood Estates
Beaver Bank, NS**

**Presented to:
Mo-Par Developments Inc.**

October 2014



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	4.3 Intersection Level of Service Analysis	10
5.0	Summary, Recommendations, and Conclusions	13

**Appendix A: Intersection Turning Movement Counts
 Traffic Volume Diagrams
 Left Turn Lane Warrants
 Right Turn Lane Warrants
 Traffic Signal Warrant**

Appendix B: Level of Service Analysis

Prepared by:
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1.0 Introduction

Background

Plans are being prepared by Mo-Par Developments for the development of Carriagewood Estates, a residential subdivision in Beaver Bank, NS. The proposed development is located at PID#00468694, an undeveloped parcel located just north of the existing terminus of Daisy Drive (See Figure 1). It will consist of up to 270 residential units, accessed by an extension of Daisy Drive and a connection to Trinity Lane. Access to Beaver Bank Road will be from Mayflower Avenue (at the south of the development) and Trinity Lane (north of the development). It is anticipated that buildout of the development will be completed by 2024.

WSP Canada Inc. has been retained to complete a Traffic Impact Study satisfactory to the Halifax Regional Municipality (HRM).

A Traffic Impact Study Usually Considers Four Questions

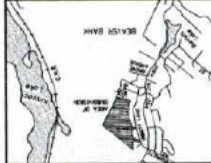
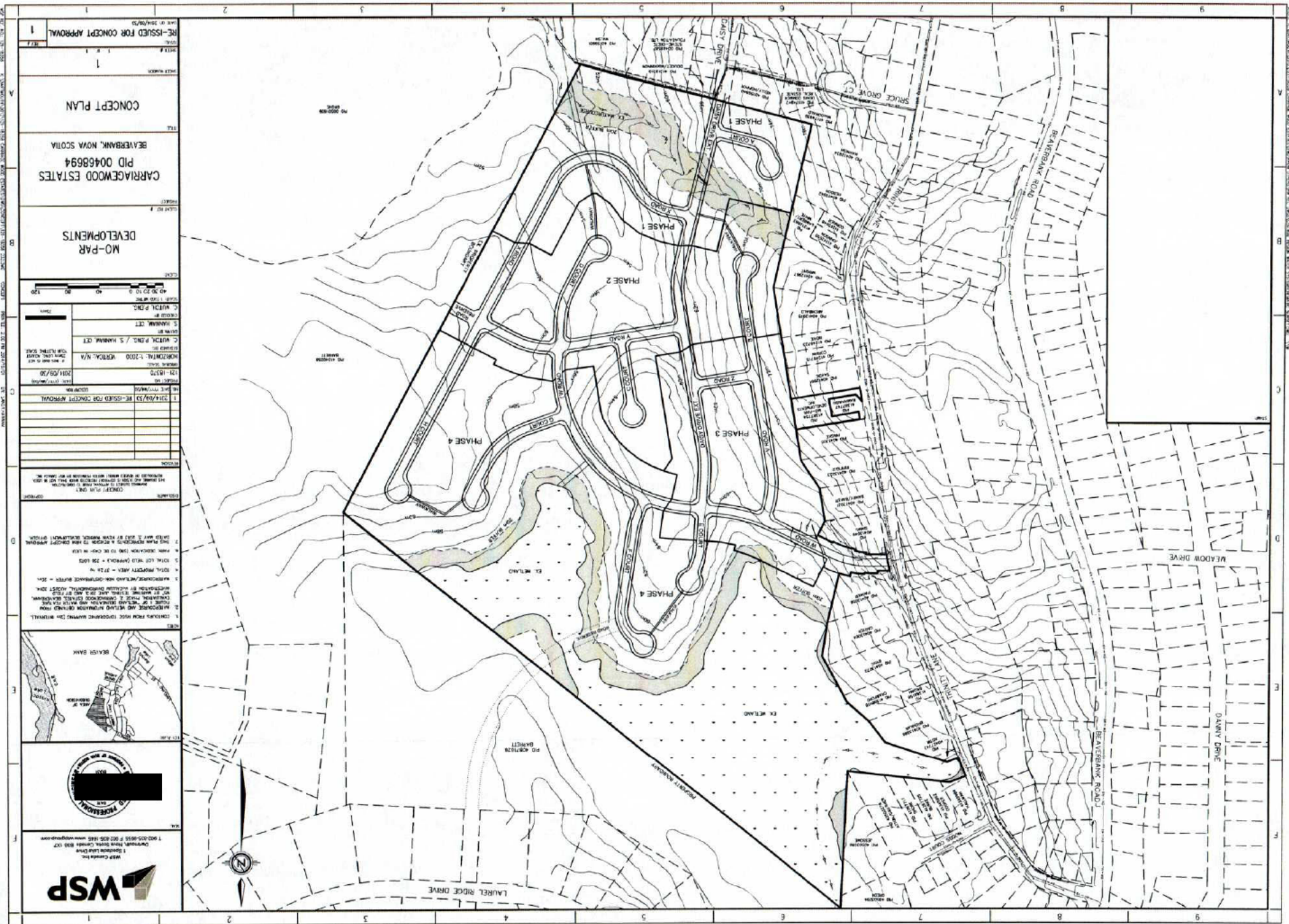
A Traffic Impact Study usually consists of determining answers for the following questions:

1. **What are the existing traffic situations** on roads adjacent to the study site? How have traffic volumes increased historically?
2. **What traffic changes are expected** at Study Area intersections? How many vehicle trips will be generated by the proposed development during weekday peak hours? How will the traffic be distributed at the exits from the development and to Study Area roads and intersections?
3. **What traffic impacts will occur** on Study Area roads and intersections? How will level of service of roads and intersections be affected?
4. **What road or intersection improvements are required** to mitigate project impacts on Study Area traffic movements?

Study Objectives

1. Develop projected 2014 and 2024 background weekday AM and PM peak hourly volumes for Study Area roads that do not include trips generated by proposed site development.
2. Estimate the number of weekday AM and PM peak hour trips that will be generated by the proposed development.
3. Distribute and assign site generated trips to Study Area intersections.
4. Add site generated trips to projected 2024 background peak hourly volumes to provide projected volumes that include site generated trips.
5. Evaluate impacts of site generated traffic on the performance and level of service of study intersections.
6. Complete traffic signal warrant analyses, as necessary, for intersections on Beaver Bank Road that are accessed by the proposed development.
7. Complete left-turn and right-turn lane warrants, as necessary, for intersections on Beaver Bank Road that are accessed by the proposed development.
8. Recommend improvements that may be needed at study intersections to mitigate the impacts of site development.

FIGURE 1 - SITE PLAN



2.0 Study Area Descriptions

Site Description

The proposed site is an approximately 37 hectare undeveloped parcel located just north of the existing terminus of Daisy Drive and east of Trinity Lane. Access to Beaver Bank Road will be from Mayflower Avenue (at the south of the development) and Trinity Lane (north of the development).

Road and Intersection Descriptions

Beaver Bank Road is a 2-lane collector road that runs approximately 21km between Lower Sackville and East Uniacke Road. In the vicinity of the Study Area, the posted speed limit is 70km/h. Just south of the intersection at Mayflower Avenue, there is a conditional school zone speed limit that reduces to 50km/h "when children are present". Annual average daily traffic volumes on Beaver Bank Road 1.7km north of Trinity Lane are approximately 5,100 vehicles per day (vpd).

Trinity Lane is a 2-lane local residential street that runs north-south approximately 1.3km between Mayflower Avenue and Beaver Bank Road. The majority of its length (approximately 1km) is unpaved. Though not posted, it has an assumed speed limit of 50km/h.

The Beaver Bank Road – Trinity Lane intersection (See Photo 1 and Photo 2) is unsignalized, with stop control on Trinity Lane and the opposing eastbound approach from Barrett Road (local residential street). All approaches are single lane.



Photo 1: Looking south (to the left) on Beaver Bank Road from the Trinity Lane Intersection



Photo 2: Looking north (to the right) on Beaver Bank Road from the Trinity Lane Intersection

**Road and
Intersection
Descriptions
(Continued)**

Mayflower Avenue, Ernest Avenue, and Daisy Drive are 2-lane paved local residential streets located east of Beaver Bank Road near the south end of the proposed development. **Mayflower Avenue** extends from Beaver Bank Road approximately 400m to the east. **Ernest Avenue / Daisy Lane** run generally east-west approximately 600m between Trinity Lane and Pennington Drive. Each street has a posted speed limit of 50km/h.

The Beaver Bank Road – Mayflower Avenue intersection (See Photo 3 and Photo 4) is unsignalized, with stop control on the Mayflower Avenue approach. All approaches are single lane, however, there is a hatched area in the center of Beaver Bank Road that is used to develop the left turn lane at Danny Drive (approximately 150m to the north).



