Project No. 211-00988

March 28, 2022

Mr. Ross Karlin
Senior Project Manager
Elm Developments Corp.

Re: Traffic Impact Statement, Development Agreement Amendment, Harbour Isle Development, Dartmouth

Dear Mr. Karlin:

This is the Traffic Impact Statement that you have requested to consider traffic volume changes that may occur as a result of altering land uses for Buildings A, B, C, D and E on Figure 1.

Description of Proposed Development - Construction has been ongoing on the Harbour Isle site for many years. The Fourth Development Agreement (January 2019) included provision for a total of 315 additional apartment units (105 units each in Buildings A, B, and C), a 175 room hotel in Building D, and a 100,000 SF Office Building in Building E. It is now proposed that the number of units in Buildings A, B, and C be increased from 105 units per building to 171 units per building for a revised total of 513 units in the three buildings. It is also proposed that Building D be changed for a 175 room hotel to a 171 unit apartment building and that Building E be changed from a 100,000 SF office building to a 171 unit apartment building. The commutative result of the proposed changes will provide 855 apartment units in the five buildings.

Description of Site Access - Buildings A, B, and C will have access on Wheelhouse Road (Figure 1) and Buildings D and E will have access on Sheppards Island Avenue. Traffic from the two local streets will use a collector street (Marketplace Drive, Photos 1 and 2) which will allow trips to access Windmill Road at signalized intersections at Seapoint Road north of the site and Bancroft Lane south of the site.

Photo 1 - Looking north on Marketplace Drive towards Seapoint Road from Wheelhouse Road.

Photo 2 - Looking south on Marketplace Drive towards Bancroft Lane from Wheelhouse Road.

