

April 20, 2020
Mr. Andrew Giles, P.Eng., NSLS
VP Development
Brunello Estates

[via email: andrewgiles@eastlink.ca]

**RE: Traffic Impact Statement
Brunello Estates – Phase 4
Timberlea, Nova Scotia**

Dear Mr. Giles:

Plans are being prepared for development of a site in Phase 4 of Brunello Estates adjacent to the Timberlea Village Parkway in Timberlea, Nova Scotia. This is the Traffic Impact Statement for development of this site (See Figure 1).

BACKGROUND INFORMATION

Brunello Estates is a large master planned community that has ongoing development in multiple phases. In 2018, Harbourside Transportation Consultants (HTC) completed a Traffic Impact Analysis (TIA) for Phase 3A and 3B of the Brunello Estates development. Access to Phases 3A and 3B is proposed through a new intersection along Timberlea Village Parkway at Marketway Lane/Amalfi Drive.

Phase 4 of the Brunello Estates is expected to include three mid-rise apartment buildings totalling 333 apartment units. Access to Phase 4 is expected to be provided via a full access driveway on Marketway Lane which is planned to be developed as part of Phase 3 and a right-in/right-out driveway on Timberlea Village Parkway (See Figure 2).

Based on projected 2023 traffic volumes, the HTC TIA concluded that a northbound left turn lane is warranted at the Timberlea Village Parkway and Amalfi Drive/Marketway Lane intersection. A southbound left-turn lane is not warranted based on the projected volumes, although it is recommended that a southbound lane also be installed when the northbound lane is constructed.

STREET AND INTERSECTION DESCRIPTIONS

Timberlea Village Parkway is an arterial road that runs north-south for approximately 1.6 km between St. Margarets Bay Road and Highway 103. In the study area, Timberlea Village Parkway consists of a two-lane cross section with a posted speed limit of 70 km/h.

Marketway Lane is a future local road that will provide access to the developing residential neighborhood. The posted speed limit is expected to be 50 km/h.

Timberlea Village Parkway at Marketway Lane/Amalfi Drive is a future 4-leg signalized intersection. The Timberlea Village Parkway approaches are expected to consist of a through lane and an exclusive left turn lane and the Marketway Lane approach is expected to consist of a left turn lane and right/through lane.

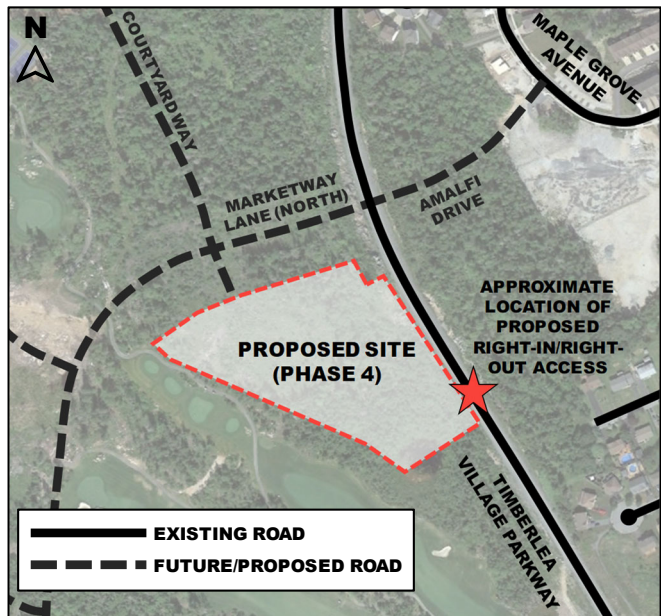


Figure 1 – Study Area



Figure 2

KEY PLAN 1:20 000

LEGEND

EXISTING	PROPOSED
MAJOR CONTOUR	MAJOR CONTOUR
MINOR CONTOUR	MINOR CONTOUR
EASEMENT	EASEMENT
RIGHT OF WAY	RIGHT OF WAY
LOT LINE	LOT LINE