Photo 3: Looking south (to the left) on Beaver Bank Road from the Mayflower Avenue Intersection



Photo 4: Looking north (to the right) on Beaver Bank Road from the Mayflower Avenue Intersection

**Public
Transportation**

Halifax Transit operates Route #400 (formerly Beaver Bank Community Transit) on Beaver Bank Road between Beaver Bank Villa and the Sackville Terminal, where it provides connection to additional routes including the Metrolink service. The route has stops at Trinity Lane and Mayflower Avenue located approximately 350m and 450m, respectively, from the proposed development.

Proposed Site Access

Vehicular access to the proposed development will be via an extension of Daisy Drive and a connection to Trinity Lane. Daisy Lane (See Photo 5), which accesses Beaver Bank Road via Ernest Avenue, Trinity Lane, and Mayflower Avenue, will be extended north from its existing limits by approximately 580m.



Photo 5: Looking south on Daisy Drive from its existing terminus and location of the south access point to the proposed development

The north site access at Trinity Drive will be via a new connection from the west side of the site, located approximately 800m north of of Mayflower Avenue (See Photo 6 and Photo 7). Stopping sight distances (SSD), measured from a driver eye height of 1.05 m to a 150 mm object, were observed on the Trinity Lane northbound and southbound approaches to the north access intersection. Observations indicated SSD greater than 190 meters on the northbound approach, which exceeds the minimum 92m required for an assumed operating speed of 60km/h on a -6% approach grade. On the southbound approach, observations indicated SSD of approximately 170m, which is greater than the minimum 78m required based on a 60km/h operating speed on a +5% approach grade.



Photo 6: Looking south (to the left) on Trinity Lane from the proposed north site access Intersection



Photo 7: Looking north (to the right) on Trinity Lane from the proposed north site access Intersection

Traffic Volume Data

HRM Traffic & Right-of-Way Services (TROW) obtained a one week long machine traffic count on Beaver Bank Road between Douglas Drive and Kinsac Road (approximately 2km north of the proposed development) during August 2011. Counts indicate Beaver Bank Road two-way AM and PM peak hour volumes of about 230 and 280 vehicles per hour, respectively. The graphical representation of average weekday hourly volumes during a 24 hour day (Figure 2) illustrates the pronounced 'peaks' of AM and PM peak hour volumes typical of a road with commuter traffic.

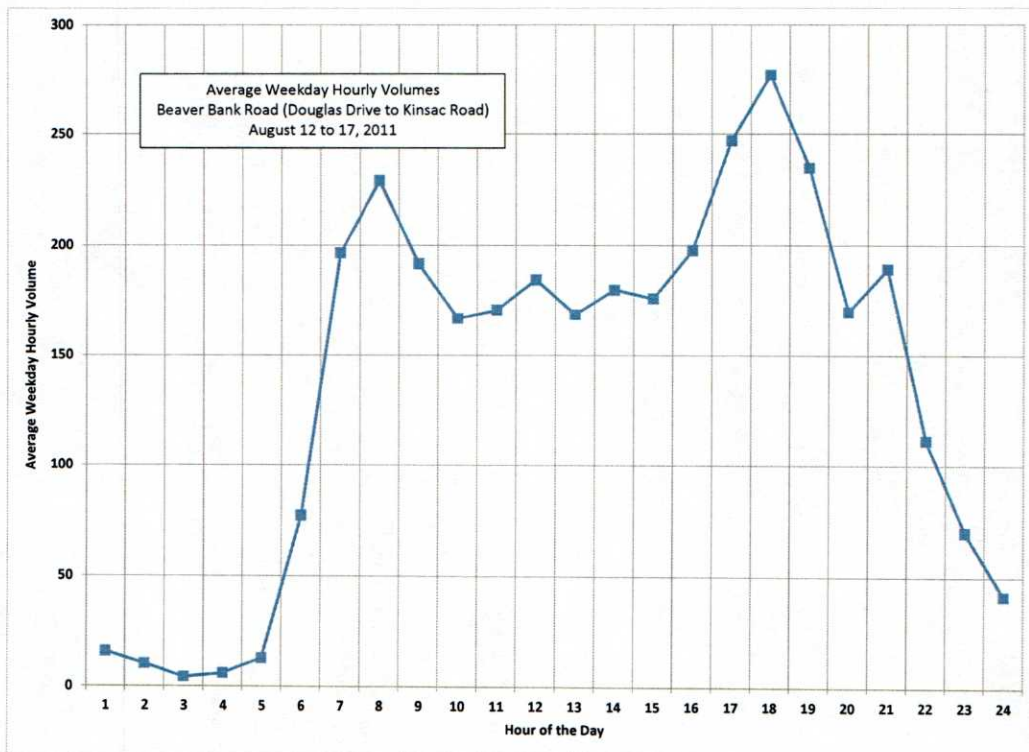


Figure 2: Average Weekday Hourly Volumes - August 2011: Beaver Bank Road (Douglas Drive to Kinsac Road)

Annual Volume Trends

Historical volume data obtained by HRM between 2007 and 2013 on Beaver Bank Road (approximately 1.7km north of Trinity Lane) do not indicate a consistent growth trend in volumes. Volumes are in the range of 5,000 to 5,500 vehicles per day. An annual growth rate of 1.0% typical of growth in the Halifax region has been used for the projecting future year traffic volumes for this study.

Manual Traffic Count

Manual traffic counts were obtained during AM, Noon, and PM peak periods on Tuesday, July 22 and Wednesday, July 23, 2014 at Beaver Bank Road intersections at Mayflower Avenue and Trinity Lane. Turning movement counts are tabulated in Tables A-1 and A-2, Appendix A, with peak hour volumes indicated by shaded areas.

***Projected 2014 and
2024 Background
Volumes***

Projected 2014 and 2024 weekday AM and PM peak hour background volumes, calculated using an annual traffic volume growth rate of 1.0%, are illustrated diagrammatically in Figure A-1 (Boxes A to D), Appendix A.

3.0 Trip Generation, Distribution, and Assignment

Trip Generation for Proposed Commercial Development

The proposed residential development will include up to approximately 270 residential units on an approximately 37 hectare undeveloped parcel located just north of the existing terminus of Daisy Drive and east of Trinity Lane. It has been assumed that all residential units will be detached single family houses.

Estimation of Total Site Generated Trips

The number of trips that will be generated by the proposed development has been estimated using rates published in *Trip Generation, 9th Edition* (Washington, 2012). Trip generation estimates, which are summarized in Table 1, indicate that the proposed development is expected to generate 202 vehicles per hour (vph) (51 vph entering and 151 vph exiting) during the AM peak hour and 270 vph (170 vph entering and 100 vph exiting) during the PM peak hour.

Table 1 - Trip Generation Estimates for Proposed Residential Development

Land Use	Units	Trip Generation Rates ¹				Trips Generated ²			
		AM Peak		PM Peak		AM Peak		PM Peak	
		In	Out	In	Out	In	Out	In	Out
Single Family Residential (ITE Land Use Code 210)	270	0.19	0.56	0.63	0.37	51	151	170	100
Trip Generation Estimates for Proposed Development						51	151	170	100
Notes: 1. Trip generation rates are 'vehicles per hour per unit' for Single Family Residential (Land Use Code 210), published in <i>Trip Generation, 9th Edition</i> , Institute of Transportation Engineers, 2012. 2. Vehicles per hour for peak hours.									

Trip Distribution and Assignment

Based on review of the local street network and development surrounding the site as well as local knowledge of the area, external trips generated by the proposed development have been distributed in the following manner:

- North – Beaver Bank Road 10%
- South – Beaver Bank Road 90%

Assigned site generated trips at Study Area intersections are shown diagrammatically in Figure A-2 (Boxes A and B), Appendix A.

Projected 2024 Volumes that Include Site Generated Trips

Site generated trips have been added to the projected 2024 background volumes (Figure A-1, Boxes C and D) to provide projected 2024 volumes that include site generated trips which are illustrated diagrammatically in Figure A-2 (Boxes C and D), Appendix A.

4.0 Intersection Performance Analysis

4.1 Traffic Signal Warrant Analysis

Traffic Signal Warrant Principles

A signal warrant analysis is completed to determine if the installation of traffic signals at an intersection will provide a positive impact on total intersection operation. That is, the benefits in time saved and improved safety that will accrue to vehicles entering from a side street will exceed the impact that signals will have in time lost and potential additional collisions for vehicles approaching the intersection on the main street.

The Canadian Traffic Signal Warrant Matrix Analysis (Transportation Association of Canada (TAC), 2005) considers 100 warrant points as an indication that traffic signals will provide a positive impact. Signal warrant analysis uses vehicular and pedestrian volumes, and intersection, roadway and study area characteristics to calculate a warrant point value.

