Ref. No. 171-00927 Task 22

March 31, 2020

Mr. Cesar Saleh, P. Eng.
VP Planning and Design
W.M. Fares Architects
3480 Joseph Howe Drive, 5th Floor
HALIFAX NS B3L 4H7

Sent via Email to cesar.saleh@wmfares.com

RE: Addendum Traffic Impact Statement, Proposed Flow Towers Multi-Tenant Residential Buildings with Ground Floor Commercial Space, Canal Street, Dartmouth

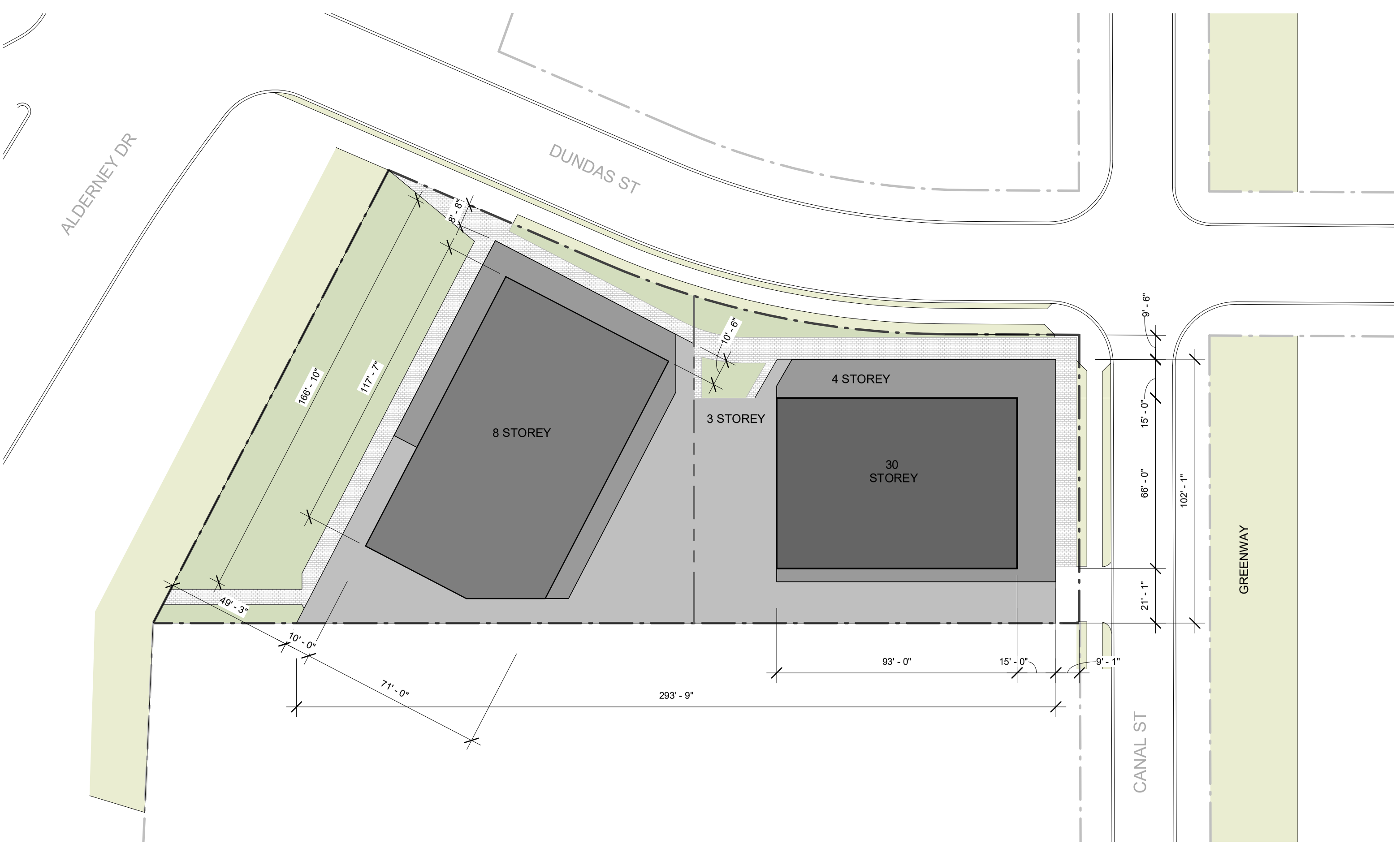
Dear Mr. Saleh:

This is the Addendum that you have requested for the Traffic Impact Statement (TIS) for the proposed Flow Towers Multi-Tenant Residential Buildings with Ground Floor Commercial Space, Canal Street, Dartmouth. The Addendum is required to address land use changes in the development that have occurred due to the proposed Dundas Street extension through the property since the original TIS (copy attached) was prepared by WSP Canada Inc. during August 2016.

Description of Land Use Changes - Changes for the proposed development between the proposed 2016 development and the current 2020 development include:

- The 2016 development was proposed to include approximately 285 residential units and 6,915 square feet of neighbourhood oriented commercial space. The 2020 development is proposed to include approximately 218 residential units and 7461 square feet of neighbourhood oriented commercial space.
- While the proposed 2016 development was to use the STOP controlled Mill Lane intersection on Alderney Drive to access the regional street network, the proposed 2020 development will have the benefit of accessing Alderney Drive at the proposed signalized Dundas Street intersection immediately northwest of the site.

Description of Site Access - Pedestrian access to the site will be from the newly constructed Dundas Street at the north edge of the site. The vehicle driveway for the parking levels will be on Canal Street at the southeast corner of the site. Access to the regional street system will be by way of a two-way access at the proposed signalized Alderney Drive / Dundas Street intersection and right-in / right-out movements at the Portland Street / Canal Street intersection.



FLOW TOWERS Canal St + Dundas St, Dartmouth NS	SITE PLAN **Figure A-1**	Project No: 2015-23 Scale: 1 : 400 Date: 3/11/2020 9:35:26 AM	WM FARES ARCHITECTS **D01**

Trip Generation Estimates - Trip generation estimates for the proposed 2016 and 2020 developments are compared in Table A-1. Published trip generation equations and rates from *Trip Generation, 10th Edition,* have been used, except as noted . While the Halifax Integrated Mobility plan has a target for 60% non-auto trips within the regional centre, a 50% reduction for non-auto trips has been used for the Addendum for compatibility with the 50% reduction used in the original TIS.

Table A- 1 - Comparison of Trip Estimates for Proposed Development - 2016 and 2020

Land Use	Number Units [2]	Trip Generation Rates				Trips Generated [3]			
		AM Peak		PM Peak		AM Peak		PM Peak	
		In	Out	In	Out	In	Out	In	Out
Trip Generation Estimates for Proposed Development - 2016									
Estimated Vehicle Trips for Proposed Development - 2016 (Table 1, *Traffic Impact Statement, Proposed Flow Towers Multi-Tenant Residential Buildings with Ground Floor Commercial Space, Canal Street, Dartmouth*, August 18, 2016)						13	34	34	25
Trip Generation Estimates for Proposed Development - 2020									
High-Rise Apartment (Land Use 222)	218 units	Equations on Pages 153 and 154 (Trip Generation, *10th Edition*)				18	56	50	32
Specialty Retail (Land Use 826) [4]	7.461 KGLA	0.76	0.60	1.19	1.52	6	4	9	11
Unadjusted vehicle trip generation estimates for proposed development						24	60	59	43
50% reduction in vehicle trips to account for high transit and AT use [5]						12	30	30	22
Adjusted vehicle trip generation estimates for proposed development						12	30	29	21
Comparison of Trip Generation Estimates - Proposed 2016 and 2020 Development Land Uses									
Reduction in Trip Estimates for Proposed 2020 Development [6]						1	4	5	4

