

November 2, 2020

Mr. Ian Watson
Senior Planner
UPLAND | Urban Planning + Design Studio
63 King Street, Dartmouth, NS

[via email: ian@uplandstudio.ca]

**RE: Traffic Impact Statement
Proposed Redevelopment, Titus Street & Main Avenue, Nova Scotia**

Dear Mr. Watson:

Plans are being prepared to redevelop the corner of Titus Street and Main Avenue in Halifax, Nova Scotia. This is the Traffic Impact Statement for redevelopment of this site.

SITE AND ACCESS DESCRIPTION

The proposed redevelopment is expected to be located on a site consisting of five (5) parcels bound by Titus Street and Main Avenue (PID 00180018, 40803371, 00180489, 00180026 and 00180034), as shown in Figure 1. The existing site is currently occupied by Low-Rise Apartments and Single Family Dwellings. The proposed redevelopment is expected to consist of 119 Mid-Rise Apartments and 3,300 ft² of commercial space with 178 underground parking spaces (168 residential and 10 commercial parking spaces). The proposed site plan is represented in Figure 2. Vehicular access to the underground parking for the proposed redevelopment is proposed on Titus Street, approximately 45 m southeast from the signalized intersection at Main Avenue. The approximate sightlines from the proposed site access are represented in Photo 1 and Photo 2. The available sight distance appears adequate for a two-way driveway on Titus Street. Completion of the development is anticipated by 2024.



Figure 1 – Study Area



Photo 1 – Looking southeast (to the left) on Titus Street from the Proposed Underground Parking Access



Photo 2 – Looking northwest (to the right) on Titus Street from the Proposed Underground Parking Access