Traffic Signal Warrant Analysis

Signal warrant analyses were completed for Beaver Bank Road intersections at Mayflower Avenue and Trinity Lane for projected 2024 background traffic with the addition of trips generated by the proposed development. Results are summarized below:

- Beaver Bank Road @ Mayflower Avenue (Table A-3):
 - *Not Warranted (37 Warrant Points)*
- Beaver Bank Road @ Trinity Lane / Barrett Road (Table A-4):
 - *Not Warranted (15 Warrant Points)*

4.2 Turn Lane Warrant Analysis

Left Turn Lane Warrant Analysis

Left turn movements on a two lane street may cause both operational and safety problems. Operational problems result as a vehicle stopped waiting for an opportunity to turn across 'heavy' opposing traffic causes a queue of stopped vehicles to form. Safety problems result from rear end collisions when a stopped left turning vehicle is struck by an advancing vehicle, or from head-on or right angle collisions when a left turning vehicle is struck by an opposing vehicle.

The Geometric Design Standards for Ontario Highways Manual contains nomographs for left turn lane analysis for two lane streets. The analysis method, which is normally used by WSP Atlantic to evaluate need for left turn lanes, uses a series of nomographs that consider speed, advancing volumes, left turns as a percentage of advancing volumes, and opposing volumes. A point, based on 'opposing' and 'advancing' volumes, plotted to the right of the 'warrant line' of the appropriate '% left turns' and 'approach speed' nomograph, indicates that a left turn lane is warranted for the conditions used in the

analysis. Similarly, a point that is plotted to the left of the warrant line indicates that a left turn lane is not warranted.

Analysis of left turn lane warrants was completed (Figure A-3, Appendix A) for southbound left turns from Beaver Bank Road into Mayflower Avenue and Trinity Lane for projected 2024 volumes both without and with the addition of site generated trips. The analysis indicated that left turn lanes are not expected to be warranted based on weekday AM and PM peak hour traffic volumes.

**Right Turn Lane
Warrant Analysis**

Operational problems may result at an intersection where a 'high' number of vehicles slow to make a right turn into a site. The *Ohio Department of Transportation State Highway Access Management Manual* contains nomographs for evaluating right turn lane warrants on two lane roads. The analysis is based on right turning and advancing volumes.

The right turn lane warrant evaluation included in Figure A-4, Appendix A, indicates that a right turn lane is warranted on the northbound approach to Mayflower Avenue during the PM peak hour based on projected 2024 volumes both without and with added site generated trips. It is also noted that a right turn lane is warranted based on 2014 PM peak hour volumes.

4.3 Intersection Level of Service Analysis

**Intersection Level of
Service Analysis**

The level or quality of performance of an intersection in terms of traffic movement is determined by a level of service (LOS) analysis. LOS for intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and increased travel time.

**Level of Service
(LOS) Criteria**

LOS criteria (Table 2) are stated in terms of average control delay per vehicle which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Table 2 - Level of Service (LOS) Criteria for Intersections

LOS	LOS Description	Two Way Stop Controlled (TWSC) Intersections Control Delay (Seconds per Vehicle)
A	Very low delay; most vehicles do not stop (Excellent)	Less than 10.0
B	Higher delay; most vehicles stop (Very Good)	Between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping (Good)	Between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (Satisfactory)	Between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of acceptable delay	Between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (Unacceptable)	Greater than 50.0

Intersection Level of Service Analysis

Synchro 8.0 software has been used for performance evaluation of Study Area intersections on Beaver Bank Road for 2024 AM and PM peak hour volumes without and with site development.

Level of service (LOS) analysis results are included in Appendix B and are summarized in Table 3 and Table 4.

Summary Level of Service Analysis

Beaver Bank Road @ Mayflower Avenue– Intersection performance is expected to be satisfactory both without and with the addition of site generated trips. All movements operate within HRM acceptable limits.

Beaver Bank Road @ Trinity Lane / Barrett Road– Intersection performance is expected to be satisfactory both without and with the addition of site generated trips. All movements operate within HRM acceptable limits.

Table 3 - LOS for Beaver Bank Road @ Trinity Lane / Barrett Road

LOS Criteria	Control Delay (sec/veh), LOS, v/c Ratio, and 95% Queue (m) by Intersection Movement				Overall Intersection	
	EB-LTR	WB-LTR	NB-LTR	SB-LTR	Delay	LOS
Weekday AM Peak Hour - Projected 2024 Volumes without Site Development (Page B-1)						
Delay	11.4	12.8	0.3	0.2	0.6	A
LOS	B	B	A	A		
v/c	0.02	0.01	0.14	0.22		
Queue	0.4	0.3	0.1	0.1		
Weekday AM Peak Hour - Projected 2024 Volumes with Site Development (Page B-5)						
Delay	11.7	13	0.3	0.3	1.9	A
LOS	B	B	A	A		
v/c	0.02	0.13	0.15	0.23		
Queue	0.5	3.3	0.1	0.2		
Weekday PM Peak Hour - Projected 2024 Volumes without Site Development (Page B-3)						
Delay	14.1	13.6	0.3	0.0	0.7	A
LOS	B	B	A	A		
v/c	0.04	0.03	0.36	0.22		
Queue	0.9	0.6	0.2	0		
Weekday PM Peak Hour - Projected 2024 Volumes with Site Development (Page B-7)						
Delay	15.1	16.7	0.3	0.8	1.7	A
LOS	C	C	A	A		
v/c	0.04	0.14	0.38	0.24		
Queue	1.0	3.7	0.2	0.4		

Table 4 - LOS for Beaver Bank Road @ Mayflower Avenue

LOS Criteria	Control Delay (sec/veh), LOS, v/c Ratio, and 95% Queue (m) by Intersection Movement			Overall Intersection	
	WB-LR	NB-TR	SB-LT	Delay	LOS
Weekday AM Peak Hour - Projected 2024 Volumes without Site Development (Page B-2)					
Delay	14.6	0.0	0.4	1.4	A
LOS	B	A	A		
v/c	0.15	0.08	0.37		
Queue	3.9	0.0	0.1		
Weekday AM Peak Hour - Projected 2024 Volumes with Site Development (Page B-6)					
Delay	21.2	0.0	0.1	3.9	A
LOS	C	A	A		
v/c	0.43	0.11	0.41		
Queue	16.2	0.0	0.1		
Weekday PM Peak Hour - Projected 2024 Volumes without Site Development (Page B-4)					
Delay	18.1	0.0	0.3	0.9	A
LOS	B	A	A		
v/c	0.14	0.39	0.30		
Queue	3.6	0.0	0.1		
Weekday PM Peak Hour - Projected 2024 Volumes with Site Development (Page B-8)					
Delay	28.8	0	0.2	2.6	A
LOS	D	A	A		
v/c	0.43	0.49	0.38		
Queue	15.4	0.0	0.2		

5.0 Summary, Recommendations, and Conclusions

- Description of the Proposed Development**
1. Plans are being prepared by Mo-Par Developments for the development of Carriagewood Estates, a residential subdivision in Beaver Bank, NS. The proposed development, located just north of the existing terminus of Daisy Drive, will consist of up to 270 single family residential units. It is anticipated that buildout of the development will be completed by 2024.
- Proposed Site Access**
2. Two site accesses will be provided to the proposed development including: (i) an extension of Daisy Drive and (ii) a connection to Trinity Lane. Access to Beaver Bank Road will be from Mayflower Avenue (at the south of the development) and Trinity Lane (north of the development).
- Description of Study Area Roads**
3. **Beaver Bank Road** is a 2-lane collector road that runs approximately 21km between Lower Sackville and East Uniacke Road.

Trinity Lane is a 2-lane local residential street that runs north-south approximately 1.3km between Mayflower Avenue and Beaver Bank Road. The majority of its length (approximately 1km) is unpaved.

Mayflower Avenue, Ernest Avenue, and Daisy Drive are 2-lane paved local residential streets located east of Beaver Bank Road near the south end of the proposed development. **Mayflower Avenue** extends from Beaver Bank Road to the east. **Ernest Avenue / Daisy Lane** run generally east-west between Trinity Lane and Pennington Drive.
- Background Traffic Volumes**
4. Projected 2014 and 2024 weekday AM and PM peak hour background volumes were calculated using an annual traffic volume growth rate of 1.0%.
- Estimation of Site Generated Trips for the Proposed Development**
5. The proposed residential development will include up to approximately 270 single family residential units. Trip generation estimates, estimated using rates published in *Trip Generation, 9th Edition* (Washington, 2012), indicate that the proposed development is expected to generate 202 vehicles per hour (vph) (51 vph entering and 151 vph exiting) during the AM peak hour and 270 vph (170 vph entering and 100 vph exiting) during the PM peak hour.
- Trip Distribution and Assignment**
6. External trips generated by the development have been assigned to study area streets and intersections based on review of the local street network and development surrounding the site as well as local knowledge of the area. Trips were distributed to the north (10%) and south (90%) on Beaver Bank Road.
- Signal Warrant Analysis**
7. Signal warrant analyses were completed for Beaver Bank Road intersections at Mayflower Avenue and Trinity Lane for projected

2024 background traffic with the addition of trips generated by the proposed development. Traffic signals are not expected to be warranted at the Mayflower Avenue (37 warrant points) or the Trinity Lane (15 warrant points) intersections.

