

July 15, 2019

Ms. Stephanie Salloum
Planner III – Rural Policy and Applications
Planning and Development
P.O. Box 1749
Halifax, NS B3J 3A5

**Re: Addendum to Traffic Impact Study:
Proposed 'Windgate Village' Development, Beaver Bank, Nova Scotia**

Dear Ms. Salloum,

This is an Addendum Traffic Impact Study for the proposed Windgate Village development in Beaver Bank, NS. The Addendum addresses the changes to the proposed development (site plan and land use) that have been proposed since the original TIS submission (WSP 2015).

ORIGINAL AND REVISED DEVELOPMENT CONCEPTS

The original and revised development concepts are summarized below:

- **Original Concept (Figure 1):** The original development concept included a mix of residential and commercial land uses. The south end of the parcel – located adjacent to Windgate Drive – included commercial developments, a mix of multi-unit and single family residential units, and a sports field / community park. The north end of the parcel, accessed via existing residential streets, comprised single family residential units only.
- **2019 Concept (Figure 2):** The current development concept includes residential developments only; the commercial component has been eliminated. The south end of the parcel includes a mix of single family residential units and multi-unit apartment buildings. The north end of the parcel comprises single family residential units only.

Windgate Drive is a 2-lane major collector street that runs east-west and connects Windsor Junction Road with Beaver Bank Road. Traffic volume data collected by HRM Traffic Management in June 2017 indicate the two-way annual average weekday traffic (AAWT) volume on Windgate Drive between Cumberland Way and Windsor Junction Road is approximately 3,650 daily vehicles and about 250 vehicles in one direction during the associated peak hour. The posted speed limit is 70km/h.

