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Project No. 222015

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Re: Bruce Street, Dartmouth, NS - Traffic Impact Statement

Mr. Emodi,

Harbourside Transportation Consultants has completed a traffic impact statement, as per Halifax Regional Municipality (HRM) requirements, to support the development application for a development on Bruce Street in Dartmouth, Nova Scotia.

1 Site Context

The development site is located on Bruce Street on the southwest corner of the intersection of Bruce Street and Woodlawn Road. The site context is shown in Figure 1.



Figure 1: Site Context - Dartmouth, NS



1.1 Transportation Network

Bruce Street is a local roadway that runs north-south between Portland Street and Woodlawn Road. Bruce Street has a two-lane cross section with on-street parking on the west side of the roadway. There are no sidewalks on Bruce Street. The roadway cross section is shown in Figure 2.

At the intersection with Portland Street, the Bruce Street approach is stop controlled and vehicles are only permitted to turn right onto Portland Street. There are no turning restrictions on Portland Street. At the intersection with Woodlawn Road, the Bruce Street approach is stop controlled. There are no turning restrictions on Bruce Street or Woodlawn Road.



Figure 2: Bruce Street

Woodlawn Road is a major collector roadway that runs southwest-northeast from Portland Street to Main Street. Woodlawn Road has a four-lane cross section with two travel lanes in each direction, auxiliary left turn lanes are provided at major intersections. The roadway cross section is shown in Figure 3.



Figure 3: Woodlawn Road

Portland Street is an arterial roadway that runs east-west from Downtown Dartmouth to Cole Harbour where the road changes into Cole Harbour Road. Portland Street is a major commuter corridor which experiences traffic volumes of over to 45,000 vehicles per day east of the Highway 111 interchange. The segment of Portland Street between Highway 111 and Cole Harbour has a five-lane cross-section with two travel lanes in each direction and intermittent auxiliary left turn lanes in the central lane. Additional auxiliary right turn lanes are provided at major intersections. There are sidewalks on both sides of Portland Street to the east of Baker Drive, to the west of Baker Drive and through the Highway 111 interchange there is sidewalk only on the north side of Portland Street.

1.2 Transit

The Halifax Transit Route Map (as of November 22, 2021) for the Portland Street area is shown in Figure 4. The transit map demonstrates that development site will be well connected through the existing transit service.

In the vicinity of the development, Woodlawn Road is serviced by five Halifax Transit routes: 58 Woodlawn, 63 Mount Edward, 67 Baker, 158 Woodlawn Express and 178 Mount Edward Express. There is an outbound bus stop located on Woodlawn Road before Bruce Street (#8596) along the frontage on the development site and an inbound bus stop located on Woodlawn Road opposite of Bruce Street (#8602).



1.3 Existing Site Land Uses

The development site encompasses two properties on Bruce Street: Civic #3 and #5. Existing site land uses include a commercial building with approximately 3,500 square feet of commercial space at Civic #3 and a single-family residential home at Civic #5.

The site has three existing access points:

1. Commercial access on Woodlawn Road
2. Commercial access on Bruce Street
3. Residential (single-family unit) access on Bruce Street

The vehicle trip generation estimates for the existing site land uses were quantified using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual (11th edition)*. The weekday morning (AM) and afternoon (PM) peak hour trip generation estimates for the existing site land uses are summarized in Table 1. On a typical weekday, the existing site land uses are estimated to generate 9 vehicle trips in the morning peak hour (5 trips entering and 4 trips exiting) and 24 vehicle trips in the afternoon peak hour (12 trips entering and 12 trips exiting).

Table 1: Trip Generation Estimates for Existing Site Land Uses

Land Use	Unit		Trip Generation Rates ¹						Trips Generated ²					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Rate	In	Out	Rate	In	Out	Total	In	Out	Total	In	Out
210 Single-Family Detached Housing	1	units	0.7	26%	74%	0.94	63%	37%	1	0	1	1	1	0
822 Strip Retail Plaza (<40k)	3.5	1000 ft ²	2.36	60%	40%	6.59	50%	50%	8	5	3	23	11	12
Total Trips Generated (vph)									9	5	4	24	12	12
1. Trip generation rates are in 'vehicles per hour per unit.'														
2. Trips generated are in 'vehicles per hour.'														

