

PO Box 1749  
Halifax, Nova Scotia  
B3J 3A5 Canada

## MEMORANDUM

TO: Chair and Members of North West Planning Advisory Committee

FROM: Tim Beed, Planner

DATE: July 6th, 2016

**SUBJECT: Case 20284: Application by Ekistics Plan + Design to consider a development agreement for a 9 hole golf course at PIDs 00421248, 40702474, 41189002 Hammonds Plains Road, Hammonds Plains.**

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**Location:** 2108 Hammonds Plains Road, Hammonds Plains

**Existing Use:** The site is predominantly undeveloped. A Nova Scotia Power transmission line runs along the eastern portion of the site and there are also remnants of an old quarry on the site. There are several local commercial, service and light industrial uses in close proximity along Hammonds Plains Road.

**Background:** There is an existing development agreement on a small portion of each of the lots that was originally approved for a quarry (Case # 91065) which is proposed to be discharged. The access for the proposed golf course is over the adjacent property that fronts on Hammonds Plains Road, which was recently rezoned to C-4 in June 2015.

**Designation:** Mixed Use B (MU-B) under the Beaver Bank, Hammonds Plains and Upper Sackville Municipal Planning Strategy (Map 1).

**MPS Policy:** Under the current Mixed Use B designation, Commercial Recreation uses can be considered in accordance with Policy P-27 and P-137 (Attachment B). When considering a Golf Course, the layout of club houses and greens are to be designed in such a way that the impact on watercourses and adjacent development is minimized.

**Zoning:** MU-1, C-4, P-2 (Mixed Use 1, Highway Commercial, Community Facility) Zones under the Beaver Bank, Hammonds Plains and Upper Sackville Land Use Bylaw (Map 3). The current zoning permits multiple uses on the property. A commercial recreation use, such as a golf course, maybe considered by development agreement.

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**Proposal:** An application by Ekistics Plan + Design to enter into a Development Agreement for a 9 hole golf course on 125 acres (50h) with a maintenance building at 2108 Hammonds Plains Road. The proposed design includes a 20m riparian buffer along a stream onsite and a stormwater management plan that utilizes 6 proposed ponds to retain and filter rain water runoff.

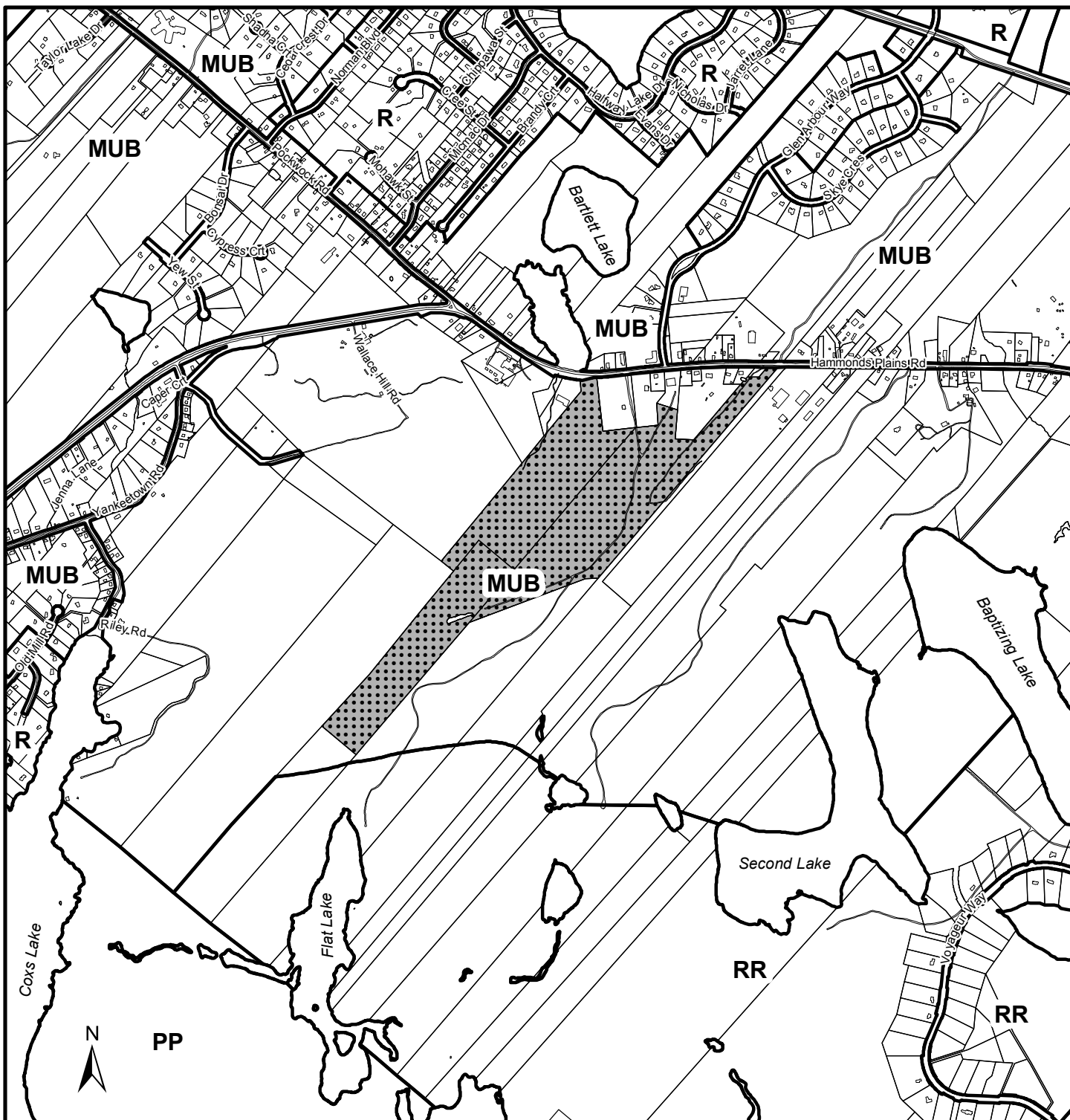
**Input Sought from North West Planning Advisory Committee**

Feedback is sought from NWPAC relative to this proposed application. NWPAC's recommendation will be included in the staff report to North West Community Council.

**Attachments:**

Map 1 Generalized Future Land Use Map  
Map 2 Zoning Map

Attachment A Excerpt of Beaver Bank, Hammonds Plains, Upper Sackville Land Use By-law  
Attachment B Excerpt from Beaver Bank, Hammonds Plains, Upper Sackville Municipal Planning Strategy  
Attachment C Applicant's Submission  
Attachment D Public Information Meeting Minutes (April 18<sup>th</sup>, 2016)  
Attachment E Traffic Impact Statement



## Map 1 - Generalized Future Land Use

2108 Hammonds Plains Rd,  
Hammonds Plains

**HALIFAX**



Area of Proposed  
Development Agreement

### Designation

MUB Mixed Use B  
R Residential  
RR Rural Resource  
PP Provincial Park

0 200 400 600 800 m

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.

Beaver Bank, Hammonds Plains  
and Upper Sackville Plan Area



## Map 2 - Zoning

2108 Hammonds Plains Rd,  
Hammonds Plains



Area of Proposed  
Development Agreement

Beaver Bank, Hammonds Plains  
and Upper Sackville Plan Area

### Zone

R-1	Single Unit Dwelling
C-2	General Business
C-4	Highway Commercial
I-1	Mixed Industrial
MU-1	Mixed Use 1
MR-1	Mixed Resource
P-2	Community Facility
PWS	Protected Water Supply
RPK	Regional Park

**HALIFAX**



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.

**Planning Context:** Land Use Bylaw

**Plan Area:** Beaver Bank, Hammonds Plains and Upper Sackville

**Applicable Zoning:** MU-1, C-4, P-2

- Permits multiple uses on the property; however, a **development agreement** is required for a commercial recreation use.

### **3.6 USES CONSIDERED BY DEVELOPMENT AGREEMENT:**

(a) Notwithstanding Section 3.5 above, certain uses which may not be uses permitted in any zone may be considered in accordance with the Municipal Government Act. As provided for by Policies P-18, P-19, **P-22A (RC-Mar 5/13;E-Apr 20/13)**, **P-26A (RC-Sep 16/08;E-Oct 4/08)**, P-27, P-30, P-31, **P-32b (RC-Jul 8/03;E-Aug 16/03)**, P-39, P-41, P-44, P-50, P-56, P-77, and P-131 of the Municipal Planning Strategy for Beaver Bank, Hammonds Plains and Upper Sackville, such uses are as follows:

- Commercial recreation uses and expansion of existing commercial recreation uses in the Mixed Use A, B and C Designations and the Rural Resource Designation Salvage Yards in the Mixed Use C Designation

**Planning Context:** Municipal Planning Strategy

**Plan Area:** Beaver Bank, Hammonds Plains and Upper Sackville

**Land Use Policy:** Mixed Use B

- Provides for a limited amount of commercial and industrial development.
- Consider aspects of commercial developments such as lot size, separation distances, highway access, location of parking areas, setbacks from the highway, limits on outdoor storage and display and signage.
- Commercial Recreation uses can be considered where it can be shown that a site has high commercial recreation potential which can be exploited without creating negative external impacts.

When considering a Golf Course, the layout of club houses and greens are to be designed in such a way that the impact on watercourses and adjacent development is minimized, including hazards resulting from stray golf balls.