EXISTING	PROPOSED
PRECAST HEADWALL	CATCHBASIN
SURFACE GRADE	FLOW ARROW
SURFACE SLOPE	CURB CUT

NOTES

1. THE MAJOR CONSTRUCTION WAS CARRIED OUT BY SHYCON CONSTRUCTION.
2. HOME BUYER TO EXPOSE SERVICE LATERALS AND CONFIRM ELEVATION PRIOR TO FOOTING PLACEMENT TO CONFIRM CONNECTION TO BUILDING.
3. HOMEOWNER/HOME BUILDER IS RESPONSIBLE FOR FINAL LOT GRADING AND SURFACE TREATMENT AS PART OF HOME CONSTRUCTION.
4. THE DESIGNER OF EACH INDIVIDUAL LOT GRADING PLAN MUST FOLLOW THE REQUIREMENTS OF THE HRA SUBDIVISION GRADING BYLAW. THIS INCLUDES AT A MINIMUM, COMPLETING A TOPOGRAPHIC SURVEY OF INDIVIDUAL LOT AND LOCATING PROPERTY BOUNDARIES IN THE FIELD. BOUNDARY INFORMATION MUST BE OBTAINED BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH THE REGULATIONS OF THE NOVA SCOTIA LAND SURVEY ACT AND MUST INCLUDE AT A MINIMUM, FIELD MEASUREMENTS OF LEGAL BOUNDARY INFORMATION AND REVIEW OF THE APPROVED SUBDIVISION SURVEY PLAN.
5. ALL ELEVATIONS ARE BEING AND WERE BASED ON TOPOGRAPHIC SURVEY CONDUCTED BY THOMPSON CONNOR DATED DECEMBER 4, 2008 AND DESIGN POINT BETWEEN DECEMBER 20, 2017 AND DECEMBER 19, 2018.
6. MINIMUM LOT GRADE TO BE 3%.
7. MAXIMUM LOT GRADE TO BE 3% HORIZONTAL VERTICAL GRADES STEEPER THAN 3 ARE TO BE APPROVED BY PROJECT GEOTECHNICAL ENGINEER.
8. INDIVIDUAL LOT GRADING DESIGN TO BE COMPLETED PRIOR TO HOUSE CONSTRUCTION BASED ON AS-BUILT CONDITIONS.
9. FLOOR ELEVATIONS TO BE CONFIRMED AS PART OF INDIVIDUAL LOT GRADING DESIGN BASED ON AS-BUILT LATERAL LOCATIONS.
10. ROOF LEADERS TO DISCHARGE TO SURFACE AND TOWARDS ROAD.
11. FENCE OR HANDRAIL REQUIRED FOR WALLS HIGHER THAN 1 m (AS PER HRA REQUIREMENTS).
12. THE INFORMATION ON THIS PLAN IS INTENDED TO PROVIDE GUIDANCE TO THE DESIGNER OF EACH INDIVIDUAL LOT GRADING PLAN.
13. THIS PLAN ALONE IS NOT INTENDED FOR, AND IS NOT SUITABLE FOR THE CONSTRUCTION OF THE PROJECT.

DRAFT
NOT FOR CONSTRUCTION

12 0 12 24
Metres
1:400

1	DRAFT	DRAFT
ISSUE	DATE	DESCRIPTION
		CONSULTANT

DESIGN POINT
ENGINEERING & SURVEYING
PHONE: 902.932.5597
www.designpoint.ca

CLIENT

THE LINKS AT BRUNELLO: PHASES 4 & 5
TIMBERLEA, NOVA SCOTIA
SHEET DESCRIPTION
ELEVENTH HOLE MULTI-UNIT SITE GRADING PLAN

Drawn	Engineer	Project No.	Drawing No.
J. CHRYER	A. SKETCHLEY	17-144	C-SK01
Scale	Filename		
1:400	17-144_4_CSK1.dwg		1 of 16

TRAFFIC VOLUME DATA

Turning movement counts were collected at the Timberlea Village Parkway and Brunello Avenue/Maple Grove Avenue intersection on Wednesday, July 18, 2018 by HTC. Count data are summarized in Table A-1, Appendix A, with peak hours indicated by shaded areas. The projected 2023 design hourly volumes used in the 2018 Harbourside Transportation Consultants Traffic Impact Analysis are summarized in Figure 3. Based on these projections, that the average two-way volume on Timberlea Village Parkway is expected to be 940 vph during the morning peak hour and 1,070 vph during the evening peak hour.