NOTES:
1. Equations and rates are for indicated Land Use Codes, *Trip Generation, 10th Edition*, Institute of Transportation Engineers, 2017, except as noted.
2. Units are 'Number of Residential Units'; KGLA is 'Gross Leasable Area x 1000 square feet'
3. Rates are 'vehicles per hour per unit'; trips generated are 'vehicles per hour for peak hours'.
4. Since *10th Edition* does not include Specialty Retail, rates for Land Use 826 from the *9th Edition* have 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 Speciality Retail are generally low, AM trip rates have been assumed to be 50% of the PM rate with reversal of the directional split.
5. While the Halifax Integrated Mobility plan has a target for 60% non-auto trips within the regional centre, a 50% reduction for non-auto trips has been used for the Addendum.
6. These are estimated reductions in AM and PM peak hour vehicle trips resulting from land use changes required to accommodate the Dundas Street Extension.

Summary Trip Generation Comparison - Trip generation estimates for the 2016 and 2020 proposed land uses (Table A-1) indicate the following:

1. The proposed 2016 land use was estimated to generate 47 two-way vehicle trips (13 entering and 34 exiting) during the AM peak hour and 59 two-way vehicle trips (34 entering and 25 exiting) during the PM peak hour.
2. The proposed 2020 land use is estimated to generate 42 two-way vehicle trips (12 entering and 30 exiting) during the AM peak hour and 50 two-way vehicle trips (29 entering and 21 exiting) during the PM peak hour.
3. The proposed 2020 land use is estimated to generate 5 fewer two-way vehicle trips during the AM peak hour and 9 fewer two-way vehicle trips during the PM peak hour.

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Summary -

1. The proposed development will include approximately 218 residential units and 7,461 square feet of neighbourhood oriented commercial space.

2. Pedestrian access to the site will be from Dundas Street at the north site boundary and vehicle access will be a driveway on Canal Street at the southeast site boundary.

3. Vehicle access to the regional street network will be by way of a two-way traffic movement at the proposed signalized Alderney Drive / Dundas Street intersection and right-in / right-out movements at the Portland Street / Canal Street intersection.

4. The proposed 2020 land use is estimated to generate five fewer two-way vehicle trips during the AM peak hour and nine fewer two-way vehicle trips during the PM peak hour.

Conclusion -

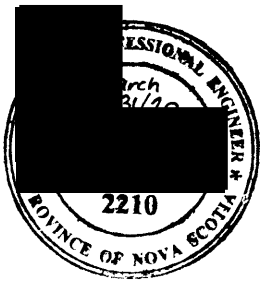
4. Since trip estimates for the proposed 2020 development are slightly lower than those for the previously proposed 2016 development, and vehicle access to Alderney Drive will now be at the Dundas Street signalized intersection, the conclusion of the original 2016 Traffic Impact Statement is still considered to be appropriate:

> "While peak hourly volumes are high on regional streets near the site, the low to moderate numbers of site generated vehicle trips are not expected to have any significant impact to the level of performance of adjacent streets and intersections, or the regional street network".

If you have any questions or comments, please contact me by Email to ken.obrien@wsp.com or telephone 902-443-7747.

Sincerely:

[redacted], P. Eng.
Senior Traffic Engineer
WSP Canada Inc.



Ref. No. 161-04044 Task 4

August 18, 2016

Ms. Ashley Blissett, P. Eng.
Senior Development Engineer
Halifax Regional Municipality
PO Box 1749
HALIFAX NS B3J 3A5