1 Spectacle Lake Drive, Dartmouth, Nova Scotia, Canada B3B 1X7
Telephone: 902-835-9955 ~ Fax: 902-835-1645 ~ www.wsp.com

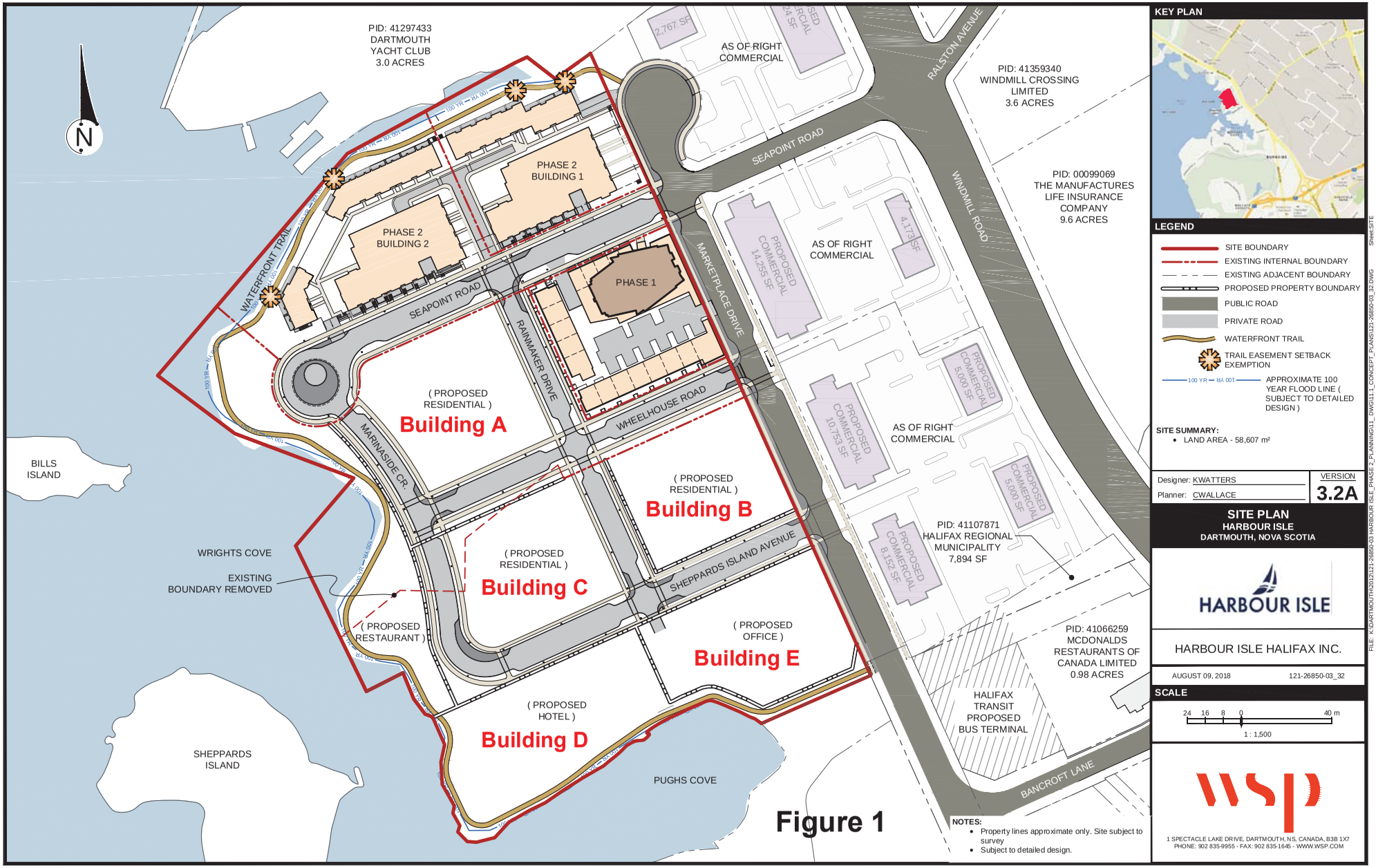

Figure 1

NOTES:
- Property lines approximate only. Site subject to survey
- Subject to detailed design.

KEY PLAN

LEGEND

- SITE BOUNDARY
- EXISTING INTERNAL BOUNDARY
- EXISTING ADJACENT BOUNDARY
- PROPOSED PROPERTY BOUNDARY
- PUBLIC ROAD
- PRIVATE ROAD
- WATERFRONT TRAIL
- TRAIL EASEMENT SETBACK EXEMPTION
- APPROXIMATE 100 YEAR FLOOD LINE (SUBJECT TO DETAILED DESIGN)

SITE SUMMARY:
- LAND AREA - 58,607 m²

Designer: KWATTERS
Planner: CWALLACE

VERSION **3.2A**

SITE PLAN
HARBOUR ISLE
DARTMOUTH, NOVA SCOTIA

HARBOUR ISLE

HARBOUR ISLE HALIFAX INC.

AUGUST 09, 2018 | 121-26850-03_32

SCALE

24 16 8 0 40 m

1 : 1,500

1 SPECTACLE LAKE DRIVE, DARTMOUTH, NS, CANADA, B3B 1X7
PHONE: 902 835-9955 - FAX: 902 835-1645 - WWW.WSP.COM

FILE: K:\DARTMOUTH\26121\121-26850-03 HARBOUR ISLE_PHASE 2_PLANNING\31_ DWG\31 1_CONCEPT_PLANS\121-26850-03_32.DWG Sheet:SITE

Trip Generation - Trip generation estimates (Table 1) for the affected buildings have been prepared using published equations from *Trip Generation, 11th Edition*, Institute of Transportation Engineers, 2021. Trip generation estimates have been prepared for the 315 apartment units, 175 room hotel, and 100,000 SF office building included in the Fourth Development Agreement. Trip generation estimates have also been prepared for the total 855 apartment units that are proposed for Buildings A, B, C, D, and E. Since Halifax Transit propose construction of a Transit Terminal at the corner of Marketplace Drive and Bancroft Lane (Figure 1), a 15% reduction for non-auto trips, which is considered appropriate for apartment units on this site, has been applied for all trip generation estimates in Table 1.

Table 1 - Trip Generation Estimates for Proposed Amendments to Harbour Isle Land Use

