

September 8, 2020
Mr. Norsat Eblaghi
President and Chief Executive Officer
Alumitech Holdings Limited

[via email: norsat@alumitech.ca]

**RE: Traffic Impact Statement and Site Access Review
Second Spring Development, Hammonds Plains, Nova Scotia**

Dear Mr. Eblaghi:

Plans are being prepared for Second Spring, a residential retirement development adjacent to Hammonds Plains Road in Hammonds Plains, Nova Scotia, as shown in Figure 1. This is the Traffic Impact Statement for development of the proposed site. In addition, WSP has completed a sightline review at the proposed site access driveway. This memo outlines our review of the proposed site access driveway with respect to stopping sight distance requirements along Hammonds Plains Road.

SITE DESCRIPTION AND ACCESS

Second Spring development is planned to include detached and semi-detached units, directed towards retirement-age people. A full access driveway is planned to be provided along Hammonds Plains Road by utilizing an existing former driveway (shown in Photo 1), which is expected to be upgraded and widened to accommodate two-way traffic movements. The future planned internal roadway is expected to support one-way counter clockwise movements.

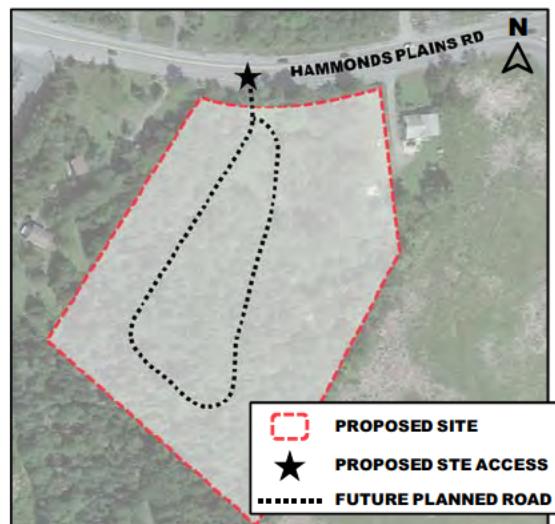


Figure 1 – Study Area



Photo 1 – Existing Former Driveway

ROADWAY DESCRIPTION

Hammonds Plains Road is an arterial road that runs east-west approximately 19 km between St. Margarets Bay Road and the Bedford Highway, otherwise known as NS Route 213 between Upper Tantallon and NS Trunk 2. In the vicinity of the proposed development, Hammonds Plains Road operates similar to a major collector and has a two-lane cross section with paved shoulders and a 70 km/h posted speed limit.

TRAFFIC VOLUME DATA

Turning movement counts were obtained from previously completed Transportation Studies in the area. Turning movement counts were collected on Hammonds Plains Road at Larry Uteck Boulevard and Kingswood Drive/Gatehouse Run intersections in February 2018 by Harbourside Transportation Consultants (HTC). Count data are tabulated in Tables A-1 and A-2, Appendix A, with peak hour volumes indicated by shaded areas. Based on these counts, that the average two-way volume on Hammonds Plains Road is approximately 1,620 vehicle per hour (vph) during the morning peak hour and 1,730 vph during the evening peak hour.

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.

The proposed Second Spring community will be developed and marketed for senior adults. Since the Halifax Regional Municipality (HRM) and developers cannot legally mandate that a community must only be occupied by senior adults, WSP investigated the following land use scenarios:

1. Combination of Detached and Attached Senior Adult Dwellings (see Table 1)
2. Single Family Homes (see Table 2)

Generated trips for Senior Adult Housing – Detached (Land Use 251), Senior Adult Housing – Attached (Land Use 252) and Single Family Homes (Land Use 210) are estimated for the AM and PM peak hours of traffic by the number of dwellings. The Second Spring development is planned to include a total of 41 dwellings.

It was estimated that the combination of Detached and Attached Senior Adult Dwellings would generate:

- **7 new** two-way trips (2 entering and 5 exiting) during the AM peak hour; and,
- **9 new** two-way trips (5 entering and 4 exiting) during the PM peak hour.