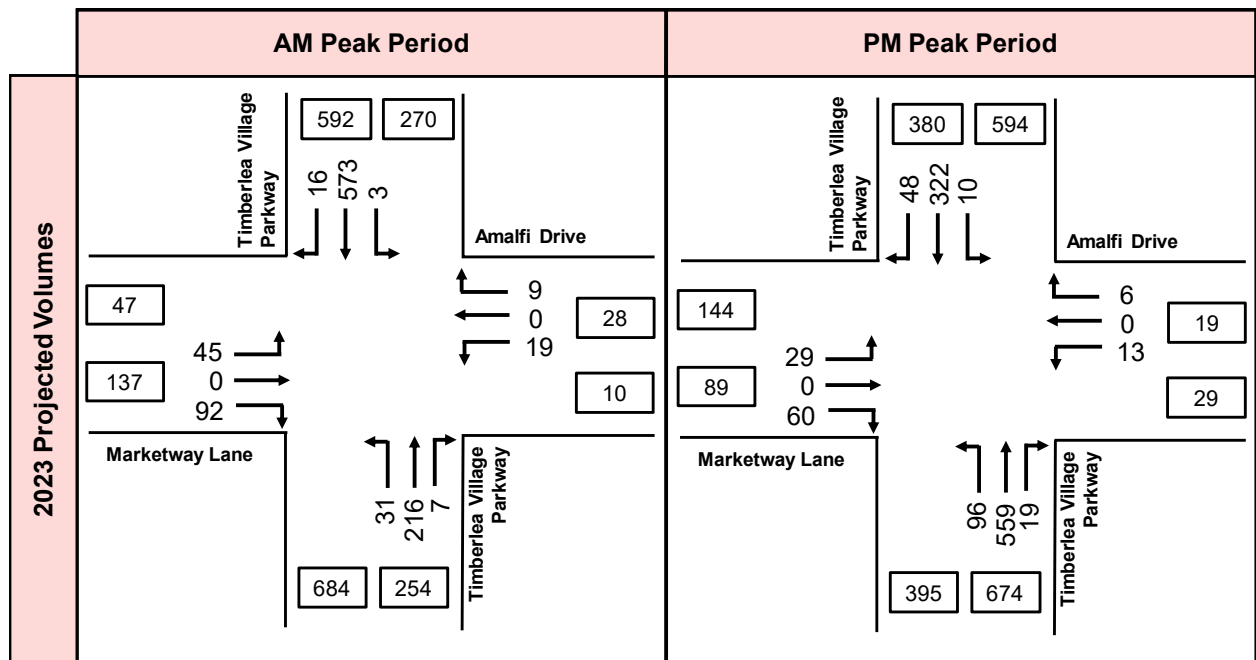


Figure 3 – Projected 2023 Traffic Volumes (Harbourside Transportation Consultants, 2018)

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. Brunello Estates is expected to be development in multiple phases. Generated trips for Mid-Rise Apartments (Land Use 221) are estimated for the AM and PM peak hours of traffic by the number of units. Phase 4 is expected to include three (3) mid-rise apartment buildings, consisting of 333 total apartment units. Trip generation estimates were prepared using *Trip Generation Manual, 10th Edition* (Institute of Transportation Engineers, Washington, 2017) for Phase 4 of the proposed development (See Table 1).

It was estimated that Phase 4 of the proposed site would generate:

- **111 new** two-way trips (29 entering and 82 exiting) during the AM peak hour; and,
- **141 new** two-way trips (86 entering and 55 exiting) during the PM peak hour.

Table 1 - Trip Generation Estimates

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
Proposed Development - Phase 4									
Mid-Rise Apartment (Land Use 221)	333 units	Equations from Pages 74 and 75 (Residential - Land Uses 200 - 299)				29	82	86	55
Total New Trips generated by Phase 4 of the Proposed Site						29	82	86	55
Notes: 1. Land Use Code 221 is from <i>Trip Generation</i> , 10th Edition, (Institute of Transportation Engineers, Washington, 2017). 2. Per apartment unit for Mid-Rise Apartment. 3. Trip generation rates are ‘vehicles per hour unit’. 4. Trips generated are ‘vehicles per hour’ for AM and PM peak hours.									