2 Proposed Development

The proposed development will include a mid-rise residential building with ground floor commercial, the building will include a total of 52 residential units and 5,200 square feet of commercial space. The development will include 42 underground vehicle parking spaces. The proposed site development plan is shown in Figure 5.



Bruce Street Development

GROUND LEVEL

ASK2

Figure 5: Site Development Plan

2.1 Trip Generation

The vehicle trip generation estimates for the development were quantified using trip generation rates from the ITE *Trip Generation Manual (11th edition)*. The weekday morning (AM) and afternoon (PM) peak hour trip generation estimates for the proposed development are summarized in Table 2. On a typical weekday, the proposed development is expected to generate 31 vehicle trips in the morning peak hour (11 trips entering and 20 trips exiting) and 54 vehicle trips in the afternoon peak hour (29 trips entering and 25 trips exiting).

After accounting for existing trips generated by the current site land uses, the proposed development is expected to generate 22 new vehicle trips in the morning peak hour (6 trips entering and 16 trips exiting) and 30 new vehicle trips in the afternoon peak hour (17 trips entering and 13 trips exiting).

Table 2: Trip Generation Estimates

Land Use	Unit		Trip Generation Rates ¹						Trips Generated ²					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Rate	In	Out	Rate	In	Out	Total	In	Out	Total	In	Out
221 Multifamily Housing (Mid-Rise)	52	units	0.37	23%	77%	0.39	61%	39%	19	4	15	20	12	8
822 Strip Retail Plaza (<40k)	5.2	1000 ft ²	2.36	60%	40%	6.59	50%	50%	12	7	5	34	17	17
Total Trips Generated (vph)									31	11	20	54	29	25
Existing Trips (vph)									-9	-5	-4	-24	-12	-12
New Trips Generated (vph)									22	6	16	30	17	13

1. Trip generation rates are in 'vehicles per hour per unit.'

2. Trips generated are in 'vehicles per hour.'



The majority of vehicle trips generated by the development are expected to travel to/from Highway 111 via Portland Street. It is anticipated that the new vehicle trips associated with the development can be accommodated at the intersections of Woodlawn Road and Bruce Street and Portland Street and Bruce Street with a negligible impact on traffic operations. It should be noted that this consists of a high-level qualitative assessment, therefore no analytical capacity calculations have been completed to support the assessment.

3 Site Plan Review

3.1 Access

Vehicle access to the parking level will be provided from Bruce Street at the southern end of the site. The access configuration for development will eliminate the existing commercial access point on Woodlawn Road and both the commercial and residential access points on Bruce Street.

The development will also include new sidewalk on Bruce Street along the frontage of the development site for pedestrian access.

3.2 Sight Distance Review

The sight distance available at the existing access was reviewed to ensure the access meets the minimum stopping sight distance and turning sight distance requirements of the Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roads*. The TAC minimum stopping and turning sight distance requirements for a two-lane roadway with a design speed of 50 km/h are:

- Minimum stopping sight distance = 65 metres
- Minimum turning sight distance - left-turn from stop = 105 metres
- Minimum turning sight distance - right-turn from stop = 95 metres

Measurements of sight lines at the approximate access location indicate that there is over 110 metres of sight distance available south of the access point on Bruce Street (looking to the right of the access point), the sight lines are shown in Figure 6. The stopping and turning sight distance requirements will be met south of the access point.

There is approximately 60 metres of sight distance available north of the access point on Bruce Street (looking to the left of the access point), the sight lines are shown in Figure 7. The sight distance is limited by the length of the street, the intersection with Woodlawn Street where Bruce Street terminates is clearly visible from the access point.

The stopping and turning sight distance requirements cannot be met north of the access point due to the length of Bruce Street, however clear sight lines are provided to the end of the street. The access is located at the location which will provide the maximum sight distance possible on this site by maximizing the distance between the access and Woodlawn Road.



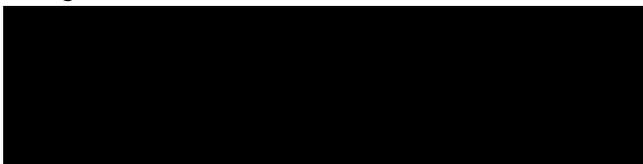
Figure 6: Sight Lines to the Right of Access (South on Bruce Street)



Figure 7: Sight Lines to the Left of Access (North on Bruce Street)

If you have any questions or additional discussion, please feel free to contact the undersigned.

Regards,



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