It was estimated that the Single Family Dwellings would generate:

- **24 new** two-way trips (6 entering and 18 exiting) during the AM peak hour; and,
- **33 new** two-way trips (21 entering and 12 exiting) during the PM peak hour.

Table 1 – Trip Generation Estimates for Senior Adult Housing

Land Use ¹	Units ²	Trip Generation Rates ³				Trip Generation Estimates ⁴							
		AM Peak		PM Peak		AM Peak		PM Peak					
		In	Out	In	Out	In	Out	In	Out				
Senior Adult Housing - Detached (Land Use 251)	11 Units	0.08	0.16	0.18	0.12	1	2	2	1				
Senior Adult Housing - Attached (Land Use 252)	30 Units	0.07	0.13	0.14	0.12	2	4	4	4				
		Trip Generation Estimates				3	6	6	5				
		20% Reduction for Non-Auto Trips ⁵				1	1	1	1				
		Primary Trip Estimate for Proposed Site				2	5	5	4				
NOTES:													
1. Trip generation rates and equations are from Trip Generation, 10th Edition, (Institute of Transportation Engineers, Washington, 2017).													
2. 'Number of Dwelling Units' for Senior Adult Detached/Attached Housing													
3. Trip generation rates are 'vehicles per hour per unit'.													
4. Trips generated are 'vehicles per hour' for AM and PM peak hours.													
5. In 2011, approximately 20% of trips were made by transit or using active transportation in the Halifax Inner Suburban Area. The Halifax Integrated Mobility Plan has a 26% target for non-auto trips within the Inner Suburban Region by 2031 (Page 40, MP, 2017). Within the 2031 timeframe, all units are expected to be fully occupied. A more conservative reduction was considered at 20% for non-auto trips generated by residential land uses has been used to account for all transit, bicycle and walking trips.													

Table 2 – Trip Generation Estimates for Single Family Dwellings

Land Use ¹	Units ²	Trip Generation Rates ³				Trip Generation Estimates ⁴			
		AM Peak		PM Peak		AM Peak		PM Peak	
		In	Out	In	Out	In	Out	In	Out
Single Family Homes (Land Use 210)	41 Units	0.19	0.56	0.62	0.37	8	23	26	15
20% Reduction for Non-Auto Trips⁵				2	5	5	3		
Primary Trip Estimate for Proposed Site				6	18	21	12		

NOTES:

- Trip generation rates and equations are from Trip Generation, 10th Edition, (Institute of Transportation Engineers, Washington, 2017).
- 'Number of Residential Units' for Single Family Homes.
- Trip generation rates are 'vehicles per hour per unit'.
- Trips generated are 'vehicles per hour' for AM and PM peak hours.
- In 2011, approximately 20% of trips were made by transit or using active transportation in the Halifax Inner Suburban Area. The Halifax Integrated Mobility Plan has a 26% target for non-auto trips within the Inner Suburban Region by 2031 (Page 40, MP, 2017). Within the 2031 timeframe, all units are expected to be fully occupied. A more conservative reduction was considered at 20% for non-auto trips generated by residential land uses has been used to account for all transit, bicycle and walking trips.

ACCESS REVIEW

A full access driveway is proposed on Hammonds Plains Road, approximately 250 m east of Kingswood Drive/Gatehouse Run and 150 m west of Larry Uteck Boulevard. In the vicinity of the proposed site, Hammonds Plains Road has an inconsistent grade and curves. There is a significant grade present on the eastbound and westbound approaches (~6%) and the proposed site access is located on the outside of the curve, as shown in Figure 3. Due to the presence of the grades and the curve, a sightline review was conducted.