**Left Turn Lane
Warrant**

8. Analysis of left turn lane warrants was completed for southbound left turns from Beaver Bank Road into Mayflower Avenue and Trinity Lane for projected 2024 volumes both without and with the addition of site generated trips. The analysis indicated that left turn lanes are not expected to be warranted for all scenarios.

**Right Turn Lane
Warrant Analysis**

9. Right turn lane warrants were completed for northbound right turns from Beaver Bank Road into Mayflower Avenue and Trinity Lane for projected 2024 volumes both without and with the addition of site generated trips. The warrant evaluation has indicated that a right turn lane is warranted on the northbound approach to Mayflower Avenue during the PM peak hour based on projected 2024 volumes both without and with added site generated trips. It was also noted that a right turn lane is warranted based on 2014 PM peak hour traffic volumes.

**Summary - Level of
Service Analysis**

10. Intersection performance analysis was completed for Beaver Bank Road intersections at Mayflower Avenue and Trinity Lane. Results indicate that intersection performance is expected to be satisfactory based on 2024 AM and PM peak hour volumes both without and with site development.

Recommendations

11. The need for a right turn lane on the northbound approach to Mayflower Avenue (warranted based on projected 2024 PM peak hour volumes without and with development) should be reviewed periodically.
12. Consideration should be given to adding a paved surface to the existing gravel section of Trinity Lane.

Conclusions

13. With implementation of recommended upgrades, site generated trips are not expected to have a significant impact to traffic performance in the Study Area.

Appendix A

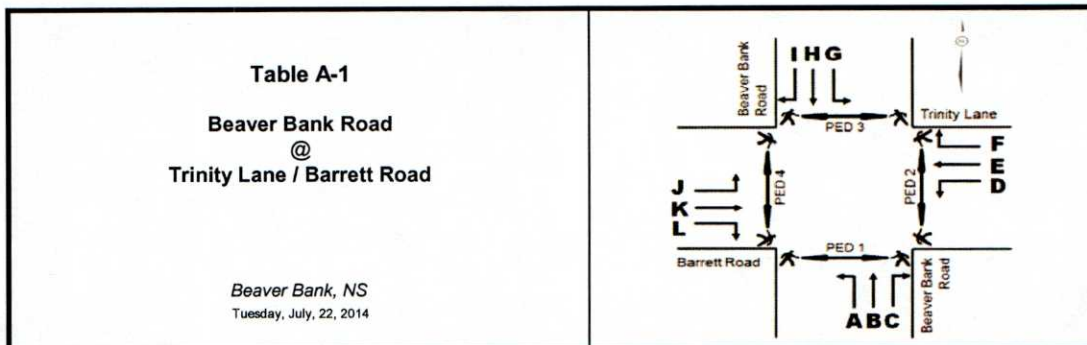
**Intersection Turning Movement
Counts**

Traffic Volume Diagrams

Traffic Signal Warrants

Left Turn Lane Warrants

Right Turn Lane Warrants



AM Peak Period Volume Data

Time	Beaver Bank Road Northbound Approach			Trinity Lane Westbound Approach			Beaver Bank Road Southbound Approach			Barrett Road Eastbound Approach			Total Vehicles
	A	B	C	D	E	F	G	H	I	J	K	L	
	07:00 - 07:15	0	16	0	3	0	2	0	101	0	1	0	
07:15 - 07:30	2	22	0	1	0	0	0	77	0	0	1	5	108
07:30 - 07:45	0	18	0	5	0	0	0	66	1	1	0	2	93
07:45 - 08:00	0	17	0	3	0	0	0	50	1	1	0	1	73
08:00 - 08:15	0	33	0	2	0	0	0	59	1	1	0	1	97
08:15 - 08:30	1	30	0	1	0	0	0	64	1	0	0	1	98
08:30 - 08:45	1	42	0	1	0	0	0	67	0	1	0	1	113
08:45 - 09:00	3	36	1	2	0	0	1	67	0	1	0	1	112

AM Peak Hour Data

07:00 - 08:00	2	73	0	12	0	2	0	294	2	3	1	11	400
08:00 - 09:00	5	141	1	6	0	0	1	257	2	3	0	4	420
AM Peak Total	5	141	1	6	0	0	1	257	2	3	0	4	381
Pedestrians	PED:1			PED:2			PED:3			PED:4			-
Heavy Vehicles	0	10	0	0	0	0	0	10	0	0	0	0	-
% Heavy	7%			0%			4%			0%			-

Noon Peak Period Volume Data

Time	Beaver Bank Road Northbound Approach			Trinity Lane Westbound Approach			Beaver Bank Road Southbound Approach			Barrett Road Eastbound Approach			Total Vehicles
	A	B	C	D	E	F	G	H	I	J	K	L	
	11:00 - 11:15	0	36	0	3	0	0	0	22	0	0	0	
11:15 - 11:30	3	30	3	2	0	1	0	50	1	1	0	2	93
11:30 - 11:45	1	28	1	5	0	1	0	50	0	2	0	2	90
11:45 - 12:00	0	38	2	0	0	0	1	47	1	0	0	3	92
12:00 - 12:15	0	32	0	1	0	1	0	40	1	0	0	0	75
12:15 - 12:30	1	41	0	2	0	0	0	50	1	2	0	6	103
12:30 - 12:45	4	54	1	1	0	0	0	45	0	1	0	1	107
12:45 - 13:00	1	54	3	1	0	1	2	43	0	2	0	1	108

Noon Peak Hour Data

11:00 - 12:00	4	132	6	10	0	2	1	169	2	3	0	9	338
12:00 - 13:00	6	181	4	5	0	2	2	178	2	5	0	8	393
Noon Peak Hour	6	181	4	5	0	2	2	178	2	5	0	8	393
Pedestrians	PED:1			PED:2			PED:3			PED:4			0
Heavy Vehicles	0	10	2	1	0	0	0	12	0	0	0	0	-
% Heavy	6%			14%			7%			0%			-

PM Peak Period Volume Data

Time	Beaver Bank Road Northbound Approach			Trinity Lane Westbound Approach			Beaver Bank Road Southbound Approach			Barrett Road Eastbound Approach			Total Vehicles
	A	B	C	D	E	F	G	H	I	J	K	L	
	16:00 - 16:15	0	73	2	0	0	0	1	47	1	2	0	
16:15 - 16:30	4	83	1	0	0	1	3	43	1	0	1	0	137
16:30 - 16:45	2	83	1	1	0	1	1	41	1	1	1	4	137
16:45 - 17:00	3	98	5	1	0	2	0	35	1	0	0	2	147
17:00 - 17:15	4	91	2	0	0	0	0	43	0	2	0	2	144
17:15 - 17:30	2	102	2	2	0	0	2	41	0	0	0	2	153
17:30 - 17:45	2	89	5	4	1	0	0	61	1	0	0	2	165
17:45 - 18:00	0	101	4	0	0	1	0	53	1	0	0	1	161