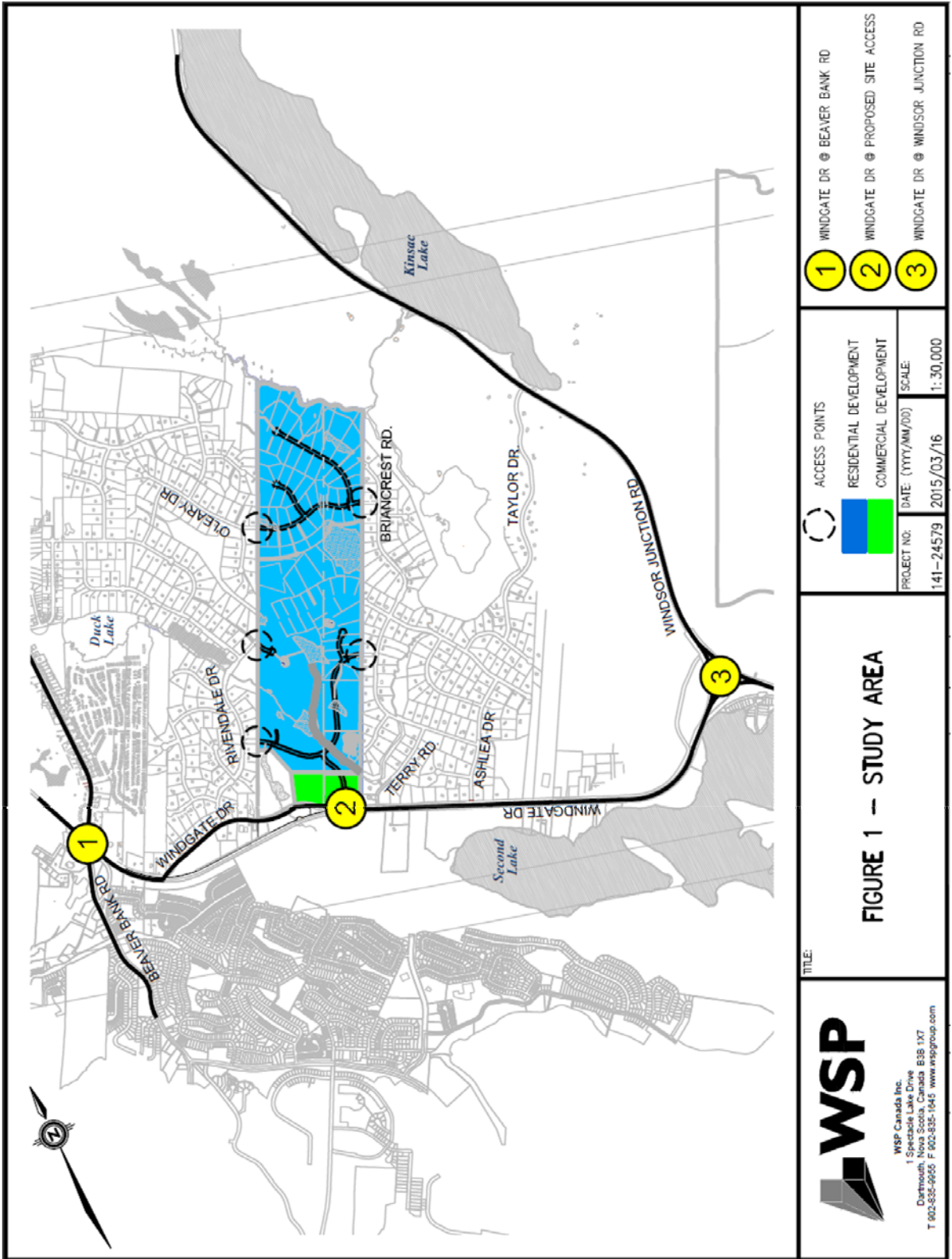


Figure 1: Original Concept Plan



Figure 2: Revised concept plan



TRIP GENERATION ESTIMATES

Proposed land uses and access locations for both the original and revised development concepts are summarized in Table 1.

Table 1: Summary of Original and Revised Development Concepts

	Original Development Concept		Revised Development Concept	
	Access	Proposed Land Uses	Access	Proposed Land Uses
South	Windgate Drive Rivendale Drive Capilano Drive	Residential: <ul style="list-style-type: none"> • 46 Detached Single Family Units • 44 Townhouse Units • 120 Apartment Units Commercial: <ul style="list-style-type: none"> • 60,000 SF Specialty Retail 	Windgate Drive Rivendale Drive Elise Victoria Drive	Residential: <ul style="list-style-type: none"> • 105 Detached Single Family Units • 44 Semi-detached Units • 126 Apartment Units
North	O'Leary Drive Briancrest Road	Residential: <ul style="list-style-type: none"> • 55 Detached Single Family Units 	Briancrest Road Galloway Drive	Residential: <ul style="list-style-type: none"> • 93 Detached Single Family Units

The trips that will be generated by the proposed development have been estimated using rates published in *Trip Generation, 10th Edition* (Institute of Transportation Engineers, Washington, 2017). Trip generation estimates for the original and revised development concepts are which are summarized in Table 2 and described below:

- **Original Development Concept:** Trip generation estimates for the original development concept, as described in the March 2015 TIS, include a total of 246 two-way vehicle trips (86 vph entering and 160 vph exiting) during the AM peak hour and 372 two-way vehicle trips (203 vph entering and 169 vph exiting) during the PM peak hour.
- **Revised Development Concept:** Trip generation estimates for the revised development concept include a total of 238 two-way vehicle trips (58 vph entering and 180 vph exiting) during the AM peak hour and 310 two-way vehicle trips (195 vph entering and 115 vph exiting) during the PM peak hour.
- The revised development concept includes an overall reduction of approximately 8 two-way vehicle trips (28 fewer entering, 20 more exiting) during the AM peak hour and a reduction of 62 two-way vehicle trips (8 fewer entering, 54 fewer exiting) during the PM peak hour.
- Changes in the number of trips generated with the new development concept are not expected to significantly affect intersection performance analysis results from the March 2015 TIS.