SIGHTLINE REVIEW

Stopping sight distance (SSD) reflects the distance required for an approaching vehicle to make a complete stop the instant that an object comes into view. This is highly dependent on the type of object that is likely to be encountered on the roadway, which a driver will have to avoid by stopping or maneuvering. The SSDs were observed on the eastbound and westbound approaches Hammonds Plains Road to the proposed site driveway. SSDs were measured from a driver eye height of 1.05 m on the approaches to a 150 mm (6") and 600 mm (24") object at the proposed driveway. The 150 mm object height represents items that could fall into the roadway such as a tree or rock, construction debris from a truck and/or a person, whereas the 600 mm object height represents vehicle tail/brake lights.

The minimum SSD required for a vehicle approach speed of 70 km/h is 99 m on a +6% (uphill) grade and is 123 m on a -6% (downhill) grade. The results of the SSD investigation are summarized below and the approximate sightlines from the proposed site driveway are represented in Photo 2 and Photo 3.

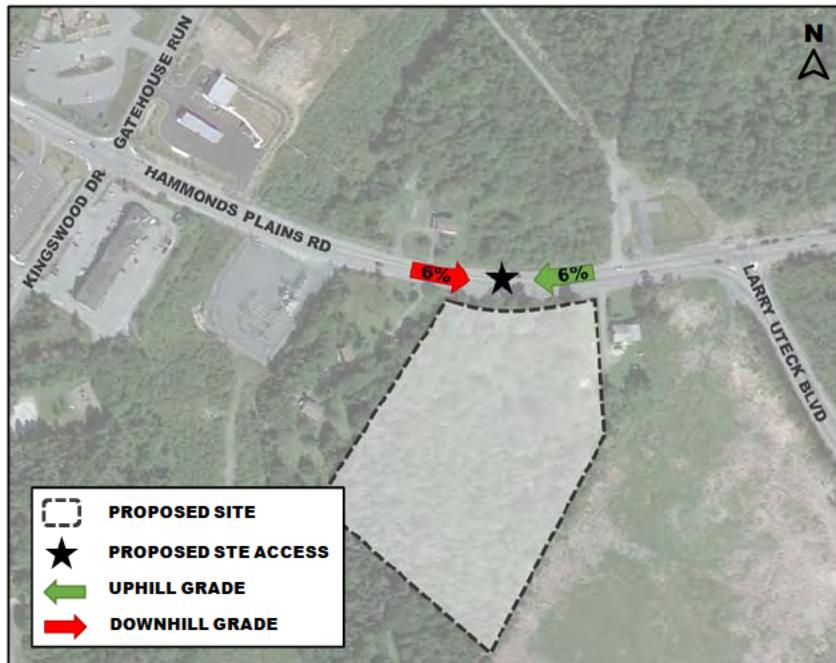

Figure 3 – Approximate Grades on Hammonds Plains Road



Photo 2 – At Site Driveway looking left (west) on Hammonds Plains Rd towards Kingswood Dr



Photo 3 – At Site Driveway looking right (east) on Hammonds Plains Rd towards Larry Uteck Blvd

With respect to the 150 mm (6") object height, the sight distance measurements indicate:

- There is more than 100 m of unobstructed sightlines available for the westbound approach indicating adequate SSD available for a vehicle approach speed over 70 km/h on a +6% (uphill) grade.
- There is a vertical crest present on Hammonds Plains Road that limits available sight distance on the eastbound approach. The SSD was measured as 88 m on this approach, which is adequate for a vehicle approach speed between 55-60 km/h on a -6% (downhill) grade.

With respect to the 600 mm (24") object height, the sight distance measurements indicate:

- There is more than 100 m of unobstructed sightlines available for the westbound approach indicating adequate SSD available for a vehicle approach speed over 70 km/h on a +6% (uphill) grade.
- There is a vertical crest present on Hammonds Plains Road that limits available sight distance on the eastbound approach. The SSD was measured as 121 m on this approach, which is adequate for a vehicle approach speed between 65-70 km/h on a -6% (downhill) grade.

Based on both object heights of 150 mm and 600 mm, the SSD in the eastbound direction was not met at the proposed driveway location.