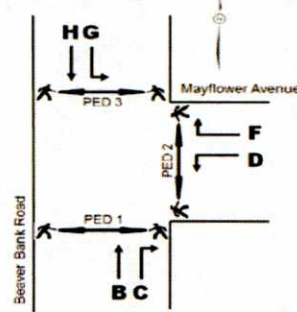
PM Peak Hour Data

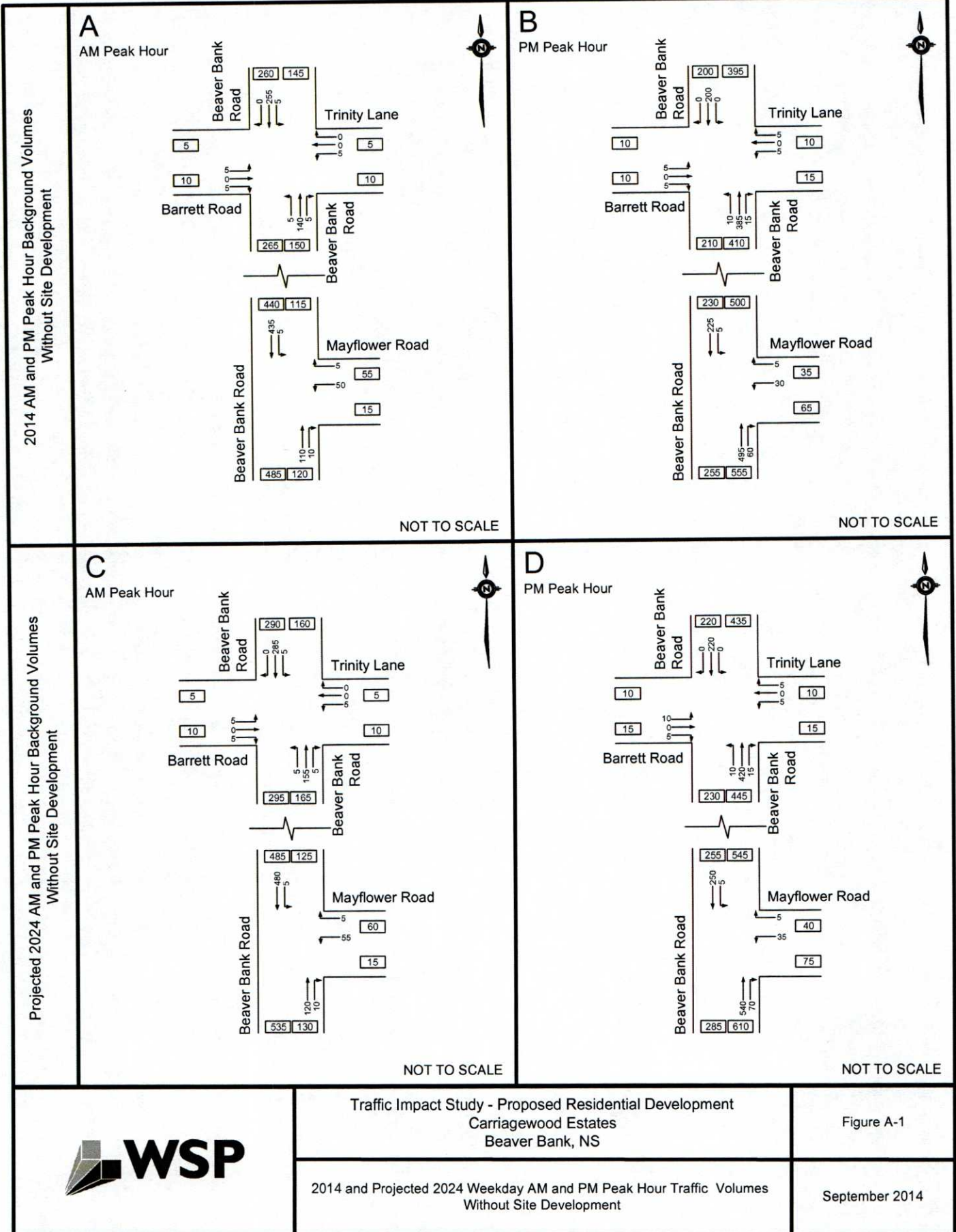
16:00 - 17:00	9	337	9	2	0	4	5	166	4	3	2	9	550
17:00 - 18:00	8	383	13	6	1	1	2	198	2	2	0	7	623
PM Peak Hour	8	383	13	6	1	1	2	198	2	2	0	7	623
Pedestrians	PED:1			PED:2			PED:3			PED:4			0
Heavy Vehicles	0	10	0	0	0	0	0	8	0	0	0	0	-
% Heavy	2%			0%			4%			0%			-

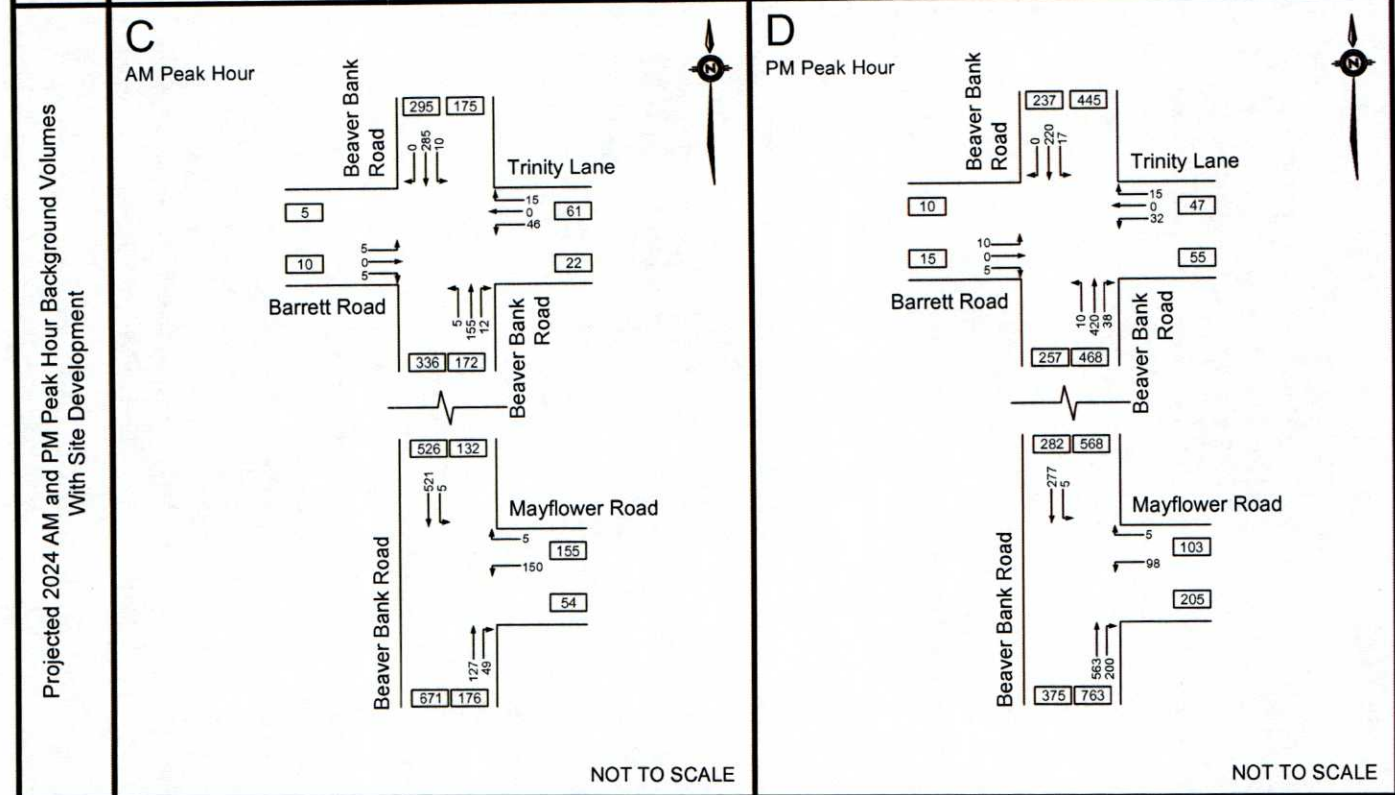
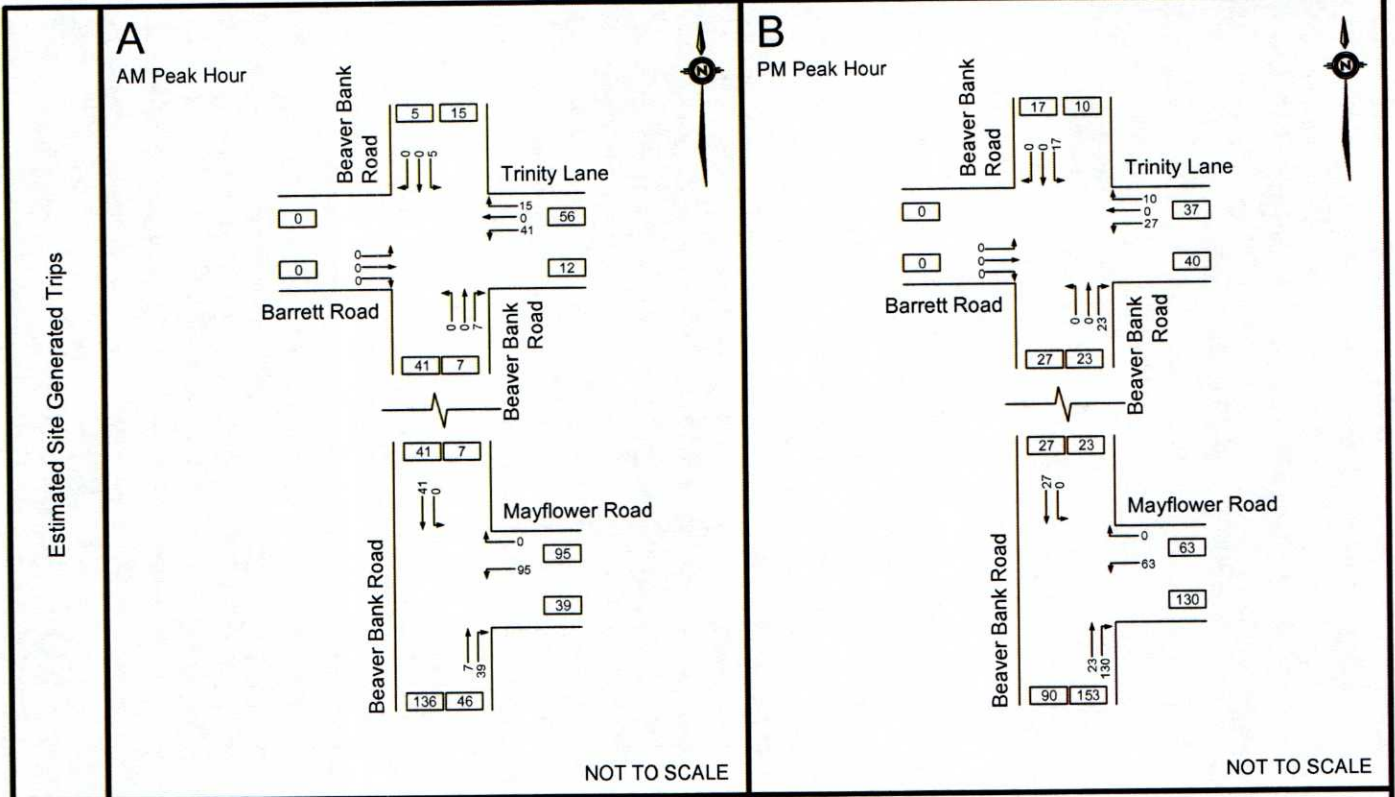
Time		Beaver Bank Road Northbound Approach		Mayflower Avenue Westbound Approach		Beaver Bank Road Southbound Approach		Total Vehicles
		B	C	D	F	G	L	
07:00	07:15	18	2	17	0	1	123	161
07:15	07:30	31	6	11	0	0	101	149
07:30	07:45	29	1	13	0	0	128	171
07:45	08:00	33	2	10	1	1	85	132
08:00	08:15	27	3	8	0	0	85	123
08:15	08:30	28	4	9	0	1	88	130
08:30	08:45	31	5	7	0	0	59	102
08:45	09:00	35	5	9	1	1	60	111
AM Peak Hour Data								
07:00	08:00	111	11	51	1	2	437	613
08:00	09:00	121	17	33	1	2	292	466
AM Peak Total		111	11	51	1	2	437	613
Pedestrians		PED:1	0	PED:2	0	PED:3	0	-
Heavy Vehicles		10	0	0	0	0	13	-
% Heavy		8%		0%		3%		-
Noon Peak Period Volume Data								
Time		Beaver Bank Road Northbound Approach		Mayflower Avenue Westbound Approach		Beaver Bank Road Southbound Approach		Total Vehicles
		B	C	D	F	G	L	
11:00	11:15	37	1	3	1	0	58	100
11:15	11:30	38	11	6	0	0	62	117
11:30	11:45	39	10	4	2	0	57	112
11:45	12:00	53	4	11	0	0	58	126
12:00	12:15	61	3	7	0	1	69	141
12:15	12:30	52	2	4	2	0	54	114
12:30	12:45	39	3	2	1	0	60	105
12:45	13:00	58	1	3	0	1	43	106
Noon Peak Hour Data								
11:00	12:00	167	26	24	3	0	235	455
12:00	13:00	210	9	16	3	2	226	466
Noon Peak Hour		191	28	28	2	1	246	496
Pedestrians		PED:1	0	PED:2	0	PED:3	0	-
Heavy Vehicles		12	4	0	2	0	14	-
% Heavy		7%		7%		6%		-
PM Peak Period Volume Data								
Time		Beaver Bank Road Northbound Approach		Mayflower Avenue Westbound Approach		Beaver Bank Road Southbound Approach		Total Vehicles
		B	C	D	F	G	L	
16:00	16:15	90	15	3	0	0	70	178
16:15	16:30	116	15	5	0	0	46	182
16:30	16:45	112	13	6	0	0	57	188
16:45	17:00	127	7	7	1	0	57	199
17:00	17:15	127	18	7	1	0	53	206
17:15	17:30	110	15	10	0	0	51	186
17:30	17:45	133	12	6	0	1	72	224
17:45	18:00	123	17	9	1	0	50	200
PM Peak Hour Data								
16:00	17:00	445	50	21	1	0	230	747
17:00	18:00	493	62	32	2	1	226	816
PM Peak Hour		493	62	32	2	1	226	816
Pedestrians		PED:1	0	PED:2	0	PED:3	0	-
Heavy Vehicles		5	0	0	0	0	6	-
% Heavy		1%		0%		3%		-