Table 2: Trip Generation Estimates for Proposed Development (Original and Revised Concepts)

	Land Use	Units ²	Trip Generation Rates ¹				Trips Generated			
			AM Peak		PM Peak		AM Peak		PM Peak	
			In	Out	In	Out	In	Out	In	Out
Original Development Concept	Trip Generation Estimates for Area 1 (Southern Portion)									
	Single Family Residential (ITE Land Use Code 210) ³	90	0.19	0.56	0.62	0.37	17	50	56	33
	Multifamily Housing (Low-Rise) (ITE Land Use Code 220)	120	0.11	0.35	0.35	0.21	13	43	42	25
	Specialty Retail ⁴ (ITE Land Use Code 826)	60	0.76	0.60	1.19	1.52	46	36	71	91
	Trip Generation Estimates for Area 1						76	129	169	149
	Trip Generation Estimates for Area 2 (Northern Portion)									
	Single Family Residential (ITE Land Use Code 210) ³	55	0.19	0.56	0.62	0.37	10	31	34	20
Total Trip Generation Estimates (Original Development Concept)						86	160	203	169	
Revised Development Concept	Trip Generation Estimates for Area 1 (Southern Portion)									
	Single Family Residential (ITE Land Use Code 210) ³	149	0.19	0.56	0.62	0.37	28	83	93	55
	Multifamily Housing (Low-Rise) (ITE Land Use Code 220)	126	0.11	0.35	0.35	0.21	13	45	44	26
	Trip Generation Estimates for Area 1						41	128	137	81
	Trip Generation Estimates for Area 2 (Northern Portion)									
Single Family Residential (ITE Land Use Code 210) ³	93	0.19	0.56	0.62	0.37	17	52	58	34	
Total Trip Generation Estimates (Revised Development Concept)						58	180	195	115	
Summary	Total Trip Generation Estimates (Original Development Concept)						86	160	203	169
	Total Trip Generation Estimates (Revised Development Concept)						58	180	195	115
	Difference						-28	20	-8	-54
Notes: 1. Trip generation rates are 'vehicles per hour per unit', published in <i>Trip Generation, 10th Edition</i> (Institute of Transportation Engineers, Washington, 2017). 2. Residential units are dwelling units. KGLA is 'Gross Leasable Area x 1000 square feet'. 3. The Single Family Residential (Land Use Code 210) has been used to estimate trip generation for townhouse and semi-detached units. 4. The Specialty Retail (Land Use 826) rate for 'Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM' has been used. Since there is no published rate for the AM peak hour of adjacent street for this Land Use, and since AM peak hour trips to Specialty Retail are generally low, AM trip rates have been assumed to be 50% of the PM rate with reversal of the directional split.										

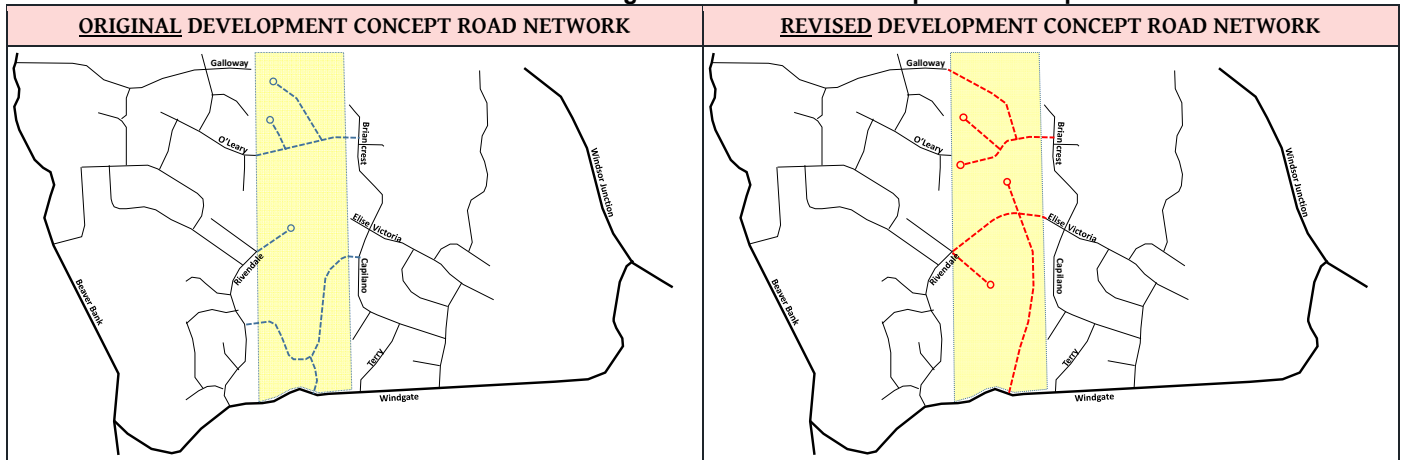
Road Network

The road network configurations for both concepts are illustrated in Table 3. Overall, the revised concept road network is similar functionally; however, it does include some notable modifications:

- The primary east-west road through the south end of the development, which in the original concept was a new road running between Rivendale Drive and Capilano Drive, is now a direct connection between the current limits of Rivendale Drive and Elise Victoria Drive.
- The access road to Windgate Drive, which is proposed just north of the previous location, is a more prominent north-south road through the south end of the development.
- The revised road network at the north end of the development includes a direct connection to Galloway Drive and does not include a connection to O'Leary Drive.