SUMMARY

1. Plans are being prepared for Second Spring, a residential retirement development consisting of 41 dwellings in Hammonds Plains, NS.
2. A full access driveway is expected to be provided on Hammonds Plains Road by upgrading and widening an existing former driveway.
3. Based on counts completed by Harbourside Transportation Consultants in February 2018, the average two-way volume on Hammonds Plains Road is approximately 1,620 vph during the morning peak hour and 1,730 vph during the evening peak hour.
4. It was estimated that the combination of Detached and Attached Senior Adult Dwellings would generate:
 - **7 new** two-way trips (2 entering and 5 exiting) during the AM peak hour; and,
 - **9 new** two-way trips (5 entering and 4 exiting) during the PM peak hour.
5. It was estimated that the Single Family Dwellings would generate:
 - **24 new** two-way trips (6 entering and 18 exiting) during the AM peak hour; and,
 - **33 new** two-way trips (21 entering and 12 exiting) during the PM peak hour.
6. Based on both object heights of 150 mm and 600 mm, there is adequate SSD in the westbound direction, however, there is not adequate SSD available in the eastbound direction for the proposed driveway location on Hammonds Plains Road. The minimum requirement is 123 m for a -6% slope with a 70 km/h approach speed. It was determined that the available SSD in the eastbound direction is 88 m and 121 m from an object height of 150 mm and 600 mm respectively.

RECOMMENDATIONS

7. It is recommended that consideration be given to positioning the primary site driveway on Kingswood Drive near the Brenda Drive intersection. Consideration should also be given to designating a right-in/right-out access on Hammonds Plains Road as a secondary access.

CONCLUSIONS

8. Second Spring is not expected to have any significant impact to the levels of performance on adjacent streets and intersections or to the regional street system.
9. The proposed driveway location on Hammonds Plain Road does not meet the minimum requirements for SSD in the eastbound direction.

If you have any questions or comments, please contact me by email at courtney.mccarthy@wsp.com or by telephone at 902-536-0982.

Sincerely,

Original Signed

Courtney McCarthy, P.Eng.
Traffic & Transportation Engineer
WSP Canada Inc.





**Traffic Impact Statement and Site Access Review
Second Spring Development, Hammonds Plains, Nova Scotia**

APPENDIX

Table A-1			Hammonds Plains Road @ Kingswood Drive / Gatehouse Run												
			Gatehouse Run						Hammonds Plains Road						
			I	H	G	J	K	L	Ped 3	Ped 4	Ped 2	Ped 1	F	E	D
Hammonds Plains, NS			Hammonds Plains Road						Kingswood Drive						
Wednesday, February 7, 2018															
AM Peak Period Volume Data															
Time	Kingswood Drive Northbound Approach			Hammonds Plains Road Westbound Approach			Gatehouse Run Southbound Approach			Hammonds Plains Road Eastbound Approach			Total Vehicles		
	A	B	C	D	E	F	G	H	I	J	K	L			
07 00	07:15	6	3	34	9	58	0	30	2	3	8	224	24	401	
07:15	07:30	4	9	53	6	53	2	40	1	5	12	231	32	448	
07:30	07:45	12	14	60	8	88	7	31	2	8	11	203	26	470	
07:45	08:00	17	10	55	14	72	7	35	3	12	13	236	24	498	
08 00	08:15	12	12	43	25	84	4	33	12	9	21	228	28	511	
08:15	08:30	10	6	51	20	87	6	28	6	11	12	197	19	453	
08:30	08:45	22	9	72	27	78	9	31	13	9	9	164	15	458	
08:45	09:00	17	9	53	17	87	5	16	5	6	9	160	17	401	
AM Peak Hour			51	42	209	67	331	24	127	23	40	57	864	97	1932
07 00	08 00	39	36	202	37	271	16	136	8	28	44	894	106	1817	
08 00	09 00	61	36	219	89	336	24	108	36	35	51	749	79	1823	
Ped 1			Ped 2			Ped 3			Ped 4			Total Peds			
07 00	08 00	0	0	0	0	0	0	0	0	0	0	0	0	0	
08 00	09 00	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period Volume Data															
Time	Kingswood Drive Northbound Approach			Hammonds Plains Road Westbound Approach			Gatehouse Run Southbound Approach			Hammonds Plains Road Eastbound Approach			Total Vehicles		
	A	B	C	D	E	F	G	H	I	J	K	L			
16 00	16:15	14	6	28	32	266	23	7	8	13	3	75	15	490	
16:15	16:30	14	1	21	33	224	22	8	7	11	4	103	20	468	
16:30	16:45	22	7	15	32	209	22	17	7	8	6	118	11	474	
16:45	17:00	11	5	29	43	249	21	9	8	21	4	109	19	528	
17 00	17:15	17	3	31	44	233	15	10	7	18	5	111	11	505	
17:15	17:30	27	6	34	57	182	22	14	8	11	9	89	13	472	
17:30	17:45	14	3	23	25	192	6	5	1	5	2	144	10	430	
17:45	18:00	17	4	25	37	165	13	9	1	10	2	84	14	381	
PM Peak Hour			64	16	96	152	915	80	44	29	58	19	441	61	1975
16 00	17 00	61	19	93	140	948	88	41	30	53	17	405	65	1960	
17 00	18 00	75	16	113	163	772	56	38	17	44	18	428	48	1788	
Ped 1			Ped 2			Ped 3			Ped 4			Total Peds			
16 00	17 00	2	0	0	0	0	0	0	0	0	0	0	0	2	
17 00	18 00	2	0	0	0	0	0	0	0	0	2	0	0	4	