**Enabling Policy**

- P-27 Within the Mixed Use A, B and C Designations Council may consider any proposed expansion of existing commercial recreation uses as well as the development of new commercial recreation uses by development agreement
  - Consider:
    - the site exhibits characteristics which make the location particularly suitable for the proposed use
    - the potential for adversely affecting adjacent residential and community facility development by virtue of noise, visual intrusion, traffic generation and littering
    - the provision of landscaping or buffering from adjacent development and the public road to which it has access in order to reduce the impact of the proposed development
    - the availability of a site and site design which will entirely contain all aspects of the operation within the boundary of the proposed site
    - that the appearance of all buildings and structures related to the use shall be compatible with the surrounding area in terms of scale, exterior finish and signage
    - an assessment of environmental concerns related to the proposed development and in particular, potential effects on watercourses
    - P-137
- P-137 In considering development agreements shall have appropriate regard to the following matters:
  - that the proposal is in conformity with the intent of this Plan and with the requirements of all other municipal by-laws and regulations

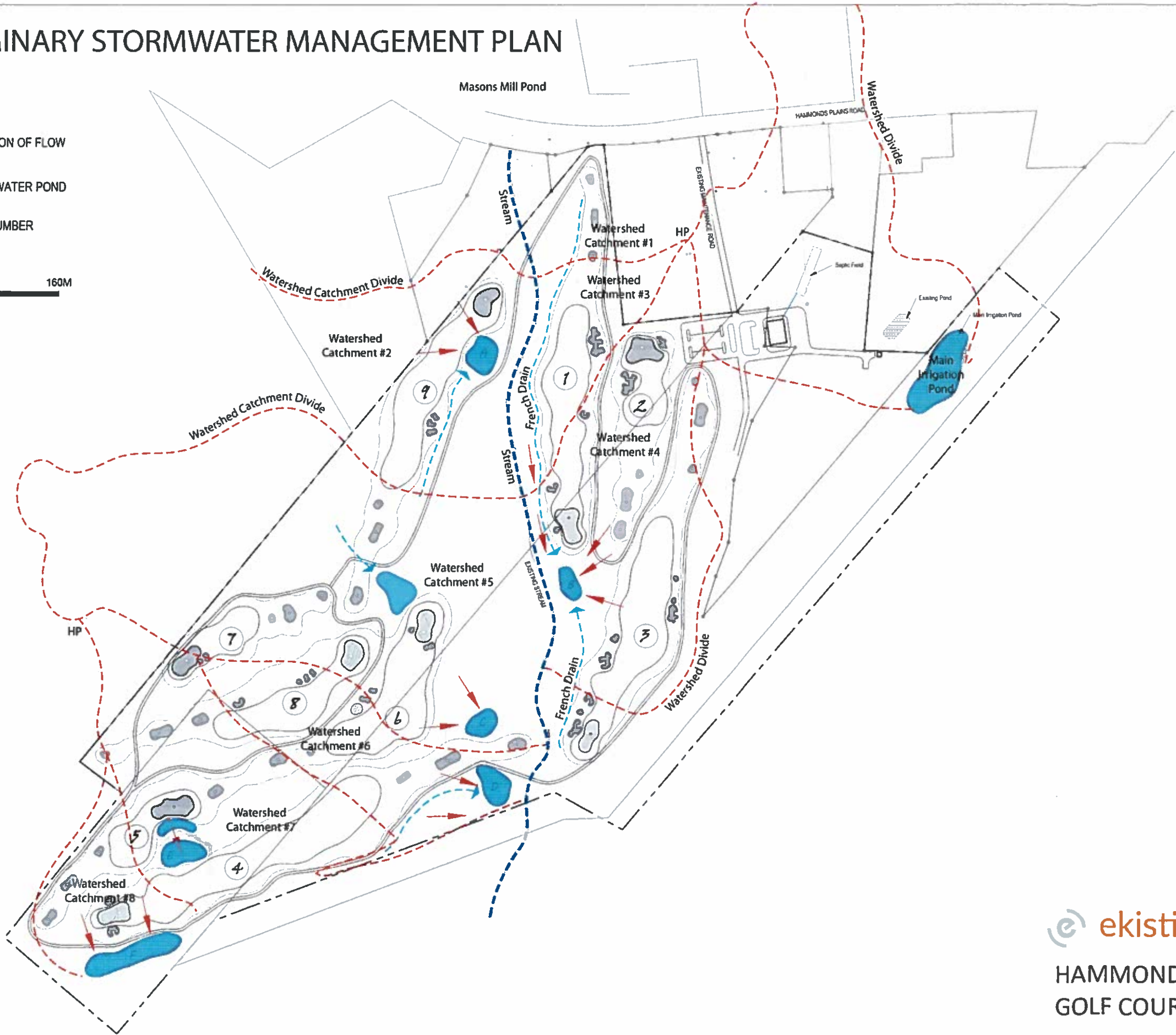
- that the proposal is not premature or inappropriate
- that controls are placed on the proposed development so as to reduce conflict with any adjacent or nearby land uses
- that the proposed site is suitable in terms of the steepness of grades, soil and geological conditions, locations of watercourses, marshes or bogs and susceptibility to flooding

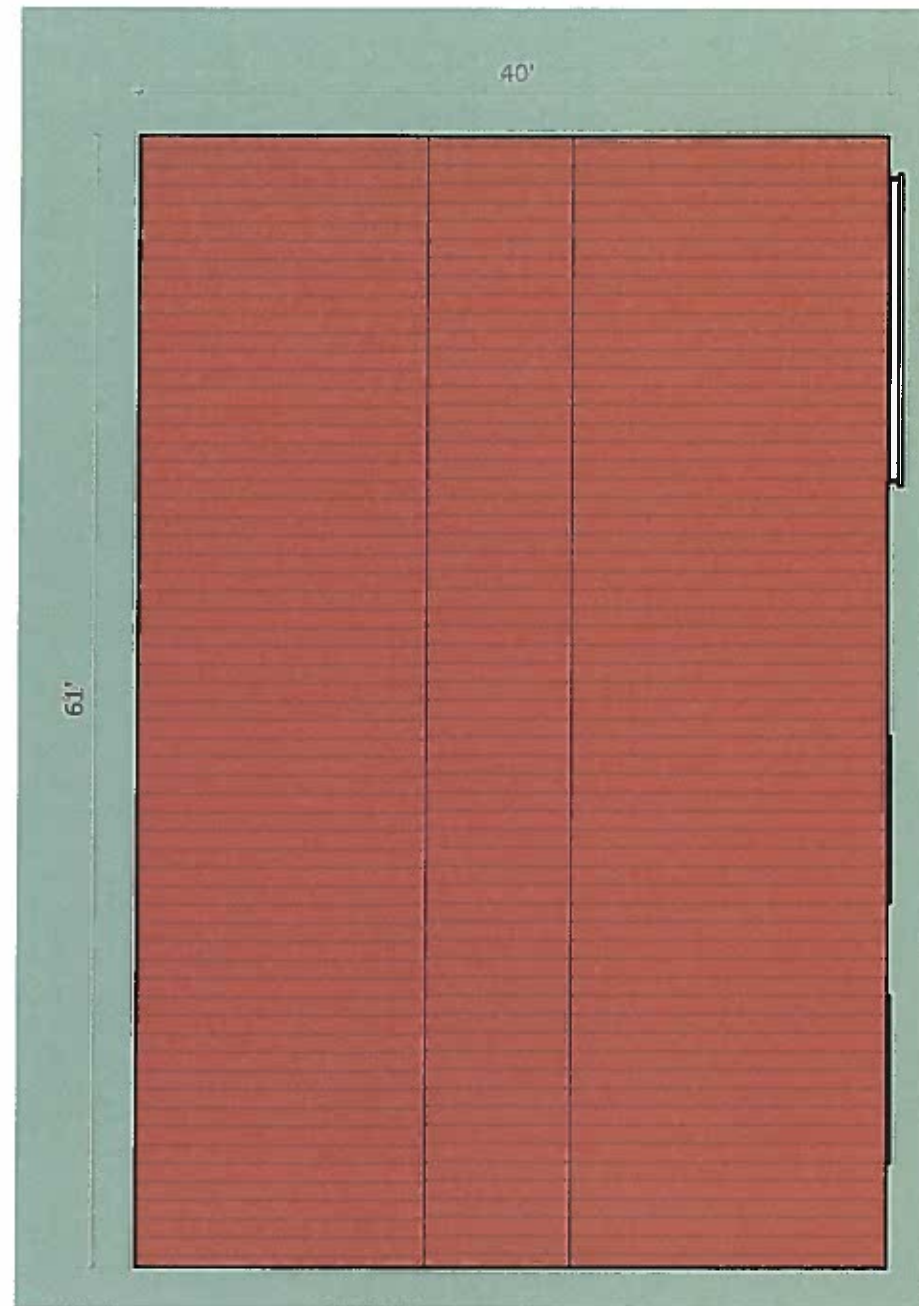
# PRELIMINARY STORMWATER MANAGEMENT PLAN

LEGEND:

- DIRECTION OF FLOW
- STORMWATER POND
- HOLE NUMBER

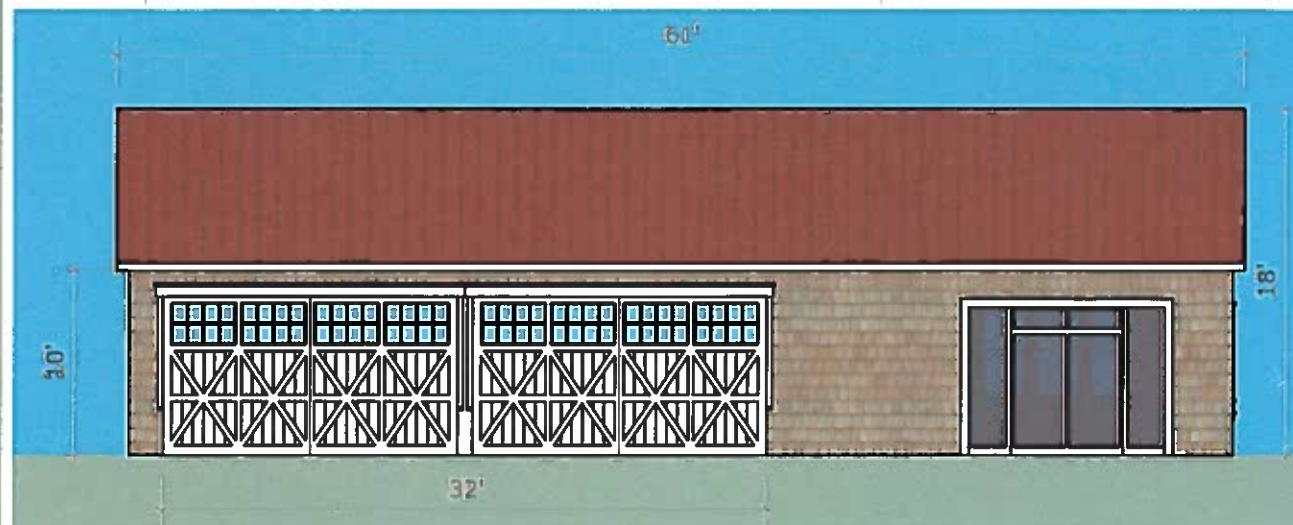
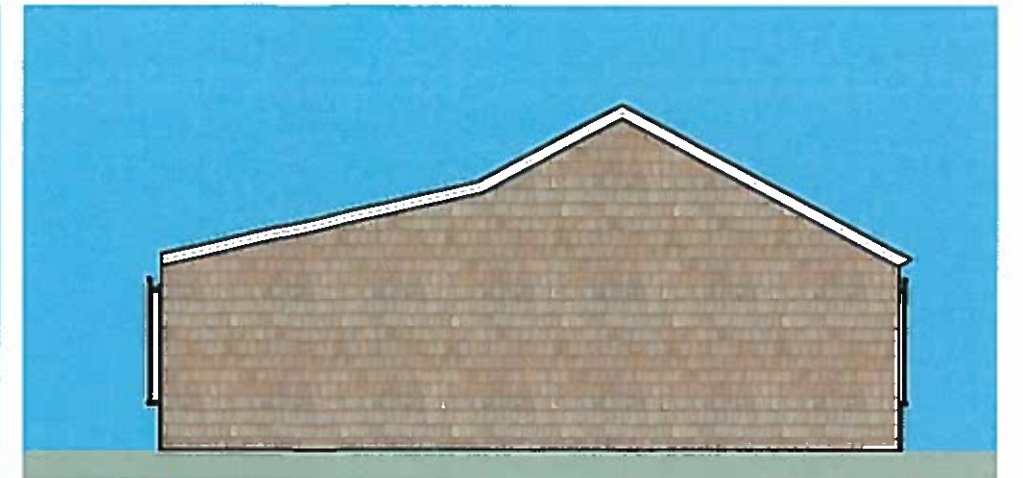
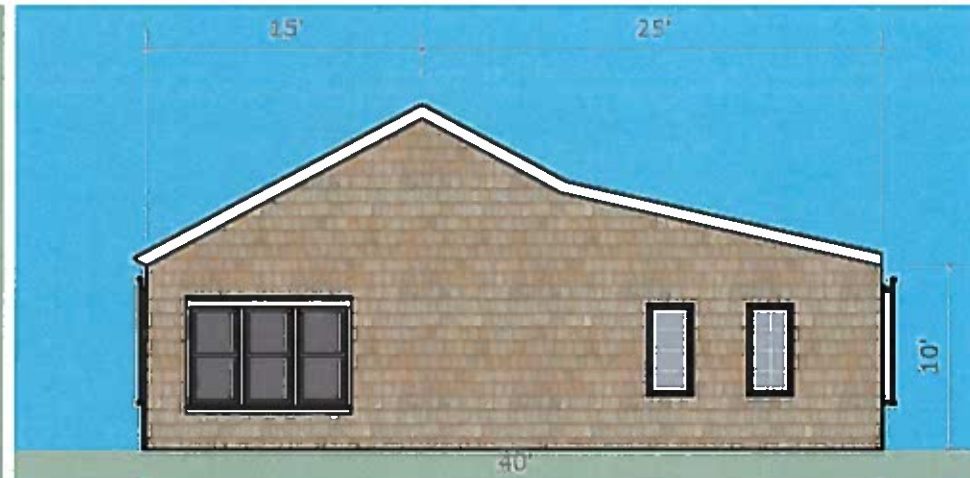
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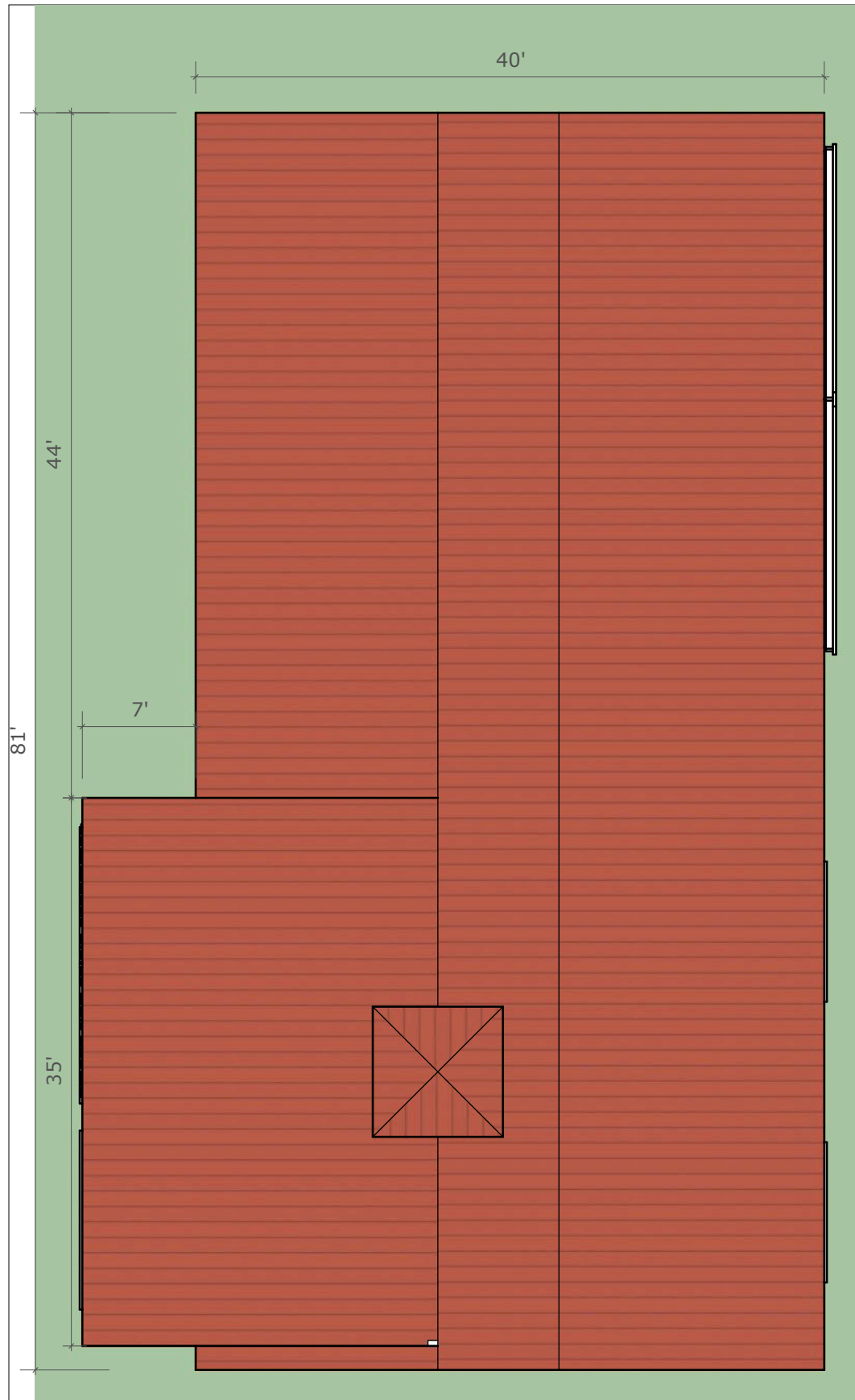