Since the road network in the revised development concept is similar functionally to that proposed in the original concept, it is expected that changes to traffic assignment relative to the original TIS will be negligible.

Table 3: Road Network – Original and Revised Development Concepts



WINDGATE DRIVE ACCESS LOCATION

Access to the south end of the site was originally proposed via a new street connection to Windgate Drive located approximately 200m west of Terry Road. However, the March 2015 TIS recommended that further investigation be completed to determine a final local for the intersection, as the proposed location did not meet minimum requirements for stopping sight distances (SSD) on the Windgate Drive approaches. A subsequent SSD investigation determined that an intersection location approximately 390m west of Terry Road (Photo 1 and Photo 2) was identified as an alternate site access location but that tree trimming should be completed to improve sight distance, particularly for the westbound approach.



Photo 1: Looking left (east) from proposed site access location approximately 390m west of Terry Road



Photo 2: Looking right (west) from proposed site access location approximately 390m west of Terry Road



Photo 3: Eastbound approach to proposed site access location. Note the trees obstructing sight lines on the right side of the photo.



Photo 4: Westbound approach to proposed site access location. Note the trees obstructing sight lines on the right side of the photo.

A site connection to Windgate Drive approximately 390m west of Terry Road is expected to provide adequate SSD with tree clearing inside the horizontal curves for the Windgate Drive approaches. Available SSD at this location should be re-evaluated once trees have been cleared to confirm the intersection location.

SUMMARY

1. The proposed Windgate Village mixed use development in Beaver Bank, NS has undergone changes (site plan and land use) since WSP completed the *Traffic Impact Study* for the development in March 2015. This addendum has been completed to consider the proposed changes based on the resulting traffic impacts.
2. The revised development concept includes residential properties only; the 60,000 sq. ft. commercial component that was proposed for the south end of the site has been eliminated. Overall, the number of residential units has increased from 265 (145 detached / semi-detached units and 120 apartment units) to 368 (242 detached / semi-detached units and 126 apartment units).
3. Trip generation estimates for the revised development concept include a total of 238 two-way vehicle trips (58 vph entering and 180 vph exiting) during the AM peak hour and 310 two-way vehicle trips (195 vph entering and 115 vph exiting) during the PM peak hour. The revised development concept includes an overall reduction of approximately 8 two-way vehicle trips (28 fewer entering, 20 more exiting) during the AM peak hour and a reduction of 62 two-way vehicle trips (8 fewer entering, 54 fewer exiting) during the PM peak hour. The differences in trip generation estimates are not expected to significantly affect the results of the intersection performance analysis from the March 2015 TIS.
4. The road network within the development has been modified, including changes to the primary east-west road through the south end of the development and the location of connections to the surrounding road network, however, the revised road network remains similar functionally to that proposed in the original concept.
5. The location of the proposed connection of the south end of the development to Windgate Drive was investigated to determine a location that meets stopping sight distance (SSD) requirements. An access location approximately 390m west of Terry Road is proposed, provided that trees are cleared to improve sight lines on both the eastbound and westbound approaches.

CONCLUSION

Alterations to the Windgate Village development concept are not expected to produce trip generation changes that will significantly affect the performance of nearby intersections from the original TIS in 2015. Further investigation of the southern site access intersection location at Windgate Drive that the site connection should be located approximately 390m west of Terry Road, but trees should be cleared on both approaches to improve sight lines. SSD measurements should be confirmed at these locations once the trees are cleared.

If you have any questions or comments, please contact me by email at patrick.hatton@wsp.com or by telephone at 902-536-0954.

Yours truly,

ORIGINAL SIGNED

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