Table A-2
Beaver Bank Road @ Mayflower Avenue

Beaver Bank, NS
Wednesday, July, 23, 2014







Traffic Impact Study - Proposed Residential Development
Carriagewood Estates
Beaver Bank, NS

Figure A-2

Projected 2024 AM and PM Peak Hour Background Traffic Volumes
With Added Site Generated Trips

September 2014

2005 Canadian Traffic Signal Warrant Matrix Analysis

Table A-3 - Beaver Bank Road @ Mayflower Avenue -
Projected 2024 Background Traffic Volumes with Site Development

Main Street (name)	Beaver Bank Road	Direction (EW or NS)	NS	Date:	August 2014
Side Street (name)	Mayflower Avenue	Direction (EW or NS)	EW	City:	Halifax NS

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	Upstream Signal (m)	# of Thru Lanes
Beaver Bank Road	NB				1			1
Beaver Bank Road	SB				1		4,000	1
Mayflower Avenue	WB			1				
	EB							

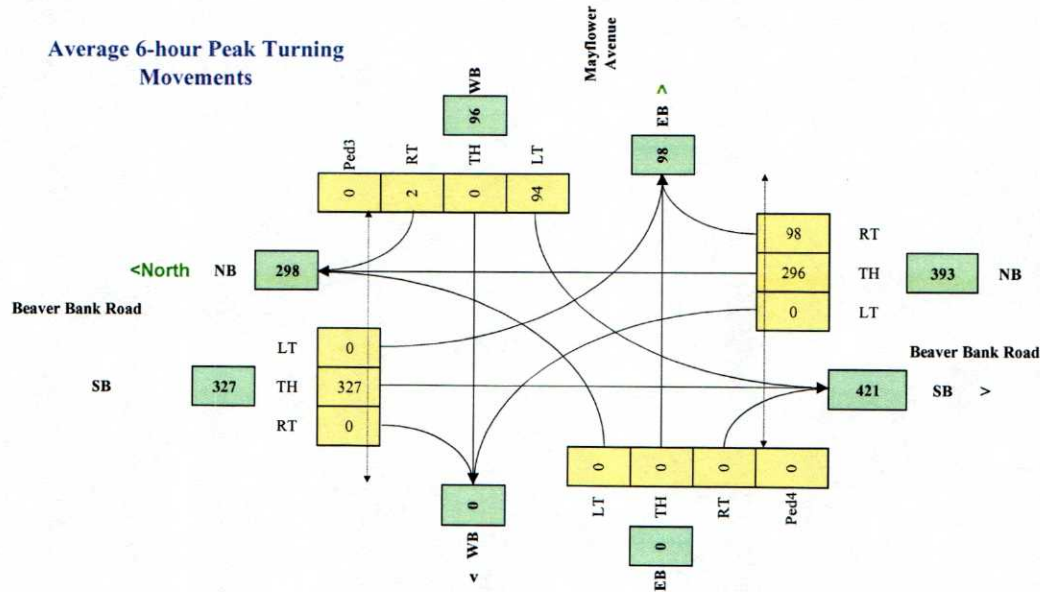
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Beaver Bank Road	NS	70	2.0%	n	0.0
Mayflower Avenue	EW	50	2.0%	n	

	Ped1	Ped2	Ped3	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	0	0
16:30 - 17:30	0	0	0	0
Total (6-hour peak)	0	0	0	0
Average (6-hour peak)	0	0	0	0

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	300,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	0	130	50	0	520	0	150	0	0	0	0	0
8:00 - 9:00	0	140	50	0	350	0	105	0	0	0	0	0
11:30 - 12:30	0	190	70	0	275	0	65	0	5	0	0	0
12:30 - 13:30	0	240	50	0	265	0	60	0	5	0	0	0
15:30 - 16:30	0	515	185	0	280	0	95	0	0	0	0	0
16:30 - 17:30	0	560	180	0	270	0	90	0	0	0	0	0
Total (6-hour peak)	0	1,775	585	0	1,960	0	565	0	10	0	0	0
Average (6-hour peak)	0	296	98	0	327	0	94	0	2	0	0	0

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p})L) / K_2] \times C_i$$

$W =$	37	37	0
	Veh	Ped	
NOT Warranted			

2005 Canadian Traffic Signal Warrant Matrix Analysis
Table A-4 - Beaver Bank Road @ Trinity Lane / Barrett Road
Projected 2024 Background Traffic Volumes with Site Development

Main Street (name)	Beaver Bank Road	Direction (EW or NS)	NS	Date:	August 2014
Side Street (name)	Trinity Lane	Direction (EW or NS)	EW	City:	Halifax NS

Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Beaver Bank Road	NB			1				1
Beaver Bank Road	SB			1			6,000	1
Trinity Lane	WB			1				
	EB			1				