**Roof Plan - Maintenance Building**  
scale 1"=10'

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**Roof Plan - Maintenance Building**  
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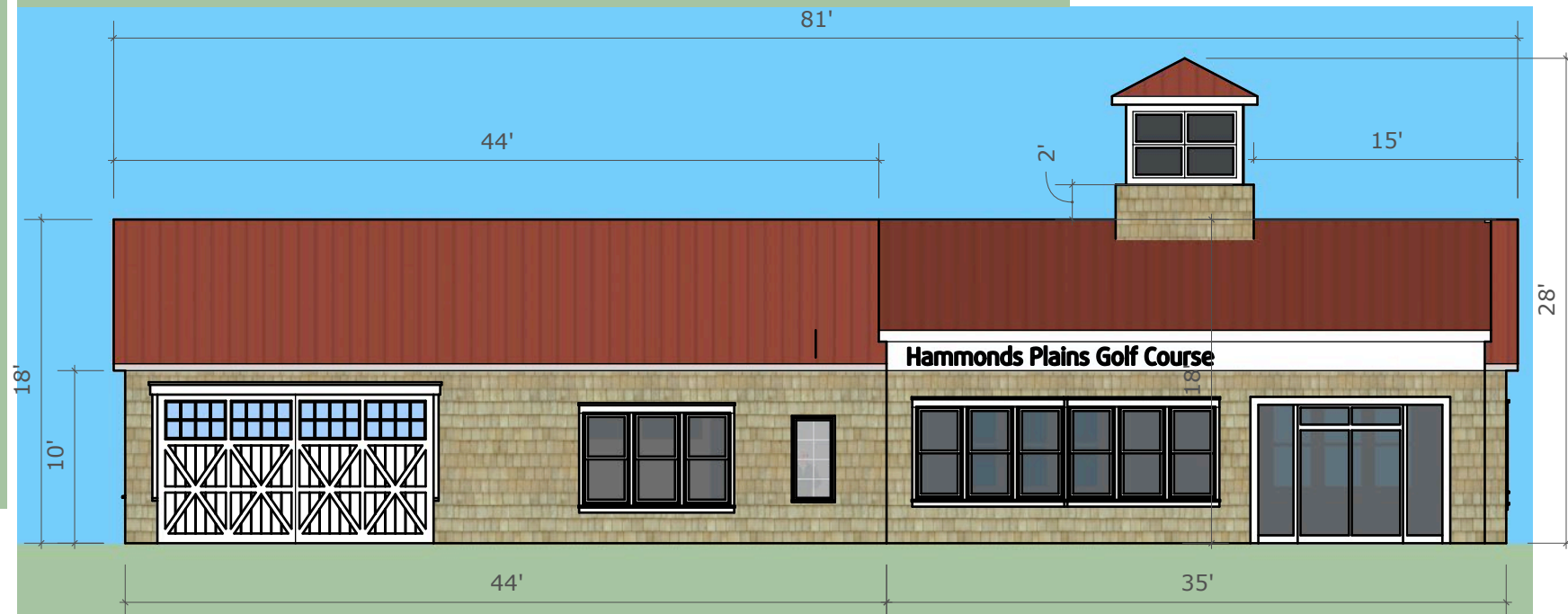
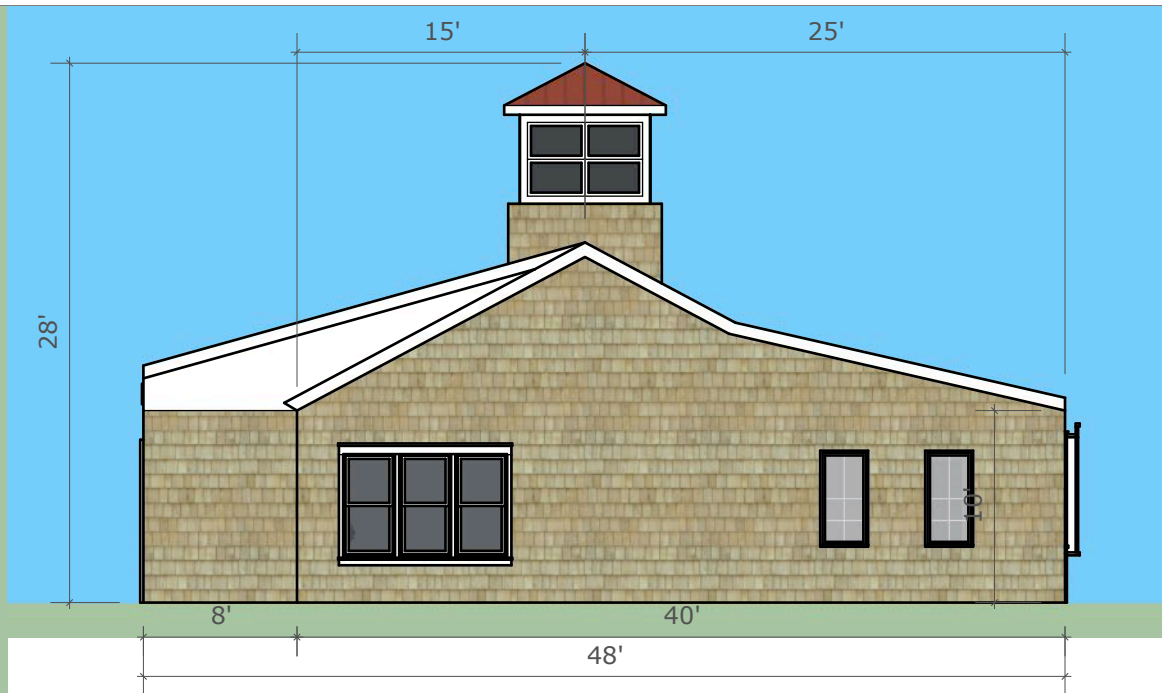


Figure 1: SITE MASTER PLAN



**HALIFAX REGIONAL MUNICIPALITY  
Public Information Meeting  
Case 20284**

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

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**Wednesday, April 20, 2016  
7:00 p.m.**

**Hammonds Plains Consolidated School - 2180 Hammonds Plains Rd, Hammonds Plains, NS**

**STAFF IN**

**ATTENDANCE:** Erin MacIntyre, Planner, HRM Development Approvals  
Tim Beed, Planner, HRM Development Approvals  
Holly Kent, Planning Technician, HRM Development Approvals  
Tara Couvrette, Planning Controller, HRM Development Approvals

**ALSO IN**

**ATTENDANCE:** Deputy Mayor, Matt Whittman, District 13  
Applicant, Rob LeBlanc– Ekistics Plan + Design  
Land owner, Vernon Kynock  
North West PAC member, Brian Murry  
North West PAC member, Ross Evans

**PUBLIC IN**

**ATTENDANCE:** Approximately 28

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The meeting commenced at approximately 7:03 p.m.

**Call to order, purpose of meeting – Tim Beed**

Mr. Beed introduced himself as the Planner and Facilitator for the application; Erin MacIntyre a planner with HRM, the applicant, Rob LeBlanc - representing Ekistics Plan + Design and Deputy Mayor Matt Whittman.

Case No. 20284: Application by Ekistics Plan + Design. to consider a new development agreement for a 9 hole golf course at 2108 Hammonds Plains Road, Hammonds Plains.

The purpose of the Public Information Meeting (PIM) is: a) to identify that HRM has received a proposal for the site; b) to provide information on the project; c) to explain the Planning Policies and the stages of the Planning Process; d) an opportunity for the applicant to present the proposal and answer any questions regarding the application; and e) an opportunity for Staff to receive public feedback regarding the proposal. No decisions are made at this PIM.

**1. Presentation of Proposal – Tim Beed**

Mr. Beed introduced himself and provided a brief introduction to the application and then made a presentation to the public outlining the purpose of the meeting, status of the application and the development request. Mr. Beed outlined the context of the subject lands and the relevant planning policies.

**Presentation of Proposal – Rob – Ekistics Plan + Design**

Mr. LeBlanc explained the background of the proposal, the property (92 acres), showed the concept plan and explained next steps. He explained that this would be a 9-hole executive (short) course with 1 par 5, 4 par 4s and 4 par 3s. He would only be irrigating the greens and tees. He would have a 3/4 acre irrigation pond 10,000 gpd, 2-4 wells with a 3 phase pump house and a 2000-5000 sq.ft. maintenance building. For stormwater management he would follow the provincial sediment and erosion control manual. There would be 8 sub-watershed catchments on the property and each sub-catchment drains to the existing stream which drains from Masons Mill Pond. There would also be a 20m stream setback.

## 2. Questions and Comments

**David Barrett, Beaver Bank** - Would like to know if it would be possible to do an email notification. **Mrs. MacIntyre** requested he leave his email information to be added to an email list for notification if it was to go that way in the future.

**Sheila Mann, she has a cottage on Cox Lake** – She would like to know if the stream he mentioned that runs over the property connects to Cox Lake. **Mr. LeBlanc** stated it drains south into Flat Lake and there is an outfall into another Lake and into another series of Lakes until it finally outfalls into the ocean. **Ms. Mann** – Stated Cox Lake defiantly has an outflow that goes to Flat Lake but it must be a different outflow in another direction then. **Mr. LeBlanc** stated that next time it would be helpful to bring a bigger map that shows the actual water shed not just the sub water shed.

**Reg Jones, Voguer Lakes** – Wanted to know why there was no request now for a pro shop that would sell golf balls etc. At some point down the road this is going to be something you will want so why not add it to the plans now rather than go through the process again. It is something to consider.

**Deputy Mayor Matt Whittman** – Thanked everyone for being there and the applicant for his presentation and all the information he provided. He wanted to know how scalable this is, if someday it could be 18 holes. He also wanted to know if the disc golf would remain. **Mr. LeBlanc** stated there were no plans to touch the disc golf area. **Deputy Mayor Matt Whittman** wanted to know if there were traffic studies done and what the impact would be. **Mr. LeBlanc** stated it is set up so that people would tee off every 10 minutes. In a worst case scenario every 10 minutes you would have up to four people coming in but in reality that probably wouldn't be the case and there would be very little impact to current traffic in the area.

**Pamela Loveless, Candidate for HRM 13, Maplewood** – She is excited about the project because it is an opportunity to offer more recreation to families. She would like to know how to incorporate a picnic area or some child friendly ponds because older and younger kids will be coming in with their parents and it would be nice to have an opportunity to think from the perspective of a family. **Mr. LeBlanc** stated that the fairways have been widened for this reason, because people who don't play golf tend to spray balls so it is a little bit friendlier course and a shorter course which makes it easier to play. You will notice we left two significant areas, one by the disc golf that could be developed in the future and the area by the streams, that steep area, so there is no erosion into the stream. **Pamela Loveless** stated there are some significantly steep areas and maybe that area could be used for trails. **Mr. LeBlanc** stated there will be a trail all around the golf course on terrane that isn't so crazy.

**David Barrett, Beaver Bank**, he was part of a public participation committee from 82-86 that included this area and also from 92-96. He owns Barrett lumber, a couple of archers below where the golf course would be. He feels that Vernon is very community minded and is in favor of this development.

**Vernon Kynock, Hammonds Plains** – He wanted to answer a few questions that were raised. With regards to Sheila Mann's question - the water runs down to a brook and then to a pond called the Hay Marsh and then another little pond called the Cat Gut and then into Second Lake, nowhere near Cox Lake. The Disc golf will not be affected. He thanked everybody for coming out.

## 3. Closing Comments

**Mr. Beed**, thanked everyone for coming and expressing their comments.

## 4. Adjournment

The meeting adjourned at approximately 7:45p.m.



# Hartland Developments Traffic Impact Study Update

May 2016

Prepared for

**Hartland Developments Limited**

1993 Hammonds Plains Road  
Hammonds Plains, NS  
B4B 1P3

**JRL consulting**

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Prepared by

Jeff R. LeBlanc, P.Eng., RCDD

# 1 Introduction

## 1.1 Background

Hartland Developments Limited has proposed to develop a 5.73 acre parcel of land at civic address 2090 Hammonds Plains Road (Lot 3 per survey completed by Servant, Dunbrack, McKenzie & MacDonald Ltd on September 17, 2009). The property is located just west of the Hammonds Plains Service Station on the south side of Hammonds Plains Road. The entrance to Glen Arbor is located approximately 150 meters east of the proposed development.

Existing zoning permits a commercial development up to 10,000 square feet on this property and while the final type of development has not been confirmed, initial plans include a 2,500 square foot restaurant with drive thru. Exhibit 1.1 shows the proposed Hartland Developments property in the context of the surrounding area in Hammonds Plains.