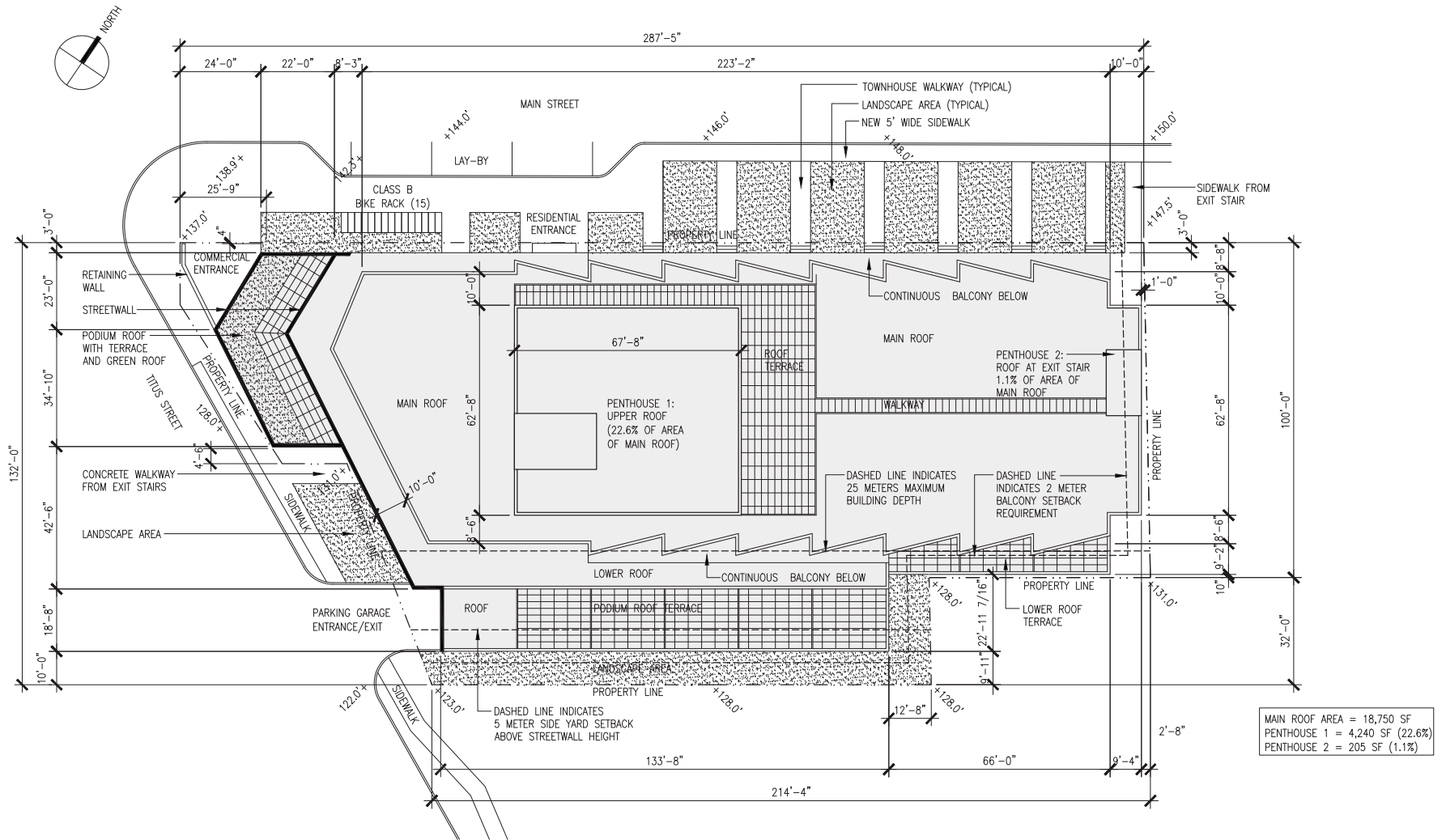


Figure 2 - Site Plan

STREET AND INTERSECTION DESCRIPTIONS

Titus Street is a major collector road that runs northwest-southeast for approximately 450 m between Lacewood Drive and Dutch Village Road. In the study area, Titus Street consists of a four-lane cross section with sidewalk on both sides. Parking is prohibited on both sides of the street and the posted speed limit is 50 km/h. Halifax Transit currently operates Routes #2, #3, #4, #135, #136, #138 and #194 on Titus Street past the proposed redevelopment.

Main Avenue is a local street north of Titus Street and collector road south of Titus Street. Main Avenue runs northeast-southwest for approximately 2.4 km between the Bedford Highway and Washmill Lake Drive. In the study area, Main Avenue consists of a two-lane cross section with sidewalk on both sides. Parking is prohibited on both sides of the street and the posted speed limit is 50 km/h. Halifax Transit currently operates Routes #2, #3, #4, #135, #136, #138, #194 and #196 on Main Avenue past the proposed redevelopment.

Titus Street at Main Avenue is a 4-leg signalized intersection. The Titus Street approaches consist of one through-right lane and one through-left lane and the eastbound Main Avenue approach is supplemented with a right turn lane. All approaches include a painted pedestrian crosswalk consisting of parallel bars.

TRAFFIC VOLUME DATA

Turning movement counts were collected at the Titus Street and Main Avenue intersection on Wednesday, September 17, 2014 by HRM. The turning movement counts have been tabulated in Table A-1 in the Appendix. Based on a 2% annual growth factor, the projected 2024 two-way volume on Titus Street is estimated to be 1,660 vehicles per hour (vph) during the morning peak hour and 2,160 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 *Trip Generation Manual* was used to estimate generated trips by the existing site as well as the proposed redeveloped site. The existing site is currently occupied by 11 residential units consisting of approximately eight (8) Low-Rise Apartments and three (3) Single Family Dwellings. The proposed redevelopment is expected to consist of 119 Mid-Rise Apartments and 3,300 ft² of commercial space. The specific commercial usage has yet to be identified, therefore, the commercial space was assumed to be a Variety Store. Variety Store is considered to be a conservative estimate for this location compared to other land uses (e.g. General Office).

Generated trips for Single Family Dwellings (Land Use 210), Low-Rise Apartments (Land Use 220) and Mid-Rise Apartments (Land Use 221) are estimated for the AM and PM peak hours of weekday traffic by the number of dwelling units. Generated trips for Variety Store (Land Use 814) are estimated for the AM and PM peak hours of weekday traffic by the gross leasable floor area of the establishment.

Trip generation estimates were prepared for the existing site and are summarized in Table 1. It was estimated that the existing site currently generates approximately:

- 3 two-way primary vehicle trips (1 entering and 2 exiting) during the AM peak hour; and,
- 4 two-way pass-by vehicle trips (2 entering and 2 exiting) during the PM peak hour.

Trip generation estimates were prepared for the proposed redevelopment and are summarized in Table 2. It was estimated that the redevelopment will generate approximately:

- 26 two-way primary vehicle trips (8 entering and 18 exiting) during the AM peak hour; and,
- 37 two-way pass-by vehicle trips (22 entering and 15 exiting) during the PM peak hour.