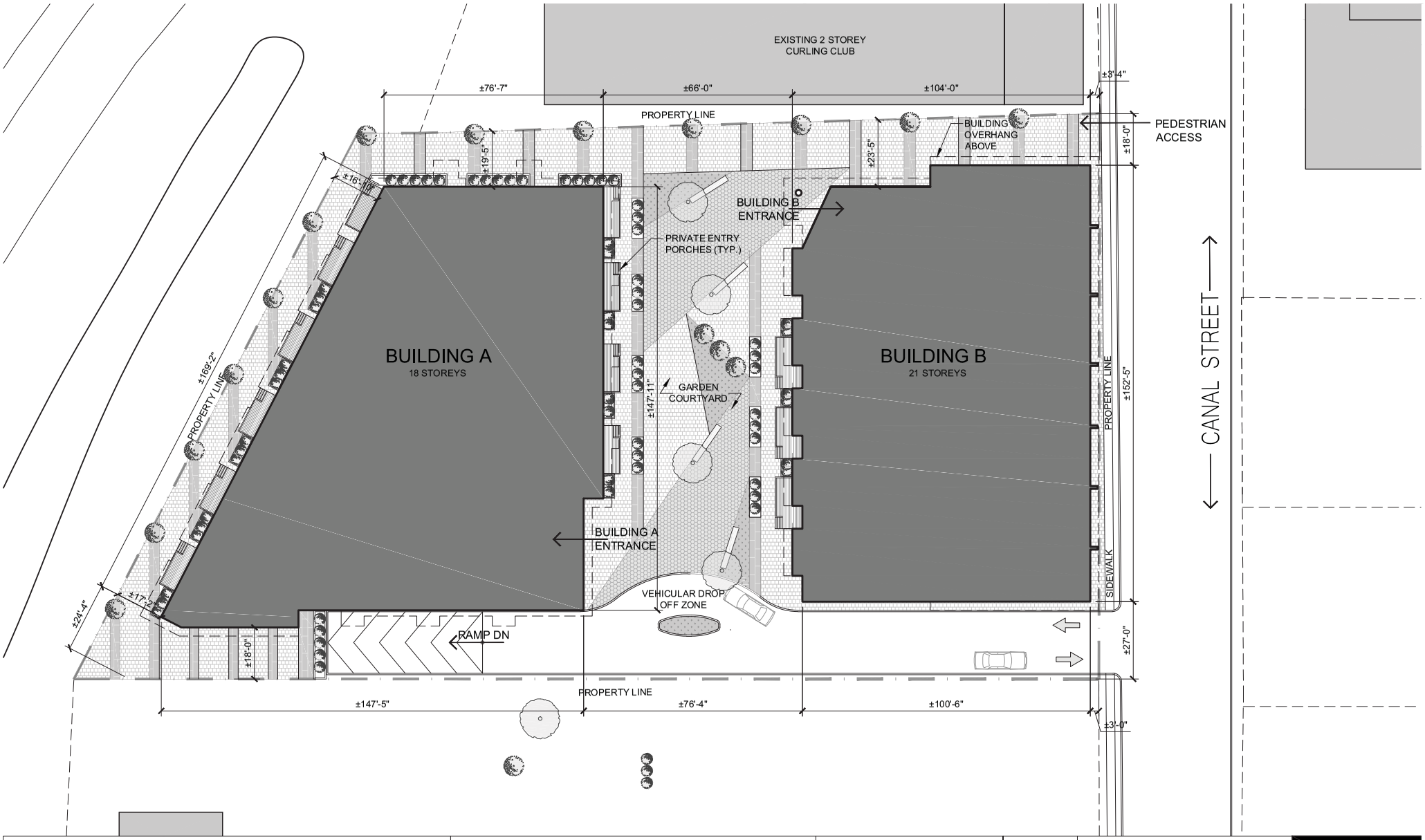
RE: Traffic Impact Statement, Proposed Flow Towers Multi-Tenant Residential Buildings with Ground Floor Commercial Space, Canal Street, Dartmouth

Dear Ms. Blissett:

W M Fares Group is preparing plans for the proposed Flow Towers development on a vacant lot on the west side of Canal Street, Dartmouth (Figure 1). The development will include two multi-unit residential buildings, with ground floor commercial space in one of the buildings. The proposed development (Figure 2) will include approximately 285 apartment units, 6,915 square feet of neighbourhood oriented commercial space, and approximately 292 underground parking spaces. This is the Traffic Impact Statement (TIS) required to accompany the development application.