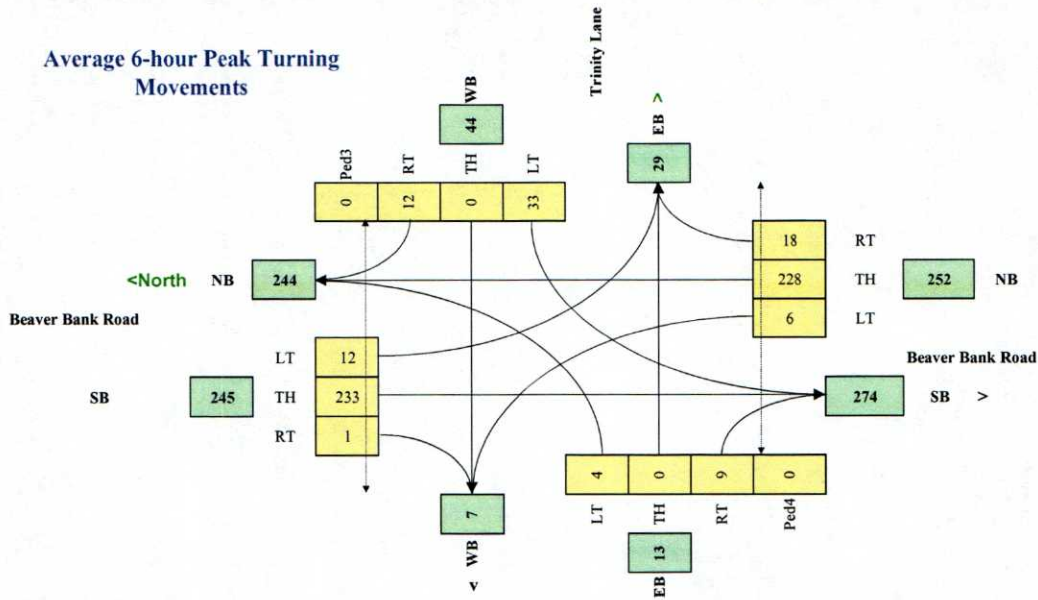
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Beaver Bank Road	NS	70	2.0%	n	0.0
Trinity Lane	EW	50	2.0%	n	

	Ped1	Ped2	Ped3	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	0	0
16:30 - 17:30	0	0	0	0
Total (6-hour peak)	0	0	0	0
Average (6-hour peak)	0	0	0	0

Demographics		
Elementary School	(y/n)	y
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	300,000
Central Business District	(y/n)	n

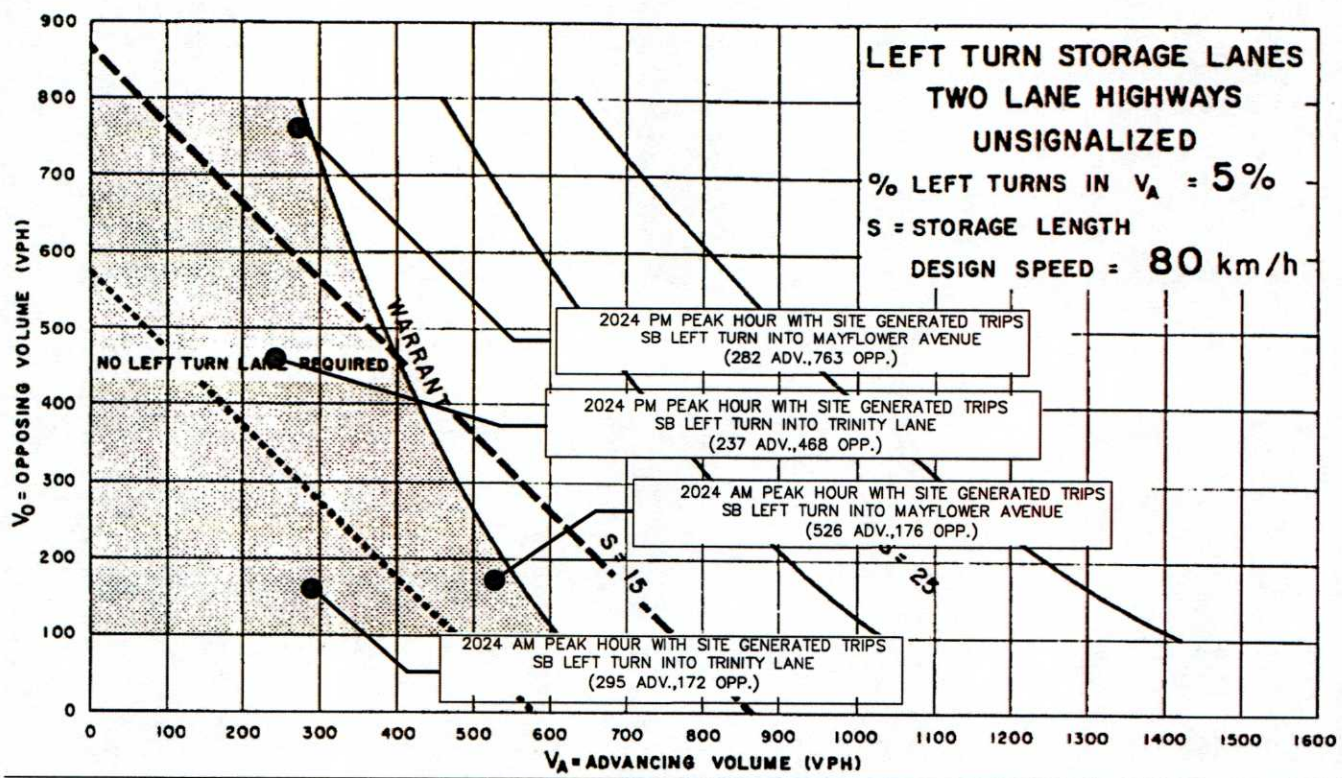
Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	0	80	5	5	325	0	55	0	15	5	0	10
8:00 - 9:00	5	155	5	5	285	0	40	0	10	5	0	5
11:30 - 12:30	5	145	15	5	185	0	20	0	10	5	0	10
12:30 - 13:30	5	200	10	10	195	0	20	0	10	5	0	10
15:30 - 16:30	10	370	35	25	185	5	25	0	15	5	0	10
16:30 - 17:30	10	420	35	20	220	0	35	0	10	0	0	10
Total (6-hour peak)	35	1,370	105	70	1,395	5	195	0	70	25	0	55
Average (6-hour peak)	6	228	18	12	233	1	33	0	12	4	0	9

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p})L) / K_2] \times C_i$$

W =	15	15	0
		Veh	Ped
Not Warranted - Vs < 75			

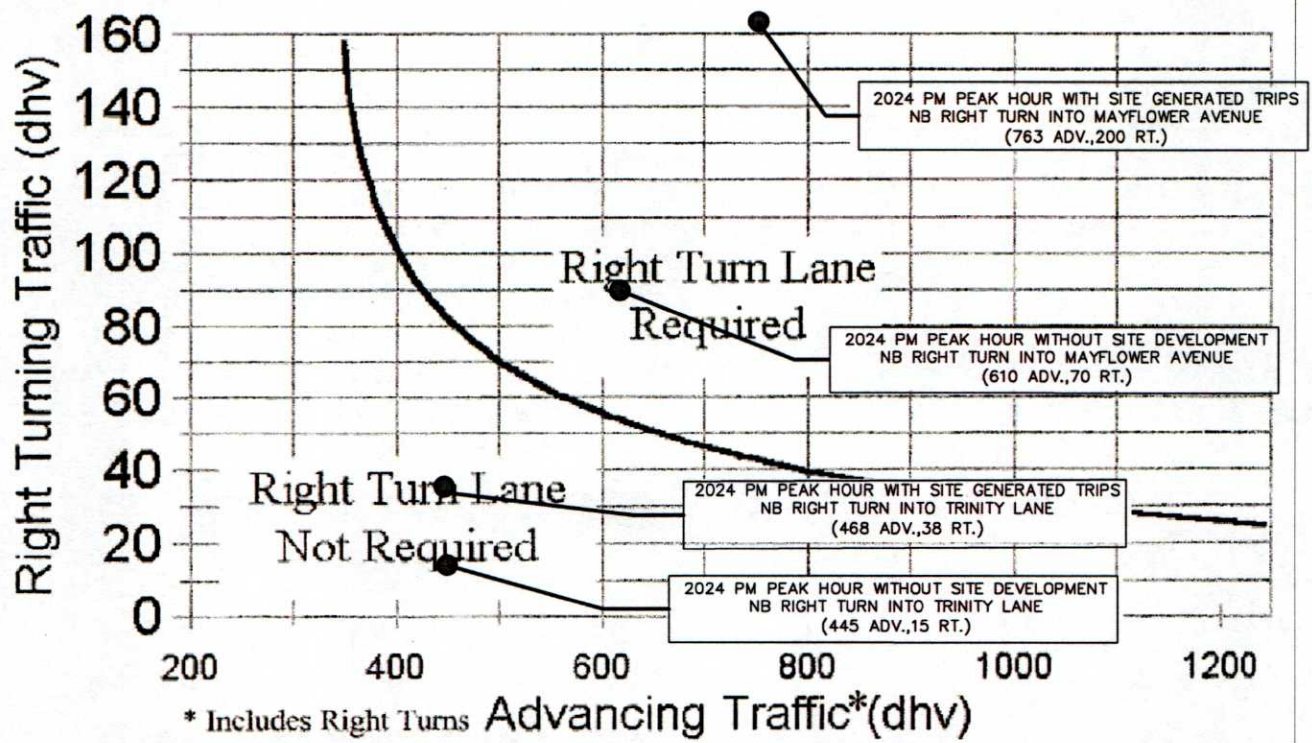


Traffic Impact Study - Proposed Residential Development
 Carriagewood Estates
 Beaver Bank, NS