*Exhibit 1.1 – Hartland Developments Lot 3 Hammonds Plains Road in Hammonds Plains, NS*



*Source: Google Earth*

JRL consulting completed a Traffic Impact Study for the proposed development in July 2010 and it was submitted by the client to HRM for their review. Since then a commercial development at the entrance to Glen Arbour has been completed in addition to other organic growth in the general area. The Glen Arbour/Hammonds Plains Road intersection has also been signalized.

HRM provided comments on February 9, 2015 regarding the application (Case 19172) by R.E. Jones Investments Limited for the lands of Hartland Developments Limited and Hammonds Plains Service Centre to rezone 2074, 2090 and 2092 Hammonds Plains Road, Hammonds Plains, from I-1 (Mixed Industrial), P-2 (Community Facility) and MU-1 (Mixed Use 1) to C-4 (Highway Commercial). The letter from Thea Langille, Major Projects Planner with Planning and Development stated the following:

*A public information meeting and review by the North West Planning Advisory Committee (PAC) were completed over the summer. Feedback from both the public and PAC was very supportive.*

*HRM Staff has reviewed the proposal in detail and the application was circulated to HRM Development Approvals (Permits), HRM Development Engineering, Halifax Water, HRM Permits and Inspections (Building Inspection), Halifax Fire (Fire Prevention Office), and HRM Civic Addressing.*

*All departmental reviews yielded positive comments, however Development Engineering, in consultation with HRM Traffic Services, identified some concerns with the Traffic Impact Study, primarily the age of the TIS. Development Engineering's comments are as follows:*

*We have reviewed the Traffic Impact Statement (TIS) dated April 2010 and require an updated TIS be submitted based on the following:*

- *Age of study*
- *Traffic data used is 5 years old.*
- *Study horizon was for 2014 completion.*
- *Hammonds Plains Road/ Glen Arbour Way intersection is now signalized with some lane reconfiguration.*
- *Amount of other development that has taken place in the area over the last four/five years is not likely accurately accounted for in background growth estimates.*
- *Current trip generation manual not used.*

*Please be advised that following some internal discussions, Development Engineering did go back to explore if these questions could be addressed through data HRM has on file from other applications in the area. Unfortunately, in this instance this was not possible. In order for HRM Staff to finalize our recommendation to North West Community Council on this application an addendum to the TIS must be submitted.*

The key conclusions and recommendations from our original 2010 Traffic Impact Study were as follows:

- Our analysis shows that the proposed Hartland Developments development can be introduced safely and efficiently to the existing transportation network with the recommendations provided in section 5.
- As mentioned in Section 3.2, the types of local land uses proposed for this development will in fact attract a large portion of its customers from the existing traffic stream and as a result the trips generated will have a limited impact on the Glen Arbour Way/Hammonds Plains Road intersection.
- Currently, local residents must travel outside of the study area for all retail trips so this proposed development has the potential to actually reduce trips on the Hammonds Plains Road since residents can meet their retail needs locally.
- We recommend an update to this traffic study if the type of development changes significantly to properly assess actual background traffic growth and site generated traffic against the assumptions made in this report.
- We do not recommend the installation of a westbound storage lane for site access since the final type of development has not been confirmed at this stage and existing road width will permit some queuing of WB left turning vehicles in the existing painted traffic island. Installation of traffic signals at the Hammonds Plains Road/Glen Arbour Way intersection may also provide additional opportunities for left turning vehicles. If HRM's policy requires a left turn storage lane to access the site then repainting existing lines may achieve this goal within the existing paved road width.

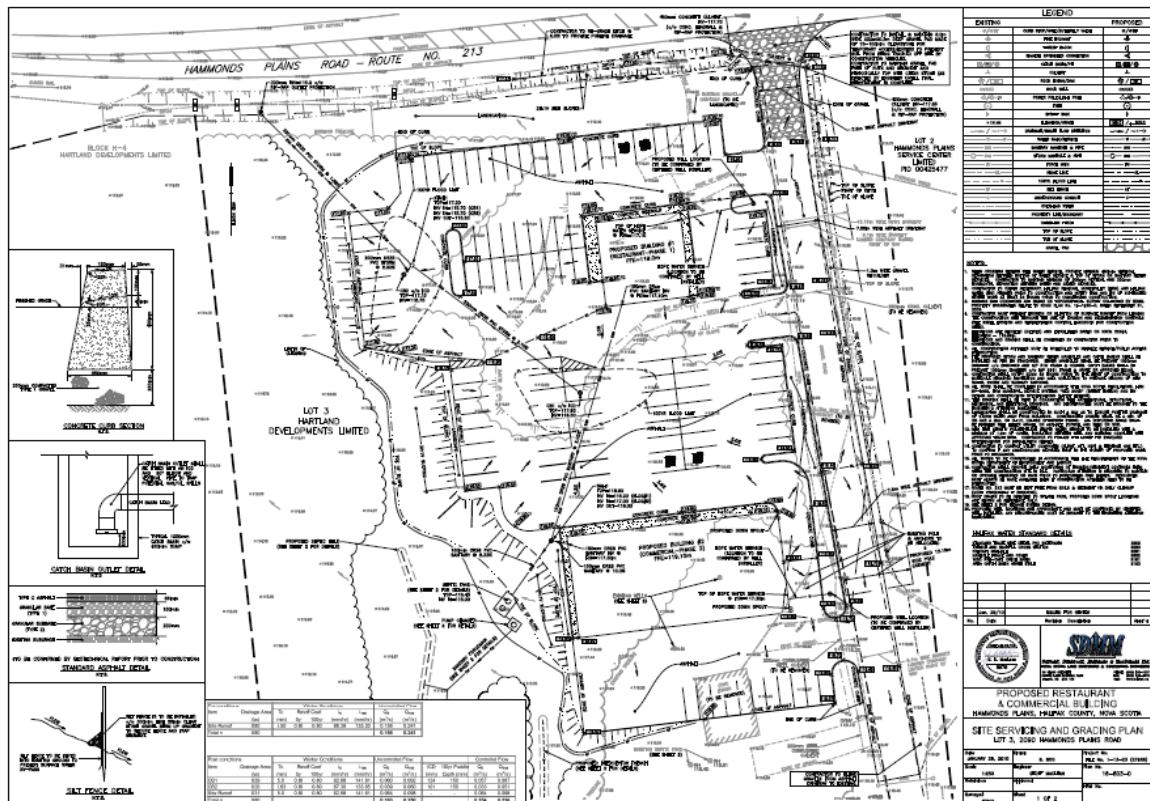
In March 2015, we completed a full update of the original 2010 Traffic Study as requested by HRM that addressed all comments and included new manual traffic counts at the Hammonds Plains Road/Glen Arbour Way intersection that allowed us to verify actual background traffic growth rates.

The original concept plan for the proposed development remains the same and it includes a 2,500 square foot Drive-In Restaurant in Phase 1 and a 7,500 square foot Commercial Building in Phase 2. Access to the site is will be through an existing driveway to Hammonds Plains Road and the proposed layout includes a total of 110 parking spaces.

The developer has now proposed to construct a new 9-hole golf course on lands just south of this proposed development. Access to the golf course will be from the same driveway as the proposed commercial development.

HRM has requested that the Traffic Study be updated to include an analysis of the traffic that will be generated by the proposed nine-hole golf course. Refer to Exhibit 1.2 for the site plan of the proposed Hartland Developments property (the golf course will share this access point)

Exhibit 1.2 – Hartland Developments Original Proposed Site Plan



Source: Hartland Developments Limited

We set a five year horizon period in the original study for full build out of the proposed development and will maintain that view and as a result we reset 2020 as the horizon period for analysis in the 2015 update and we will maintain that same horizon period for this 2016 update which includes an analysis of the impacts of the proposed 9-hole golf course.

We are pleased to submit this updated report which includes our findings and recommendations with the addition of the proposed 9-hole golf course.

## 2 Existing Traffic Conditions

### 2.1 Description

The principal route affected by this proposed development is Hammonds Plains Road (Route 213) including two key intersections. Exhibit 2.1 summarizes HRM's Characteristics of Street Classes.

Exhibit 2.1 - HRM Characteristics of Street Classes

Characteristic	Arterial Street	Major Collector	Minor Collector	Local Industrial	Local Street
1. Traffic Service Function	First Consideration	Traffic movement primary consideration, land access secondary consideration, some parking	Traffic movement of equal importance with land access, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted
2. Land Access Function	Limited Access with no parking				
3. Range of design traffic average daily volume	More than 20,000	12,000 to 20,000 or more	Up to 12,000	Less than 3,000	Less than 3,000
4. Characteristics of traffic flow	Uninterrupted flow except at signals; w/ pedestrian overpass	Uninterrupted flow except at signals and crosswalks	Interrupted flow	Interrupted flow	Interrupted flow
5. Average running speed in off-peak conditions	50-70 km/hr	40-60 km/hr	30-50 km/hr	15-30 km/hr	15-30 km/hr
6. Vehicle types	All types	All types but trucks may be limited	All types with truck limitation	All types	Passenger and service vehicles, transit buses; large vehicles restricted
7. Connects to	Expressways, arterials, major collectors, minor collectors	Expressways, arterials, major collectors, minor collectors, some locals	Arterials, major collectors, minor collectors, locals	Some major collectors, minor collectors, locals	Some major collectors, minor collectors, locals

**Hammonds Plains Road** is a two-lane undivided major collector road with a posted speed of 70 kilometers per hour that runs east-west through the Study Area. There are a number of commercial and residential land uses near the study area that have direct access to Hammonds Plains Road as well as an elementary school to the west. Traffic Signals are installed at the Pockwock Road/Hammonds Plains Road intersection located approximately 900 meters west of the Glen Arbour Way/Hammonds Plains Road intersection.

The **Hammonds Plains Road at Glen Arbour Way** intersection is currently a signalized 4-leg intersection. The southern leg provides access to an existing fire station and the northern leg is the entrance to Glen Arbour. Glen Arbour Way is a two-lane undivided local collector road with a posted speed limit of 50 km/hr. The existing intersection includes an eastbound left turn auxiliary lane with approximately 100 meters storage and a westbound auxiliary lane approximately 30 meters of storage on Hammonds Plains Road. There is a channelized

westbound right turn onto Glen Arbour Way from Hammonds Plains Road. Refer to Exhibit 2.2 for a schematic drawing that shows the existing intersection configuration.