Description of Development Location - The proposed development site (Figure 1) which is in the Dartmouth Cove area is bounded by Dartmouth Curling Club to the north, Canal Street to the east, Dominion Diving Limited to the south and the Shubenacadie Canal Trail and Alderney Drive to the west. While the existing area east and south of the site includes mostly vacant land or industrial uses, HRM has initiated a planning process that envisions significant residential and commercial development during the next 10 to 20 years.

Figure 1 - Location plan showing approximate siting of the two proposed Flow Towers buildings.



FLOW TOWERS DARTMOUTH COVE, NS	SITE PLAN **SITE / LANDSCAPE PLAN**	**Figure 2**	Project No.: P2015.23 Scale: 1" = 30'-0" Date: 3 Aug 2016		WM FARES ARCHITECTS	**SP01**

Description of Site Access - Pedestrian access to the site will be from Canal Street at the north site boundary and vehicle access will be a driveway on Canal Street at the south site boundary (Figure 2). Access to the regional street system (Figure 1) will be by way of a two-way access at the Alderney Drive / Mill Lane intersection and right-in / right-out movements at the Portland Street / Canal Street intersection. Existing traffic to and from adjacent sites also access Maitland Street through the parking lot opposite Mill Lane and across a gravel site just north of the Trans Canada Trail (Figure 1).

Canal Street is a north-south local street approximately 250 m long between Portland Street in the north and the Trans Canada Trail in the south. The street has two travel lanes with sidewalks on both sides. Parking is permitted (2 HOURS MON - FRI) on the west side of the street and except for a short NO PARKING section on the east side, parking is permitted without time restrictions. There is good visibility on both Canal Street approaches to the proposed site driveway (Photos 1 and 2).

Photo 1 - Looking north on Canal Street towards Mill Lane and Portland Street from the proposed site driveway at the south site boundary.

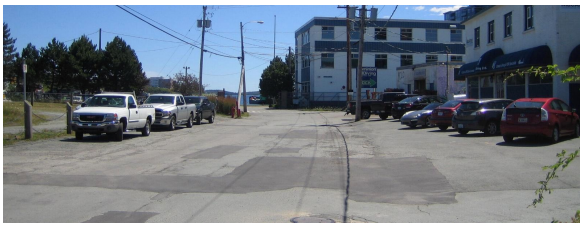


Photo 2 - Looking south on Canal Street towards the Trans Canada Trail from the proposed site driveway at the south site boundary.

Traffic Volumes - The following 2012 peak hourly traffic volume data were obtained from HRM:

- Alderney Drive (between Mill Lane and Portland Street) - AM 900 vph; PM 1020 vph
- Portland Street (between Alderney Drive and Canal Street) - AM 1180 vph; PM 1340 vph
- Portland Street (between Canal Street and Maitland Street) - AM 1160 vph; PM 1270 vph.

Transit and Active Transportation (AT) - The site is well served by transit with at least seven Halifax Transit routes serving Portland Street and Alderney Drive with connections to Penhorn Terminal to the east and Alderney Ferry Terminal to the west. The Trans Canada Trial which is just south of the site also provides a convenient pedestrian and bicycle connection to Kings Wharf and the Ferry Terminal.

Trip Generation - Trip generation estimates for the proposed development, prepared using published trip generation rates from *Trip Generation, 9th Edition* (Institute of Transportation Engineers (ITE), 2012), are included in Table 1. Using published trip rates, it is estimated that the proposed development will generate about 94 two-way vehicle trips (26 entering and 68 exiting) during the AM peak hour and 119 two-way vehicle trips (69 entering and 50 exiting) during the PM peak hour.