Figure A-3

Left Turn Lane Warrants
 Beaver Bank Road into Trinity Lane / Mayflower Avenue

September 2014



Traffic Impact Study - Proposed Residential Development
 Carriagewood Estates
 Beaver Bank, NS

Figure A-4

















Right Turn Lane Warrants
 Beaver Bank Road into Trinity Lane / Mayflower Avenue










September 2014

















Appendix B










Intersection Performance Analysis












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	5	5	0	0	5	155	5	5	285	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	5	5	0	0	5	168	5	5	310	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	503	505	310	508	503	171	310			174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	503	505	310	508	503	171	310			174		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	100	100	100			100		
cM capacity (veh/h)	476	465	730	469	467	873	1251			1403		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	5	179	315								
Volume Left	5	5	5	5								
Volume Right	5	0	5	0								
cSH	576	469	1251	1403								
Volume to Capacity	0.02	0.01	0.00	0.00								
Queue Length 95th (m)	0.4	0.3	0.1	0.1								
Control Delay (s)	11.4	12.8	0.3	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.4	12.8	0.3	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			27.1%		ICU Level of Service					A		
Analysis Period (min)			15									

















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	5	120	10	5	480
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	5	130	11	5	522
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	668	136			141	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	668	136			141	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	99			100	
cM capacity (veh/h)	421	913			1442	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	65	141	527			
Volume Left	60	0	5			
Volume Right	5	11	0			
cSH	441	1700	1442			
Volume to Capacity	0.15	0.08	0.00			
Queue Length 95th (m)	3.9	0.0	0.1			
Control Delay (s)	14.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	14.6	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			39.3%	ICU Level of Service		A
Analysis Period (min)			15			










												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	5	5	0	5	10	420	15	0	220	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	5	5	0	5	11	457	16	0	239	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	731	734	239	731	726	465	239			473		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	731	734	239	731	726	465	239			473		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	98	100	99	99			100		
cM capacity (veh/h)	332	345	800	333	348	598	1328			1089		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	11	484	239								
Volume Left	11	5	11	0								
Volume Right	5	5	16	0								
cSH	413	428	1328	1089								
Volume to Capacity	0.04	0.03	0.01	0.00								
Queue Length 95th (m)	0.9	0.6	0.2	0.0								
Control Delay (s)	14.1	13.6	0.3	0.0								
Lane LOS	B	B	A									
Approach Delay (s)	14.1	13.6	0.3	0.0								
Approach LOS	B	B										
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			41.1%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	5	540	70	5	250
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	5	587	76	5	272
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	908	625			663	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	908	625			663	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	99			99	
cM capacity (veh/h)	304	485			926	
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Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	43	663	277			
Volume Left	38	0	5			
Volume Right	5	76	0			
cSH	319	1700	926			
Volume to Capacity	0.14	0.39	0.01			
Queue Length 95th (m)	3.6	0.0	0.1			
Control Delay (s)	18.1	0.0	0.2			
Lane LOS	C		A			
Approach Delay (s)	18.1	0.0	0.2			
Approach LOS	C					
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Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			42.7%	ICU Level of Service		A
Analysis Period (min)			15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	5	46	0	15	5	155	12	10	285	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	5	50	0	16	5	168	13	11	310	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	536	527	312	526	523	175	315			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536	527	312	526	523	175	315			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	89	100	98	100			99		
cM capacity (veh/h)	442	451	728	455	453	868	1245			1394		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	66	187	326								
Volume Left	5	50	5	11								
Volume Right	5	16	13	5								
cSH	550	515	1245	1394								
Volume to Capacity	0.02	0.13	0.00	0.01								
Queue Length 95th (m)	0.5	3.3	0.1	0.2								
Control Delay (s)	11.7	13.0	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.7	13.0	0.3	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			31.6%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	150	5	127	49	5	521
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	163	5	138	53	5	566
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	742	165			191	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	742	165			191	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	99			100	
cM capacity (veh/h)	382	880			1382	
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Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	168	191	572			
Volume Left	163	0	5			
Volume Right	5	53	0			
cSH	389	1700	1382			
Volume to Capacity	0.43	0.11	0.00			
Queue Length 95th (m)	16.2	0.0	0.1			
Control Delay (s)	21.2	0.0	0.1			
Lane LOS	C		A			
Approach Delay (s)	21.2	0.0	0.1			
Approach LOS	C					
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Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	5	32	0	15	10	420	38	17	220	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	5	35	0	16	11	457	41	18	239	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	791	796	239	780	775	477	239			498		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	791	796	239	780	775	477	239			498		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	89	100	97	99			98		
cM capacity (veh/h)	293	312	800	304	321	588	1328			1066		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	51	509	258								
Volume Left	11	35	11	18								
Volume Right	5	16	41	0								
cSH	371	360	1328	1066								
Volume to Capacity	0.04	0.14	0.01	0.02								
Queue Length 95th (m)	1.0	3.7	0.2	0.4								
Control Delay (s)	15.1	16.7	0.3	0.8								
Lane LOS	C	C	A	A								
Approach Delay (s)	15.1	16.7	0.3	0.8								
Approach LOS	C	C										
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			37.0%		ICU Level of Service					A		
Analysis Period (min)			15									

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	98	5	563	200	5	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	5	612	217	5	301
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1033	721			829	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1033	721			829	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	58	99			99	
cM capacity (veh/h)	256	428			802	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	112	829	307			
Volume Left	107	0	5			
Volume Right	5	217	0			
cSH	261	1700	802			
Volume to Capacity	0.43	0.49	0.01			
Queue Length 95th (m)	15.4	0.0	0.2			
Control Delay (s)	28.8	0.0	0.2			
Lane LOS	D		A			
Approach Delay (s)	28.8	0.0	0.2			
Approach LOS	D					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			54.2%	ICU Level of Service		A
Analysis Period (min)			15			

APPENDIX F:

**Provincial Statement of Interest
Regarding Housing**



F

Statement of Provincial Interest Regarding Housing

Goal

To provide housing opportunities to meet the needs of all Nova Scotians.

Basis

Adequate shelter is a fundamental requirement for all Nova Scotians.

A wide range of housing types is necessary to meet the needs of Nova Scotians.

Application

All communities of the Province.

Provisions

1. Planning documents must include housing policies addressing affordable housing, special-needs housing and rental accommodation. This includes assessing the need and supply of these housing types and developing solutions appropriate to the planning area. The definition of the terms affordable housing, special-needs housing and rental housing is left to the individual municipality to define in the context of its individual situation.
2. Depending upon the community and the housing supply and need, the measures that should be considered in planning documents include: enabling higher densities, smaller lot sizes and reduced yard requirements that encourage a range of housing types.
3. There are different types of group homes. Some are essentially single detached homes and planning documents must treat these homes consistent with their residential nature. Other group homes providing specialized services may require more specific locational criteria.
4. Municipal planning documents must provide for manufactured housing.

Implementation

1. These statements of provincial interest are issued under the *Municipal Government Act*. The Minister of Housing and Municipal Affairs, in cooperation with other provincial departments, is responsible for their interpretation.
2. Provincial Government departments must carry out their activities in a way that is reasonably consistent with these statements.
3. New municipal planning documents as well as amendments made after these statements come into effect must be reasonably consistent with them.
4. Councils are encouraged to amend existing planning documents to be reasonably consistent with the statements. Where appropriate, the preparation of intermunicipal planning strategies is encouraged.
5. Reasonably consistent is defined as taking reasonable steps to apply applicable statements to a local situation. Not all statements will apply equally to all situations. In some cases, it will be impractical because of physical conditions, existing development, economic factors or other reasons to fully apply a statement. It is also recognized that complete information is not always available to decision makers. These factors mean that common sense will

dictate the application of the statements. Thoughtful innovation and creativity in their application is encouraged.

6. Conflicts among the statements must be considered and resolved in the context of the planning area and the needs of its citizens.

7. The Department of Housing and Municipal Affairs, with other Provincial departments, may prepare guidelines and other information to help municipalities in implementing the statements. Provincial staff are available for consultation on the reasonable application of the statements.