Refer to Exhibit 2.3 for photos of roads and key intersections in the study area

Exhibit 2.2 – Hammonds Plains Road at Glen Arbour Way Intersection Existing Configuration

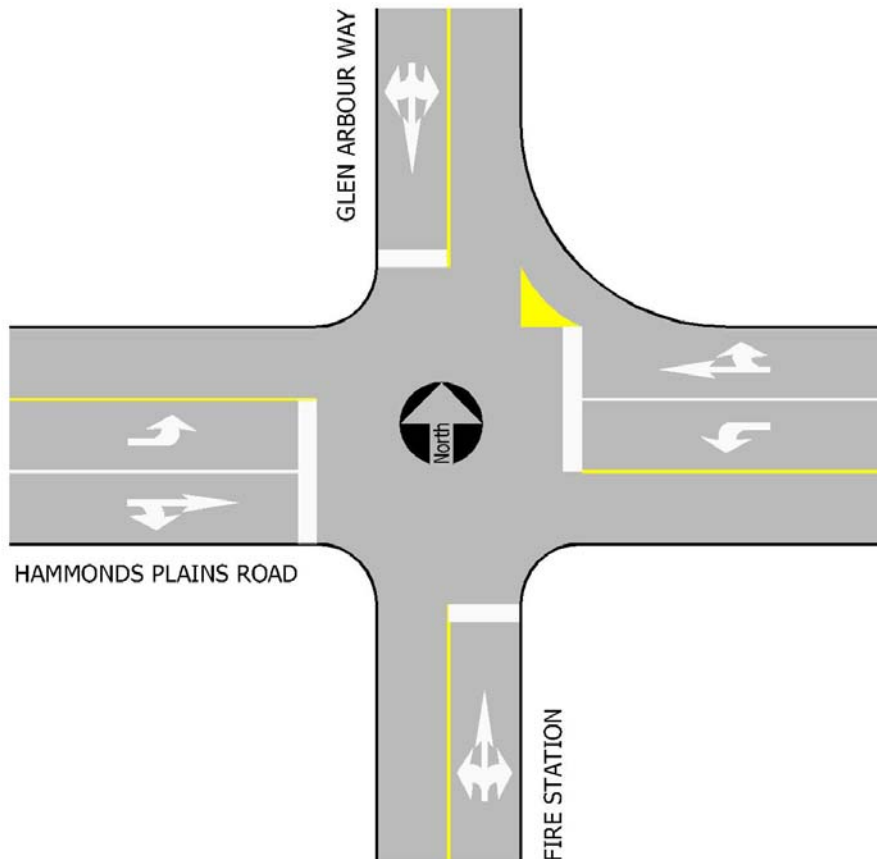


Exhibit 2.3 – Study Area Photos



2090 Hammonds Plains Road – Lot 3 Proposed Development



Looking West at Proposed Driveway



Looking East at Proposed Driveway



Hammonds Plains Road East of Proposed Development



Hammonds Plains Road at Glen Arbour Way Intersection Looking West



Hammonds Plains Road at Glen Arbour Way Intersection Looking East

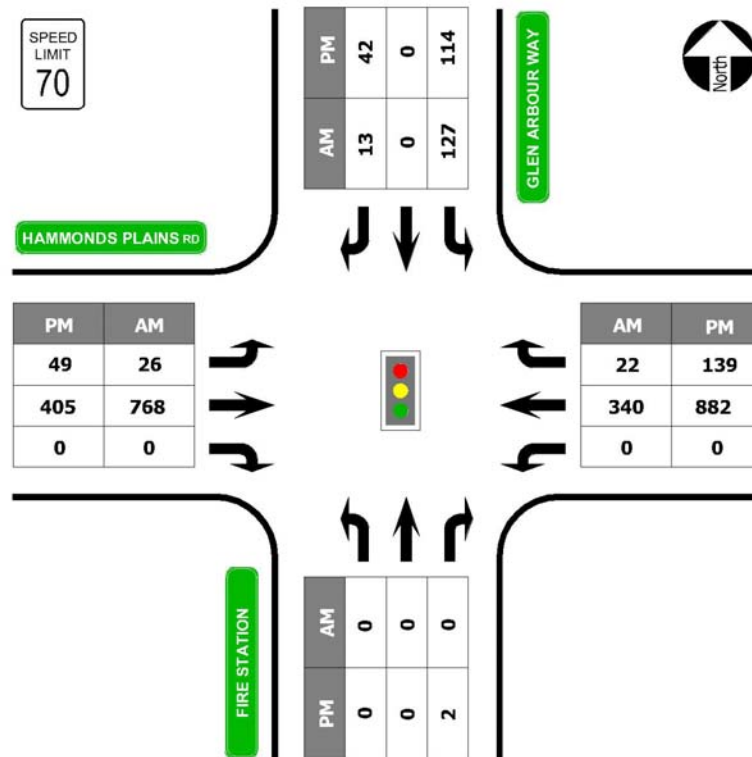


Hammonds Plains Road at Glen Arbour Way Intersection Looking North

## 2.2 Existing Traffic Volumes

JRL consulting obtained AM and PM peak hour turning movement counts that were completed by HRM in September 2014 at the Hammonds Plains Road/Glen Arbour Way intersection. These counts are summarized in Exhibit 2.4

Exhibit 2.4 – Hammonds Plains Road/Glen Arbour Way Existing 2014 Traffic Volumes



In our 2010 study we applied an annual background traffic volume growth rate of 2% to estimate baseline traffic volumes at all intersections for analysis in 2014. Existing turning movement traffic volumes at all key intersections were increased by a total of 2% per year to establish baseline background traffic volumes for the 2014 horizon year.

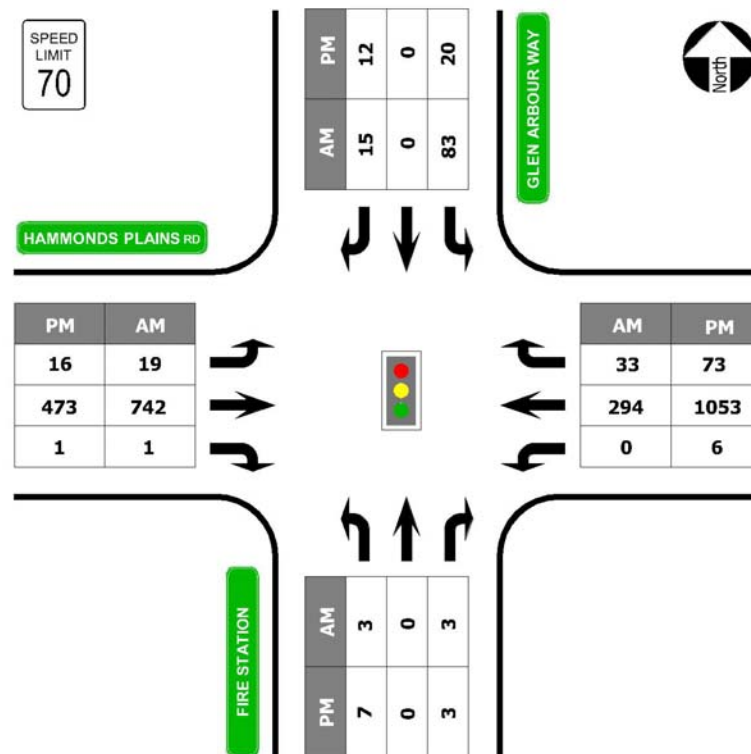
We had also assumed that the proposed Glen Arbour Commercial Development will be completed by the horizon year so we included estimated site generated trips from this development in the background traffic volumes for detailed analysis.

In our site review we noted that although the Glen Arbour Commercial Development has been completed it is not fully occupied so the HRM counts from September 2014 are only reflected the current tenants in the commercial centre.

The actual traffic observed by HRM is 4.9% less than our estimated background traffic in 2014 during the AM peak hour and 19.1% less in the PM peak hour. We note that through traffic volumes on Hammonds Plains Road are slightly larger than our estimates in the AM peak hour and they are less than our estimates in the PM peak hour. The background growth rate of 2% applied in the original study does seem reasonable in this area.

Exhibit 2.5 provides a summary of our estimated background 2014 traffic volumes at Hammonds Plains Road/Glen Arbour Way intersection from the 2010 Traffic Impact Study.

Exhibit 2.5 – Hammonds Plains Road/Glen Arbour Way Estimated Background Traffic 2014

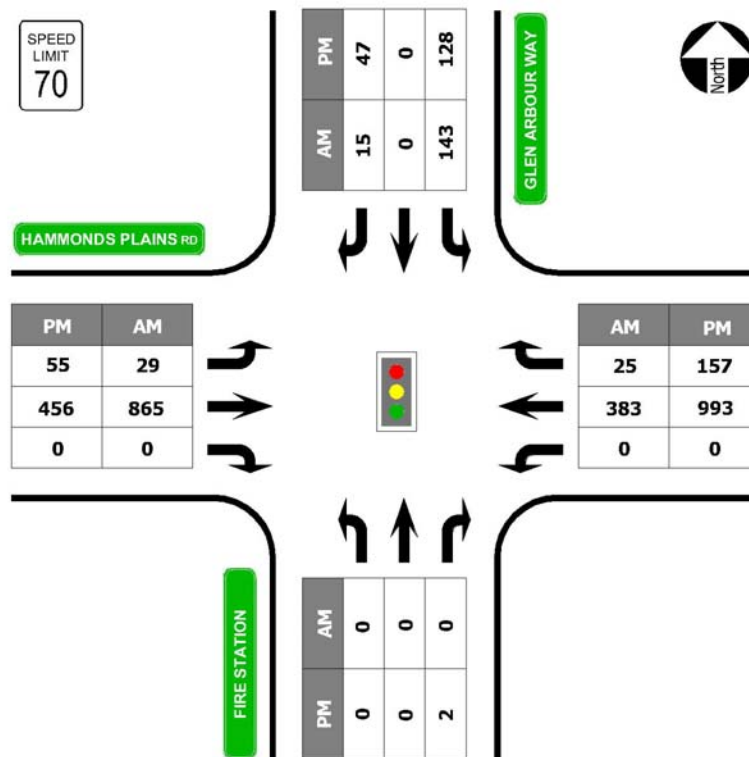


## 2.3 Background Changes in Traffic Conditions

We applied an annual background traffic volume growth rate of 2% to establish baseline background traffic volumes at all intersections for analysis in 2020. Existing turning movement traffic volumes from the HRM counts in September 2014 were increased by a total of 2% per year to establish baseline background traffic volumes for the 2020 horizon year.