* Count not completed by WSP

Table A-2 Hammonds Plains Road @ Larry Uteck Boulevard		Hammonds Plains Road											
<i>Hammonds Plains, NS</i>													
Wednesday, February 7, 2018													
AM Peak Period Volume Data													
Time	Larry Uteck Boulevard Northbound Approach		Hammonds Plains Road Westbound Approach		Hammonds Plains Road Eastbound Approach		Total Vehicles						
	A	C	D	E	K	L							
07:00	07:15	29	0	3	38	133	155	358					
07:15	07:30	21	0	1	40	148	176	386					
07:30	07:45	49	1	2	54	137	157	400					
07:45	08:00	49	6	1	44	161	165	426					
08:00	08:15	55	2	4	58	149	155	423					
08:15	08:30	56	1	4	57	132	144	394					
08:30	08:45	49	4	6	65	117	150	391					
08:45	09:00	48	5	1	61	128	101	344					
AM Peak Hour		209	10	11	213	579	621	1643					
07:00	08:00	148	7	7	176	579	653	1570					
08:00	09:00	208	12	15	241	526	550	1552					
		Ped 1		Ped 2		Ped 4		Total Peds					
07:00	08:00	0		0		0		0					
08:00	09:00	0		0		0		0					
PM Peak Period Volume Data													
Time	Larry Uteck Boulevard Northbound Approach		Hammonds Plains Road Westbound Approach		Hammonds Plains Road Eastbound Approach		Total Vehicles						
	A	C	D	E	K	L							
16:00	16:15	147	3	3	174	61	49	437					
16:15	16:30	116	2	1	163	77	55	414					
16:30	16:45	120	2	2	143	85	65	417					
16:45	17:00	164	3	3	149	91	56	466					
17:00	17:15	146	3	2	146	77	75	449					
17:15	17:30	103	0	8	158	86	51	406					
17:30	17:45	99	3	2	124	97	75	400					
17:45	18:00	81	1	2	134	56	62	336					
PM Peak Hour		546	10	8	601	330	251	1746					
16:00	17:00	547	10	9	629	314	225	1734					
17:00	18:00	429	7	14	562	316	263	1591					
		Ped 1		Ped 2		Ped 4		Total Peds					
16:00	17:00	0		0		0		0					
17:00	18:00	0		0		0		0					

* Count not completed by WSP