PROPOSED RIGHT-IN/RIGHT-OUT ACCESS REVIEW

A full access driveway is expected to be provided on Marketway Lane and a right-in/right-out (RI/RO) driveway is proposed on Timberlea Village Parkway. Timberlea Village Parkway is generally a consistent grade and is generally straight at the proposed site access. The available stopping sight distance appears adequate for a driveway onto Timberlea Village Parkway (See Photo 1 and Photo 2).



Photo 1 – Looking North (to the left) along Timberlea Village Parkway from Approximate Location of Proposed RIRO Access



Photo 2 – Looking South (to the right) along Timberlea Village Parkway from Approximate Location of Proposed RIRO Access

In order for the proposed RI/RO driveways to operate efficiently from the Timberlea Village Parkway perspective and the internal site perspective, adequate clear throat lengths are required to provide a no conflict/storage zone within each driveway. Failure to provide a sufficient clear throat length may result in frequent disruptions in on-site circulation, which can cause entering vehicles to queue. Incorporation of clear throat areas into the detailed design of the proposed driveways is critical in order to limit the potential for queue backups onto Timberlea Village Parkway. Based on the site concept drawings in Figure 2 and the expected trips generated entering the sites, it appears that sufficient clear throat lengths will be provided.

Additional aspects of RI/RO to consider:

- Provision of a taper or a right-turn lane for the right-turn in driveway, to increase the turning speed of vehicles entering the site and reduce the speed differential between turning vehicles and following vehicles.
- Providing stop control at the right-out driveway will provide vehicles an opportunity to wait for an appropriate gap to exit onto Timberlea Village Parkway. Based on the Timberlea Village Parkway through volumes and the expected number of vehicles exiting the site, it is expected that the driveways will operate at an acceptable level of service and will have no significant impact on the surrounding transportation network.

SUMMARY

1. Plans are being prepared for Phase 4 of the Brunello Estates in Timberlea, Nova Scotia. Phase 4 is expected to consist of 333 mid-rise apartment units.
2. A full access driveway is expected to be provided on Marketway Lane and a right-in/right-out driveway is proposed along Timberlea Village Parkway. The proposed RIRO access consists of separate driveway lanes for right-in and right-out movements.
3. Based on Harbourside Transportation Consultants volume projections, it was determined that the average two-way volume in 2023 on Timberlea Village Parkway is expected to be 940 vph during the morning peak hour and 1,070 vph during the evening peak hour.
4. Trip generation estimates were prepared using rates published in *Trip Generation, 10th Edition* (Institute of Transportation Engineers, Washington 2017). It was estimated that the Phase 4 of the proposed residential development will generate:
 - 111 new two-way vehicle trips (29 entering and 82 exiting) during the AM peak hour; and,
 - 141 new two-way vehicle trips (86 entering and 55 exiting) during the PM peak hour.
5. The available stopping sight distance appears adequate for a RIRO driveway onto Timberlea Village Parkway.

RECOMMENDATIONS


6. It is recommended that the exit at the RI/RO driveway be stop controlled.
7. It is recommended that consideration be given to ensuring that a sufficient clear through length is provided in the final design.
8. It is recommended that turn restriction signage be considered in the development of the final design in order to prohibit illegal left turns into the site.
9. It is recommended that a taper or right-turn lane be included for the right in driveway to reduce the conflict with through traffic on Timberlea Village Parkway.

CONCLUSIONS

10. The intersection of Marketway Lane and Timberlea Village Parkway is planned to include left-turn lanes which will accommodate the traffic for the site along with the RIRO access onto Timberlea Village Parkway. Phase 4 generated trips are not expected to have any significant impact to levels of performance on adjacent streets and intersections or to the regional street system.