Exhibit 2.6 provides a summary of estimated background 2020 traffic volumes at Hammonds Plains Road/Glen Arbour Way intersection.

Exhibit 2.6 – Hammonds Plains Road/Glen Arbour Way Estimated Background Traffic 2020



### 3 Site Generated Traffic

#### 3.1 Trip Generation

In our original study we completed new trip generation estimates using equations provided in Institute for Transportation Engineer's Trip Generation Manual Seventh Edition. For this addendum we are using the 9<sup>th</sup> edition of ITE's Trip Generation Manual.

The proposed restaurant will be fashioned after a 50's style diner similar to the Chickenburger in Bedford and it will have a drive thru lane. We reviewed ITE lands use definitions and determined that Land Use 934 is most suited to this proposed development.

The actual commercial use has not been determined so we assumed a retail development with 7,500 square feet of gross floor area as a reasonable worst-case scenario. The proposed golf course will have nine holes and ITE has data for golf courses based on employees, acres and holes and we have used number of holes for our analysis. We used the following ITE Land Use Codes to assess site generated trips for this proposed development:

- ITE Land Use 934 Fast Food Restaurant with Drive-Through Window

*"Includes fast-food restaurants with drive-through windows. This type of restaurant is characterized by a large carryout clientele; long hours of services (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours)."* The unit of measurement for average vehicle trip ends is 1000 square feet of gross floor area.

- ITE Land Use 820 Shopping Centre

*"A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. As shopping center's composition is related to its market area in terms of size, location and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands."* The unit of measurement for average vehicle trip ends is 1,000 Square Feet Gross Floor Area.

- ITE Land Use 430 Golf Course

*"Golf courses include 9-, 18-, 27- and 36-hole municipal course. Some sites have driving ranges and clubhouses with a pro shop, restaurant, lounge and banquet facilities."* The unit of measurement for average vehicle trip ends is number of holes.

Exhibit 3.1 – Site Generated Traffic Volumes with ITE Trip Generation Manual 9<sup>th</sup> Edition

LAND USE	QUANTITY	AM PEAK			PM PEAK		
		TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
Retail	7.5	32	61%	39%	106	48%	52%
			63	133		179	105
Fast Food Restaurant with Drive Thru Window	2.5	114	51%	49%	82	52%	48%
			39	116		186	119
Golf Course	9 holes	19	79%	21%	26	51%	49%
			15	4		13	13
TOTAL		164	92	72	214	107	107

The proposed 9-hole golf course will add an additional 19 vehicle trips (15 enter, 4 exit) in the AM peak hour and an additional 26 vehicle trips (13 enter, 13 exit) in the PM peak hour to what was included in the 2015 Traffic Study Update for the proposed commercial development at 2090 Hammonds Plains Road.

### 3.2 Pass-By Trips

We expect that this proposed development will attract a portion of its trips from the existing traffic passing by the site. These pass-by trips do not add new traffic to the surrounding transportation network; however, they are included in the traffic volumes entering and exiting the site. Essentially, pass-by trips are intermediate stops of a trip that already exists on the transportation network. They are not diverted from another roadway. The retail and restaurant components of this development will generate a significant amount of pass-by trips especially since they will primarily serve local residents. The smaller a retail development, the higher percentage of pass-by traffic it will attract.

We reviewed ITE's Trip Generation Handbook, 2<sup>nd</sup> Edition for their recommended practice regarding pass-by trips and it states that *"Pass-by trips are drawn from the passing traffic stream, but are always included in site driveway movements. In traffic analyses, the summation of driveway volumes must equal the total external site generation (i.e., the sum of primary, pass-by and diverted linked trips). Pass-by trips are not included in (and thus subtracted from) the*

*through volumes passing a given site access point on an adjacent road.”*

ITE provides data plots and equations that estimate the average pass-by trip percentage versus 1,000 Square Feet Gross Leasable Area of retail space that are based on field studies completed across North America. The average pass-by trip percentage for a 7,500 sqft shopping center is 83% during the PM peak hour. Pass-by trips for a Fast Food Restaurant with Drive Through is approximately 50% based on a limited sample size provided in the ITE recommended practice. The ITE recommended practice is to include all estimated trips in the site movements (enter and exit) and reduced the through traffic volumes accordingly to account for the pass-by trip percentage, however, we have not adjusted the through traffic as a worst case scenario in this analysis since the land use has not been confirmed at this point.

### 3.3 Trip Distribution and Assignment

We distributed and assigned the site-generated trips to the transportation network by analyzing the existing traffic distribution at the Hammonds Plains Road/Glen Arbour Way intersection in the AM and PM peak hours as observed during HRM manual traffic counts. Detailed spreadsheets showing how the site-generated traffic was distributed at all intersections have been included in the Appendix.

### 3.3 Total Traffic

The estimated distributed site-generated traffic was added to the calculated 2020 background traffic volumes (with an annual growth factor of 2%) to obtain the total traffic volumes at the Hammonds Plains Road/Glen Arbour Way intersection and Hartland Developments site access point. Please refer to drawings below for a summary of total traffic volumes in 2020 and the Appendix for a detailed breakdown of the calculation of total traffic at each intersection for this analysis period.

Exhibit 3.3 provides a summary of estimated total 2020 traffic volumes at the Hammonds Plains Road/Glen Arbour Way intersection.

Exhibit 3.4 provides a summary of estimated total 2020 traffic volumes at the Hammonds Plains Road/Hartland Developments Site Access.

Exhibit 3.3 – Hammonds Plains Road/Glen Arbour Way Estimated Total Traffic 2020 with Golf Course

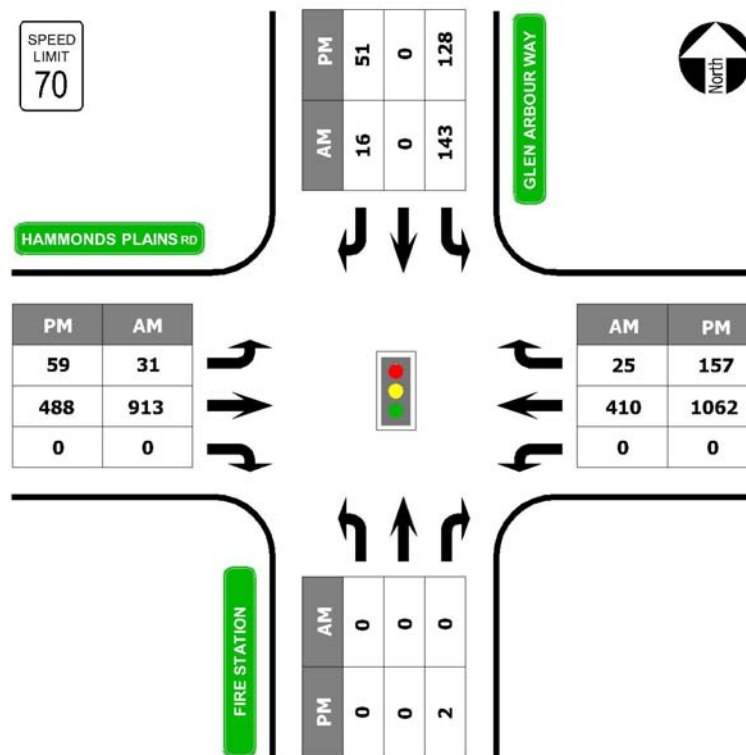
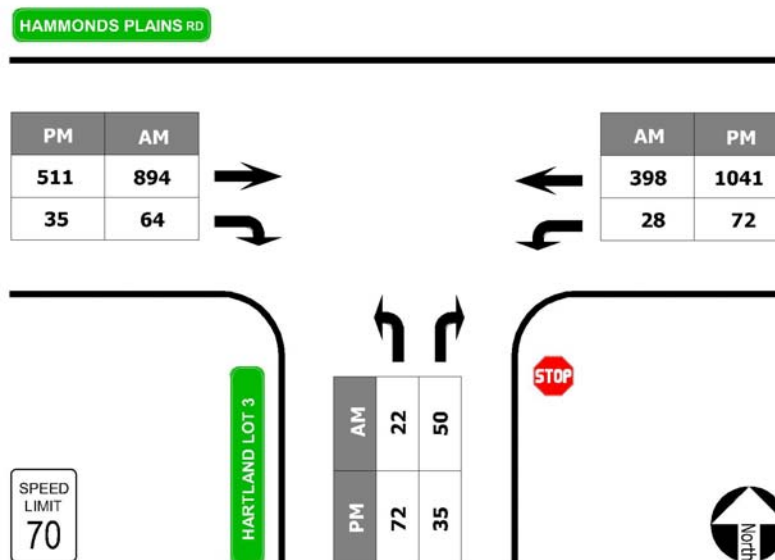


Exhibit 3.3 – Hammonds Plains Road/Hartland Site Access Total Traffic 2020 with Golf Course



## 4 Evaluation of Impacts

### 4.1 Level of Service Analysis

As described in the Highway Capacity Manual "the concept of levels of service used qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. The descriptions of individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst."

As stated in the Highway Capacity Manual, "analysis of signalized intersections focuses on the capacity and level of service of intersection approaches and the intersection as a whole. Capacity is evaluated in terms of the ratio of demand flow rate (volume) to capacity (v/c ratio) while the level of service is evaluated on the basis of average control delay per vehicle (in seconds per vehicle)." Exhibit 4.1 defines Level of Service for signalized intersections.

The Highway Capacity Manual also states that "the level of service is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole." LOS criteria for unsignalized intersections are summarized in Exhibit 4.2.