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
Trip Generation Estimates for Land Uses Included in the Fourth Development Agreement (January 2019)									
High-Rise Apt (Land Use 222)	315 Units	T=0.22(X) + 18.85 AM (34% in / 66% out) T=0.26(X) + 23.12 PM (56% in / 44% out)				30	58	59	46
Hotel (Land Use 310)	175 Rooms	T=0.50(X) - 7.45 AM (56% in / 44% out) T=0.74(X) - 27.80 PM (51% in / 49% out)				45	35	52	50
General Office Building (Land Use 710)	100.0 KGFA	Ln(T) = 0.86Ln(X)+1.16 AM (88% in / 12% out) Ln(T) = 0.83Ln(X)+1.29 AM (17% in / 83% out)				162	22	28	138
Trip Generation Estimates for Units Included in Fourth DA						237	115	139	234
15% Reduction for Non-Auto Use by Apartment and Office Land Uses [4]						29	12	13	28
Adjusted Trip Generation Estimates for Fourth DA Land Uses						208	103	126	206
Trip Generation Estimates for Proposed Land Uses									
High-Rise Apt (Land Use 222)	855 Units [5]	T=0.22(X) + 18.85 AM (34% in / 66% out) T=0.26(X) + 23.12 PM (56% in / 44% out)				70	137	137	108
15% Reduction for Non-Auto Use by Apartment and Office Land Uses [4]						11	21	21	16
Adjusted Trip Generation Estimates for Proposed Land Uses						59	116	116	92
Changes in Trip Generation Estimate as a Result of Revised Land Use						(149)	13	(10)	(114)

NOTES:
1. Land Use Codes and trip generation equations are from *Trip Generation, 11th Edition*, Institute of Transportation Engineers, Washington, 2021.
2. 'Number of residential units' for Apartments; 'Number of Rooms' for Hotel.
3. 'T' is number of generated trips; 'X' is the land use unit count; KGFA is '1000 SF Gross Floor Area'. Trips generated are 'vehicles per hour' for AM and PM peak hours.
4. The Halifax Integrated Mobility plan has a target for 26% non-auto trips within the Inner Suburban Region, a 15% reduction for non-auto trips is considered appropriate for apartment units and office space on this site since it is adjacent to a proposed transit terminal.
5. This includes the 171 apartment units now proposed for each of Buildings A, B, C, D, and E on Figure 1

Trip Generation Summary -

1. It is estimated that the units for the five buildings in the 2019 DA would generate 311 two-way vehicle trips (208 entering and 103 exiting) during the AM peak hour and 332 two-way trips 126 entering and 206 exiting) during the PM peak hour.
2. It is estimated that the 855 apartment units now proposed for the five buildings in the amended development will generate 175 two-way vehicle trips (59 entering and 116 exiting) during the AM peak hour and 208 two-way trips (116 entering and 92 exiting) during the PM peak hour.
3. While the proposed amended land use will result in 13 additional trips exiting the site during the AM peak hour, there are significantly fewer trips entering the site during this period. The proposed changes to the site also result in reductions for both entering and exiting trips during the PM peak period.

Summary Traffic Impact Statement -

1. The proposed amended land use will add 198 units to Buildings A, B, and C for an increase from 315 units to 513 units; Building D will be changed from a 175 room hotel to a 171 unit apartment building, and Building E will change from a 100,000 SF office building to a 171 unit apartment building. The commutative result of the proposed changes will provide 855 apartment units in the five buildings.

2. Buildings A, B, and C will have access on Wheelhouse Road (Figure 1) and Buildings D and E will have access on Sheppards Island Avenue. Traffic from the two local streets will use Marketplace Drive, a north-south collector street which will allow trips to access Windmill Road at signalized intersections at Seapoint Road north of the site and Bancroft Lane south of the site.

3. It is estimated that the units for the five buildings in the 2019 DA would generate 311 two-way vehicle trips (208 entering and 103 exiting) during the AM peak hour and 332 two-way trips 126 entering and 206 exiting) during the PM peak hour.

4. It is estimated that the 855 apartment units now proposed for the five buildings in the amended development will generate 175 two-way vehicle trips (59 entering and 116 exiting) during the AM peak hour and 208 two-way trips (116 entering and 92 exiting) during the PM peak hour.

5. The proposed amended land use will result in an estimated overall reduction in number of trips entering and exiting the site.

Conclusion -

6. The proposed amendment to the land use for the five lots will not have any noticeable impact on traffic operations on the local street system in Harbour Isle nor at the two signalized intersections on Windmill Road where site traffic enters the regional road system.

If you have any questions, please contact me by at greg.obrien@wsp.com or 902-444-8347.

Sincerely:

Original Signed

Greg O'Brien, P. Eng.
Atlantic Practice Manager, Traffic Engineering & Transportation Planning
WSP Canada Inc.