The appropriate percentage of non-vehicle trips for the Dartmouth Cove development area was discussed with Paul Burgess, M.Eng, P. Eng., on August 8, 2016. It was determined that, since significant numbers of the site generated trips are expected to be by made by transit, bicycle or walking modes, 50% of the site generated trips estimated using ITE published trip generation rates would be considered non-vehicle trips. When 50% non-vehicle trips are considered, it is estimated that the development will generate 47 two-way vehicle trips (13 entering and 34 exiting) during the AM peak hour and 59 two-way vehicle trips (34 entering and 25 exiting) during the PM peak hour.

Table 1 - Trip Generation Estimates for Proposed Development

Land Use [1]	Units [2]	Trip Generation Rates [3]				Trips Generated [3]			
		AM Peak		PM Peak		AM Peak		PM Peak	
		In	Out	In	Out	In	Out	In	Out
High-Rise Apartment (Land Use 222)	285 units	0.075	0.225	0.214	0.136	21	64	61	39
Specialty Retail (Use Code 826) [4]	6.915 KGLA	0.76	0.60	1.19	1.52	5	4	8	11
Unadjusted vehicle trip generation estimates for proposed development						26	68	69	50
50% reduction in vehicle trips to account for high transit and AT use [5]						13	34	35	25
Adjusted vehicle trip generation estimates for proposed development						13	34	34	25

NOTES:
1. Rates are for the indicated Land Use Codes, *Trip Generation*, *9th Edition*, Institute of Transportation Engineers, 2012.
2. Number of apartment units; KGLA is 'Gross Leasable Area x 1000 square feet'.
3. Rates are 'vehicles per hour per unit'; trips generated are 'vehicles per hour for peak hours'.
4. The Speciality 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 Speciality Retail are generally low, AM trip rates have been assumed to be 50% of the PM rate with reversal of the directional split.
5. Following discussions with Paul Burgess, M.Eng, P. Eng., on August 8, 2016, it was determined that, since significant numbers of the site generated trips are expected to be by made by transit, bicycle or walking modes, 50% of the site generated trips estimated using ITE published trip generation rates would be considered non-vehicle trips.

Summary -

1. The proposed development will include approximately 285 apartment units, 6,915 square feet of neighbourhood oriented commercial space, and approximately 292 underground parking spaces.

2. Pedestrian access to the site will be from Canal Street at the north site boundary and vehicle access will be a driveway on Canal Street at the south site boundary. Visibility is good on both Canal Street approaches to the driveway.

3. Using published trip rates, it is estimated that the proposed development will generate about 94 two-way vehicle trips (26 entering and 68 exiting) during the AM peak hour and 119 two-way vehicle trips (69 entering and 50 exiting) during the PM peak hour. However, when 50% non-vehicle trips are considered, it is estimated that the development will generate 47 two-way vehicle trips (13 entering and 34 exiting) during the AM peak hour and 59 two-way vehicle trips (34 entering and 25 exiting) during the PM peak hour.

4. The site is well served by transit with at least seven Halifax Transit routes serving Portland Street and Alderney Drive with connections to Penhorn Terminal to the east and Alderney Ferry Terminal to the west. The Trans Canada Trial which is just south of the site also provides a convenient pedestrian and bicycle connection to Kings Wharf and the Ferry Terminal.

5. While traffic volumes are high on Portland Street and Alderney Drive, existing volumes on Canal Street are expected to be low to moderate.

Conclusion -

6. While peak hourly volumes are high on regional streets near the site, the low to moderate numbers of site generated vehicle trips are not expected to have any significant impact to the level of performance of adjacent streets and intersections, or the regional street network.

Recommendation -

7. While visibility is good on both Canal Street approaches to the site driveway, the final site design must ensure that the building adjacent to Canal Street and site vegetation do not block the line of sight between drivers exiting the site and the expected high numbers of pedestrians using the sidewalk.

If you have any questions or comments, please contact me by Email to ken.obrien@wspgroup.com or telephone 902-443-7747.

Sincerely:

[redacted], P. Eng.
Senior Traffic Engineer
WSP Canada Inc.

[redacted]
18/16
2210
PROFESSIONAL ENGINEER
PROVINCE OF NOVA SCOTIA