Exhibit 4.1 - Level of Service Criteria for Signalized Intersections

Level of Service	Description	Control, Delay Per Vehicle (Seconds)
A	Very low delay; most vehicles do not stop (Excellent)	$\leq 10$
B	Higher delay; more vehicles stop (Very Good)	$\geq 10$ and $\leq 20$
C	Higher number of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping (Good)	$\geq 20$ and $\leq 35$
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; Many vehicles stop (Satisfactory)	$\geq 35$ and $\leq 55$
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of acceptable delay	$\geq 55$ and $\leq 80$
F	This level is considered to be unacceptable for most drivers; occurs when arrival flow rates exceed the capacity of the intersection (Unacceptable)	$\geq 80$

## Exhibit 4.2 - Level of Service Criteria for Unsignalized Intersections

Level of Service	Delay Range (Seconds)
A	$\leq 10$
B	$\geq 10$ and $\leq 15$
C	$\geq 15$ and $\leq 25$
D	$\geq 25$ and $\leq 35$
E	$\geq 35$ and $\leq 50$
F	$\geq 50$

Traffic volumes are at their highest during the AM and PM peak periods so the impact of the trips generated by the proposed development during these hours will provide a worst case assessment of their impacts on the existing transportation network.

HRM's Guidelines for the Preparation of Transportation Impact Studies states that all "intersections and individual traffic movements must be identified where:

- The volume/capacity ratio of an overall intersection exceeds 0.85
- The volume/capacity ratio of an individual through movement or shared through/turning movement exceeds 0.85
- The volume/capacity ratio of an exclusive turning movement exceeds 1.0"

For the existing signalized Hammonds Plains Road/Glen Arbour Way intersection we optimized the signal timing plan in Synchro to estimate the best possible performance and we have presented those results. We used recommended HRM signal timing inputs for maximum cycle length (128 seconds), amber time (4 seconds), all-red time (2 seconds), minimum green time (10 seconds) and minimum turn arrow (7 seconds) in all of our analysis.

Level of Service (LOS), Volume-to-Capacity ratios (v/c) and 95% Queue Length in meters (95%) results from all key movements are summarized in Exhibits 4.3, 4.4, 4.5, 4.6 and 4.7.

## Exhibit 4.3 – Hammonds Plains Road at Glen Arbour Way LOS Results 2020 Background Traffic

	EB-L	EB-TR	WB-LTR	SB-LTR	Total
<b>AM PEAK HOUR – 2020 ESTIMATED BACKGROUND TRAFFIC</b>					
Delay	6.7	33.8	9.6	18.5	24.8
LOS	A	C	A	B	C
v/c	0.07	0.95	0.45	0.44	
95% Queue	4.9	184.9	46.6	30.0	
<b>PM PEAK HOUR – 2020 ESTIMATED BACKGROUND TRAFFIC</b>					
Delay	68.4	6.7	39.7	47.6	33.1
LOS	E	A	D	D	C
v/c	0.77	0.39	1.00	0.71	
95% Queue	17.9	49.3	345.9	68.3	

Exhibit 4.4 – Hammonds Plains Road at Glen Arbour Way LOS Results 2020 Total Traffic Original

	EB-L	EB-TR	WB-LTR	SB-LTR	Total
<b>AM PEAK HOUR – 2020 ESTIMATED TOTAL TRAFFIC</b>					
Delay	6.7	41.5	9.8	18.8	29.2
LOS	A	D	A	B	C
v/c	0.08	0.99	0.47	0.45	
95% Queue	5.2	200.6	50.6	30.1	
<b>PM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>					
Delay	91.5	6.7	48.2	52.1	39.5
LOS	F	A	D	D	D
v/c	0.87	0.41	1.03	0.75	
95% Queue	23.7	53.5	376.5	70.4	

Exhibit 4.5 – Hammonds Plains at Glen Arbour LOS Results 2020 Total Traffic with Golf Course

	EB-L	EB-TR	WB-LTR	SB-LTR	Total
<b>AM PEAK HOUR – 2020 ESTIMATED TOTAL TRAFFIC</b>					
Delay	6.7	41.1	9.8	18.8	29.5
LOS	A	D	A	B	C
v/c	0.08	0.99	0.47	0.45	
95% Queue	5.2	199.7	50.1	30.1	
<b>PM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>					
Delay	90.8	6.7	49.9	52.9	40.6
LOS	F	A	D	D	D
v/c	0.87	0.41	1.04	0.76	
95% Queue	23.7	54.0	381.4	70.8	

Although background traffic on Hammonds Plains didn't grow as much as we estimated in our 2010 study, the volumes are still significant for a single lane in each direction. The introduction of signals at the Hammonds Plains Road/Glen Arbour Way intersection does provide improved performance for southbound traffic exiting Glen Arbour but that results in through traffic on Hammonds Plains Road now stopping each cycle which means the capacity of the through movements is reduced.

For estimated background traffic in 2020 the v/c ratio for the eastbound through movement exceeds HRM's threshold of 0.85 in the AM peak hour and the westbound through movement exceeds this threshold in the PM peak hour which is a function of distribution of traffic heading towards Halifax in the morning and returning in the afternoon.

The introduction of site generated traffic only has a marginal impact on this intersection with a slight increase v/c ratio for eastbound traffic in the AM peak hour and westbound traffic in the PM peak hour as well as a slight increase in overall intersection delay.

The impacts of the addition of the proposed 9-hole golf course are marginal at this intersection as shown in Exhibit 4.5. The overall intersection delay increases from 29.2 seconds to 29.5 seconds in the AM peak hour and from 39.5 seconds to 40.6 seconds in the PM peak hour. We also note an increase in v/c ratio for the westbound LTR movement from 1.03 to 1.04 in the PM peak hour.

Exhibit 4.6 – Hammonds Plains at Hartland Site Access LOS Results 2020 Total Traffic Original

	EB-TR	WB-LT	NB-LR	Total
<b>AM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>				
Delay		1.2	32.4	1.9
LOS		A	D	B
v/c	0.62	0.04	0.37	
95% Queue		1.0	12.7	
<b>PM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>				
Delay		2.4	175.4	11.0
LOS		A	F	C
v/c	0.35	0.07	1.03	
95% Queue		1.8	51.6	

Exhibit 4.7 – Hammonds Plains at Site Access LOS Results 2020 Total Traffic with Golf Course

	EB-TR	WB-LT	NB-LR	Total
<b>AM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>				
Delay		1.2	34.0	2.1
LOS		A	D	B
v/c	0.63	0.05	0.40	
95% Queue		1.2	14.1	
<b>PM PEAK HOUR – 2020 ESTIMATED TRAFFIC</b>				
Delay		2.8	246.4	16.7
LOS		A	F	G
v/c	0.36	0.08	1.23	
95% Queue		2.1	65.7	

All movements operated with acceptable LOS during the AM and PM peak hour periods with the exception of the northbound movement from the proposed development in the PM peak hour. This movement from the site will operate with a LOS F and v/c ratio of 1.03 and is related to the significant background westbound and eastbound traffic on the Hammonds Plains Road. We note that this is less than the v/c ratio of 1.34 calculated in the original study in 2010.

The impacts of the addition of the proposed 9-hole golf course at this intersection as shown in Exhibit 4.7. The overall intersection delay increases from 1.9 seconds to 2.1 seconds in the AM peak hour and from 11.0 seconds to 16.7 seconds in the PM peak hour. We also note an increase in v/c ratio for the northbound LR movement of 1.03 to 1.23 in the PM peak hour which is still less than the v/c ratio of 1.34 calculated in the original study in 2010.

We also expect that the golf course may attract a portion of its trips from the existing traffic passing by the site (pass-by trip) as a 9-hole course which would further reduce its impact on the existing transportation network on Hammonds Plains Road,

## 5 Conclusions and Recommendations

This report is an update to an addendum to the original Hartland Developments Traffic Impact Study (2010) that was completed in 2015. It includes a detailed analysis of the impacts of the addition of a proposed 9-hole golf course that will share the same access point from Hammonds Plains Road as the originally proposed development that includes 2,500 square foot Drive-In Restaurant in Phase 1 and a 7,500 square foot Commercial Building in Phase 2.

It includes new traffic counts, a new horizon year, revised trip generation estimates using ITE Trip Generation Manual 9<sup>th</sup> Edition as well as a full new analysis of the existing signalized Hammonds Plains Road/Glen Arbour Way intersection and the Hartland Developments driveway with site generated traffic.

The proposed development can be introduced safely and efficiently into the existing transportation network and we offer the following additional comments:

- Although Hammonds Plains Road continues to be a very busy two-lane facility near capacity during the AM and PM peak hours, background traffic didn't grow as much as estimated using a 2% annual growth rate from our 2010 report which results a better performance of intersections in the study area than we projected in 2010.
- The actual traffic observed by HRM in 2014 is 4.9% less than our estimated background traffic in 2014 during the AM peak hour and 19.1% less in the PM peak hour.
- ITE Trip Generation equations from the 9<sup>th</sup> edition result in less traffic volume estimates (20 less total trips in the AM peak hour and 13 less total trips in the PM peak hour) than the 7<sup>th</sup> edition which result in a reduced impact of site generated traffic.
- The addition of signals at the Hammonds Plains Road/Glen Arbour Way intersection does provide improve performance for vehicles exiting Glen Arbour but it also reduces the performance of eastbound and westbound traffic on Hammonds Plains Road as those movements are no longer free moving.
- Traffic from the proposed development at 2090 Hammonds Plains Road only has a marginal impact on the Hammonds Plains Road/Glen Arbour Way intersection
- The addition of the proposed 9-hole golf course has minimal additional impact on Hammonds Plains Road as described in Section 4.
- The types of local land uses proposed for this development (including the 9-hole golf course) will in fact attract a large portion of its customers from the existing traffic stream which lessens the impact of site generated traffic.
- Currently, local residents must travel outside of the study area for all retail trips so this proposed development has the potential to actually reduce trips on the Hammonds Plains Road since residents can meet their retail needs locally.

## APPENDIX

TRIP GENERATION

TRAFFIC COUNTS AND DISTRIBUTION

SYNCHRO 8 REPORTS