When trips generated by the existing land uses are considered, it is estimated that the redeveloped site will generate:

- **23 new** two-way primary vehicle trips (7 entering and 16 exiting) during the AM peak hour; and,
- **33 new** two-way pass-by vehicle trips (20 entering and 13 exiting) during the PM peak hour.



Traffic Impact Statement
Proposed Redevelopment, Titus Street & Main Avenue, Nova Scotia

Table 1 – Trip Generation Estimates for the Existing Site

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
EXISTING SITE									
Low-Rise Apartments ⁵ (Land Use 220)	8 Units	0.11	0.35	0.35	0.21	1	3	3	2
Single Family Housing ⁶ (Land Use 210)	3 Units	0.19	0.56	0.62	0.37	1	2	2	1
Trip Generation Estimate for Existing Site						2	5	5	3
50% Reduction in Trip Estimate for Non-Auto Modes ⁷						1	3	3	1
Total Trip Generation Estimate for Existing Site						1	2	2	2
Notes: 1. Land Use Code 210 and 220 rates and equations are from <i>Trip Generation, 10th Edition, (Institute of Transportation Engineers, Washington, 2017)</i> . 2. 'Number of Residential Units' for Low-Rise Apartments and Single Family Housing. 3. Trip generation rates are 'vehicles per hour unit'. 4. Trips generated are 'vehicles per hour' for AM and PM peak hours. 5. Titus Street Cvic No. 11, 13 & 15. 6. Titus Street Cvic No. 9 and Main Avenue Cvic No. 60 & 62. 7. In 2011, approximately 50% of trips were made by transit or using active transportation in the Regional Center of Halifax. The Halifax Integrated Mobility Plan has a 60% target for non-auto trips within the Regional Center of Halifax by 2031 (Page 40, IMP, 2017). A reduction of 50% was used to account for non-auto trips (transit, bicycle and walking trips) generated to the existing site.									

Table 2 – Trip Generation Estimates for the Proposed Redevelopment

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 REDEVELOPMENT									
Mid-Rise Apartments (Land Use 221)	119 Units	0.09	0.27	0.27	0.17	11	32	32	20
Variety Store ⁵ (Land Use 814)	3.3 KGLA	1.81	1.37	3.56	3.28	6	5	12	11
Trip Generation Estimate for Existing Site						17	37	44	31
50% Reduction in Trip Estimate for Non-Auto Modes ⁶						9	19	22	16
Total Primary Trips Generated by the Proposed Redeveloped Site						8	18	22	15
Notes: 1. Land Use Code 221 and 814 rates and equations are from <i>Trip Generation, 10th Edition, (Institute of Transportation Engineers, Washington, 2017)</i> . 2. 'Number of Residential Units' for Mid-Rise Apartments. 'Gross Leasable Area x 1000 SF' for Variety Store. 3. Trip generation rates are 'vehicles per hour unit'. 4. Trips generated are 'vehicles per hour' for AM and PM peak hours. 5. Commercial use associated with the proposed redevelopment have yet to be identified, therefore, the commercial space was assumed to be Variety Store. 6. In 2011, approximately 50% of trips were made by transit or using active transportation in the Regional Center of Halifax. The Halifax Integrated Mobility Plan has a 60% target for non-auto trips within the Regional Center of Halifax by 2031 (Page 40, IMP, 2017). The proposed redevelopment is expected to be fully occupied by 2024, therefore, a reduction of 50% was used to account for non-auto trips (transit, bicycle and walking trips) generated to the site.									

SUMMARY

1. Plans are being prepared to redevelop five (5) parcels bound by Titus Street and Main Avenue that are currently occupied by 11 residential units consisting of approximately eight (8) Low-Rise Apartments and three (3) Single Family Dwellings. The redevelopment is expected to consist of 119 Mid-Rise Apartments and 3,300 ft² of Variety Store.
2. Access to the proposed underground parking garage is planned from Titus Street. Sight distances appear adequate for a driveway onto Titus Street.
3. It was estimated that the existing site currently generates:
 - 3 two-way primary vehicle trips (1 entering and 2 exiting) during the AM peak hour; and,
 - 4 two-way pass-by vehicle trips (2 entering and 2 exiting) during the PM peak hour.
4. It was estimated that the proposed redevelopment will generate:
 - 26 two-way primary vehicle trips (8 entering and 18 exiting) during the AM peak hour; and,
 - 37 two-way pass-by vehicle trips (22 entering and 15 exiting) during the PM peak hour.
5. The proposed site is expected to generate 23 new two-way primary trips during the AM peak hour and 33 new two-way primary trips during the PM peak hour.