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

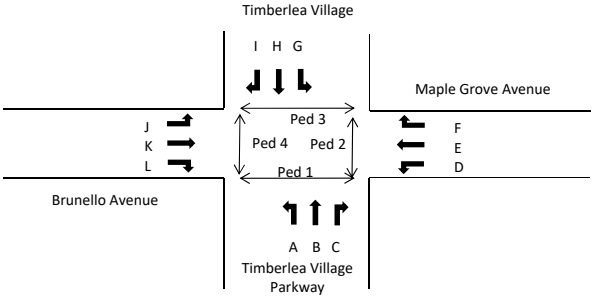
Sincerely,
Original Signed


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



Traffic Impact Statement – Brunello Estates (Phase 4)
Timberlea, Nova Scotia

APPENDIX

<p>Table A-1</p> <p>Timberlea Village Parkway @ Brunello Avenue/Maple Grove Avenue</p> <p><i>Timberlea, NS</i> Wednesday, July 18, 2018</p>														
														
AM Peak Period Volume Data														
Time	Timberlea Village Parkway Northbound Approach			Maple Grove Avenue Westbound Approach			Timberlea Village Parkway Southbound Approach			Brunello Avenue Eastbound Approach			Total Vehicles	
	A	B	C	D	E	F	G	H	I	J	K	L		
07:00 07:15	0	13	2	9	0	2	1	86	0	0	0	0	113	
07:15 07:30	0	27	4	7	0	1	1	98	0	0	0	0	138	
07:30 07:45	3	30	5	6	0	3	3	87	0	0	0	0	137	
07:45 08:00	0	36	3	10	0	1	0	78	0	0	0	1	129	
08:00 08:15	0	32	6	15	0	2	0	83	0	0	0	0	138	
08:15 08:30	0	22	4	12	0	2	2	76	1	0	0	0	119	
08:30 08:45	1	34	5	10	0	2	2	74	0	0	0	0	128	
08:45 09:00	1	29	4	6	0	1	2	55	0	0	0	1	99	
AM Peak Hour	3	125	18	38	0	7	4	346	0	0	0	1	542	
07:00 08:00	3	106	14	32	0	7	5	349	0	0	0	1	517	
08:00 09:00	2	117	19	43	0	7	6	288	1	0	0	1	484	
Midday Peak Period Volume Data														
Time	Timberlea Village Parkway Northbound Approach			Maple Grove Avenue Westbound Approach			Timberlea Village Parkway Southbound Approach			Brunello Avenue Eastbound Approach			Total Vehicles	
	A	B	C	D	E	F	G	H	I	J	K	L		
11:00 11:15	0	27	3	5	0	1	1	29	0	0	0	0	66	
11:15 11:30	0	45	3	3	0	2	1	32	0	0	0	0	86	
11:30 11:45	0	22	5	5	0	1	0	24	0	0	0	0	57	
11:45 12:00	1	28	5	5	0	1	1	32	0	0	0	0	73	
12:00 12:15	0	37	5	6	0	2	2	40	0	0	0	0	92	
12:15 12:30	1	35	6	5	0	4	2	49	0	0	0	0	102	
12:30 12:45	0	47	6	8	0	2	2	37	0	0	0	0	102	
12:45 13:00	0	33	4	1	0	2	1	37	0	1	0	0	79	
Midday Peak Hour	1	152	21	20	0	10	7	163	0	1	0	0	375	
11:00 12:00	1	122	16	18	0	5	3	117	0	0	0	0	282	
12:00 13:00	1	152	21	20	0	10	7	163	0	1	0	0	375	
PM Peak Period Volume Data														
Time	Timberlea Village Parkway Northbound Approach			Maple Grove Avenue Westbound Approach			Timberlea Village Parkway Southbound Approach			Brunello Avenue Eastbound Approach			Total Vehicles	
	A	B	C	D	E	F	G	H	I	J	K	L		
15:30 15:45	1	58	15	3	0	0	0	34	0	0	0	0	111	
15:45 16:00	0	75	8	6	0	1	1	44	0	0	0	0	135	
16:00 16:15	0	57	8	5	0	0	3	51	0	0	0	0	124	
16:15 16:30	0	90	10	8	0	3	1	55	0	0	0	0	167	
16:30 16:45	0	74	22	6	0	0	1	42	0	1	0	0	146	
16:45 17:00	0	78	17	7	0	0	4	36	0	1	0	1	144	
17:00 17:15	0	63	12	5	0	3	1	45	0	0	0	0	129	
17:15 17:30	0	72	8	12	0	3	5	48	0	0	0	0	148	
PM Peak Hour	0	305	61	26	0	6	7	178	0	2	0	1	586	
15:30 16:30	1	280	41	22	0	4	5	184	0	0	0	0	537	
16:30 17:30	0	287	59	30	0	6	11	171	0	2	0	1	567	

* Count not completed by WSP