CONCLUSION

6. The proposed redevelopment is not expected to have any significant impact to levels of performance on adjacent streets, intersections or to the regional transportation 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,

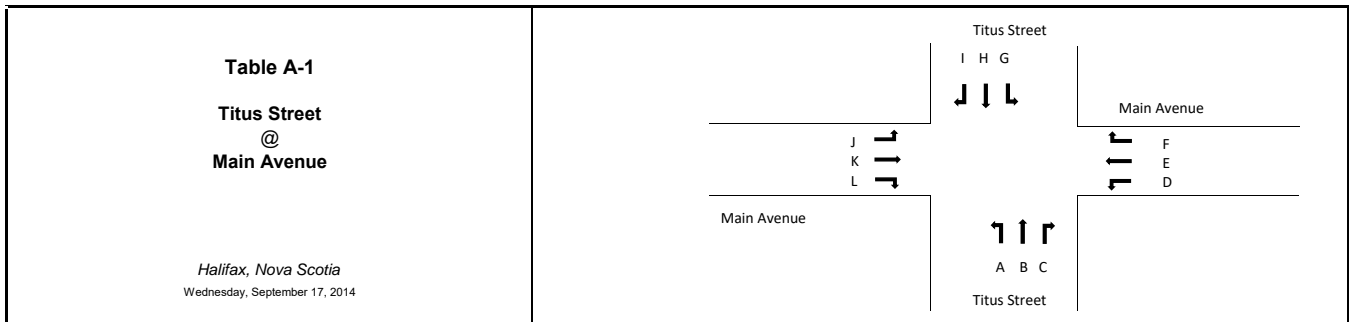
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Courtney McCarthy, P.Eng.
Transportation Engineer
WSP Canada Inc.





APPENDIX



AM Peak Period Volume Data

Time	Titus Street Northbound Approach			Main Avenue Westbound Approach			Titus Street Southbound Approach			Main Avenue Eastbound Approach			Total Vehicles
	A	B	C	D	E	F	G	H	I	J	K	L	
07:00 - 07:15	28	24	4	4	1	0	3	162	1	4	7	126	364
07:15 - 07:30	30	27	3	7	2	0	4	161	5	2	8	130	379
07:30 - 07:45	36	40	6	3	3	0	18	209	4	2	33	119	473
07:45 - 08:00	35	44	3	3	2	0	19	126	1	1	28	69	331
08:00 - 08:15	41	36	3	3	3	0	9	147	2	2	34	90	370
08:15 - 08:30	41	45	6	3	5	1	13	153	0	5	30	74	376
08:30 - 08:45	38	47	1	7	6	3	10	190	1	4	18	103	428
08:45 - 09:00	43	45	7	2	3	2	5	146	3	3	13	114	386
AM Peak Hour	163	173	17	15	17	6	37	636	6	14	95	381	1560
07:00 - 08:00	129	135	16	17	8	0	44	658	11	9	76	444	1547
08:00 - 09:00	163	173	17	15	17	6	37	636	6	14	95	381	1560

PM Peak Period Volume Data

Time	Titus Street Northbound Approach			Main Avenue Westbound Approach			Titus Street Southbound Approach			Main Avenue Eastbound Approach			Total Vehicles
	A	B	C	D	E	F	G	H	I	J	K	L	
16:00 - 16:15	49	123	3	3	13	7	0	87	6	9	3	59	362
16:15 - 16:30	58	128	3	5	14	8	3	85	2	9	9	52	376
16:30 - 16:45	84	193	11	7	14	5	1	79	7	4	3	54	462
16:45 - 17:00	94	179	15	9	11	4	0	85	7	3	5	46	458
17:00 - 17:15	97	188	9	5	23	12	2	90	7	8	7	76	524
17:15 - 17:30	107	179	5	8	14	4	1	110	4	11	6	72	521
17:30 - 17:45	94	151	10	5	10	4	1	86	4	7	3	79	454
17:45 - 18:00	81	113	5	3	11	3	3	80	4	8	9	72	392
PM Peak Hour	382	739	40	29	62	25	4	364	25	26	21	248	1965
16:00 - 17:00	285	623	32	24	52	24	4	336	22	25	20	211	1658
17:00 - 18:00	379	631	29	21	58	23	7	366	19	34	25	299	1891

* Count not completed by WSP