Ref. No. 211-11759-00

March 28th, 2022

Mr. Ross Karlin
ELM Developments
1931 Highway 7
Concord, ON L4K 1V5

Re: Wastewater Servicing Capacity Study – Harbour Isle Development, Dartmouth, Nova Scotia

Dear Mr. Karlin

WSP understands that ELM Developments is investigating the development of the remaining phases of Harbour Isle (PID 41480096, 41350497 & 41350489). This development would create five additional multi-storey buildings and a restaurant with approximately 855 residential units.

ELM Developments has requested a Wastewater Servicing Capacity Study to assess the wastewater flows by the proposed development on the local system and to determine if the existing wastewater sewer has capacity to handle these flows. The limits of this study were determined using GIS mapping and record drawings provided by Halifax Water, which resulted in analysis of an 8.3Ha sewershed. The GIS mapping and record drawings provided pipe location, size, material, and slope.

As per Halifax Water's Design and Construction Specifications (HWDCS) 2020, section 4.2.2, wastewater design flows were calculated for one 300mmø run of wastewater pipe located on Marketplace Drive, downstream of the proposed development.

The land in the sewershed is partially developed and falls under Residential R-3 and Industrial I-2 zoning. The parcels to the west of Marketplace Drive are subject to a development agreement and the parcels to the east are as-of-right zoned I-2.

Equivalent Populations were calculated for the sewershed. Equivalent Populations were determined based on requested units counts for each residential phase and anticipated commercial floor areas and hotel room numbers for the as-of-right parcels. We have used a density of 2.25 and 3.35 people per unit based on an anticipated mix of townhouse and multi-unit dwellings.

CALCULATIONS

Estimated peak average wet-weather flows have been calculated based on the formula for Hydraulic Design presented in Section 4.2.2 of the HWDCS. Equivalent populations based on the planned number of units, an infiltration / inflow allowance based on tributary area, a wastewater peaking factor derived from the Harmon Formula, and the Halifax Water Safety Factor of 1.25 were used to obtain estimated flows.

Pipe capacities were obtained using Manning's equation.

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T: +1 902-835-1645

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RESULTS

Table 1 appended shows the results of the wastewater sewer capacity analysis for the 300mmø wastewater pipe run considered, as it is immediately downstream of the study area. The 300mmø PVC pipe runs along Marketplace Drive for approximately 60 m at a slope of 0.6%. The wastewater design flow for this pipe is 52L/s, which is 53% of the 97L/s full flow capacity.

We have also included a drawing, Figure 1, which depicts the sewershed tributary to the Marketplace Drive pipe section.

CONCLUSION

Our calculations show that the existing 300mmø wastewater sewer on Marketplace Drive immediately downstream of the proposed development has sufficient capacity to receive the increased wastewater flow from the proposed development.

I trust that the foregoing letter and attached supporting documents are satisfactory. Please do not hesitate to contact me should you have any questions or comments.

Sincerely,

Original Signed

Craig Mutch, P.Eng.
Project Engineer

Halifax Regional Municipality Wastewater Sewer System Calculations

Flow From	Flow To	Buildings Contributing to Flow	Equivalent Population	Tributary Area (Ha)	Peaking Factor	Peak Wet Weather Flow (L/s)	Pipe Size (mm)	Pipe Slope (%)	Manning's 'n'	Pipe Capacity (L/s)	Percent Full
SANMH-S2	SANMH-M8	Hotel	230	0.63	4.13	4	250	0.6	0.01	60	7%
SANMH-M9	SANMH-M8	Buildings 2 and 3	500	1.34	3.97	9	250	0.6	0.01	60	15%
SANMH-M8	SANMH-M1	Hotel Buildings 2-3	730	1.97	3.88	13	250	0.6	0.01	60	21%
SANMH-M7	SANMH-M1	Hazelton (Bldg 1), Building 4	660	1.33	3.91	12	200	1.4	0.01	50	23%
SANMH-M1	SANMH-M2	Hotel, Buildings 1-4, and C-2	1450	3.93	3.69	24	300	0.6	0.01	97	25%
MHS1	SANMH-M2	Building 5-8, Restaurant	1760	3.14	3.63	29	250	2.1	0.01	112	26%
SANMH-M2	SANMH-M3	Hotel, Buildings 1-6, Restaurant, Commercial C-2 and C-5	3360	8.29	3.40	52	300	0.6	0.01	97	53%

TABLE 1

Assumptions

Safety Factor =1.25

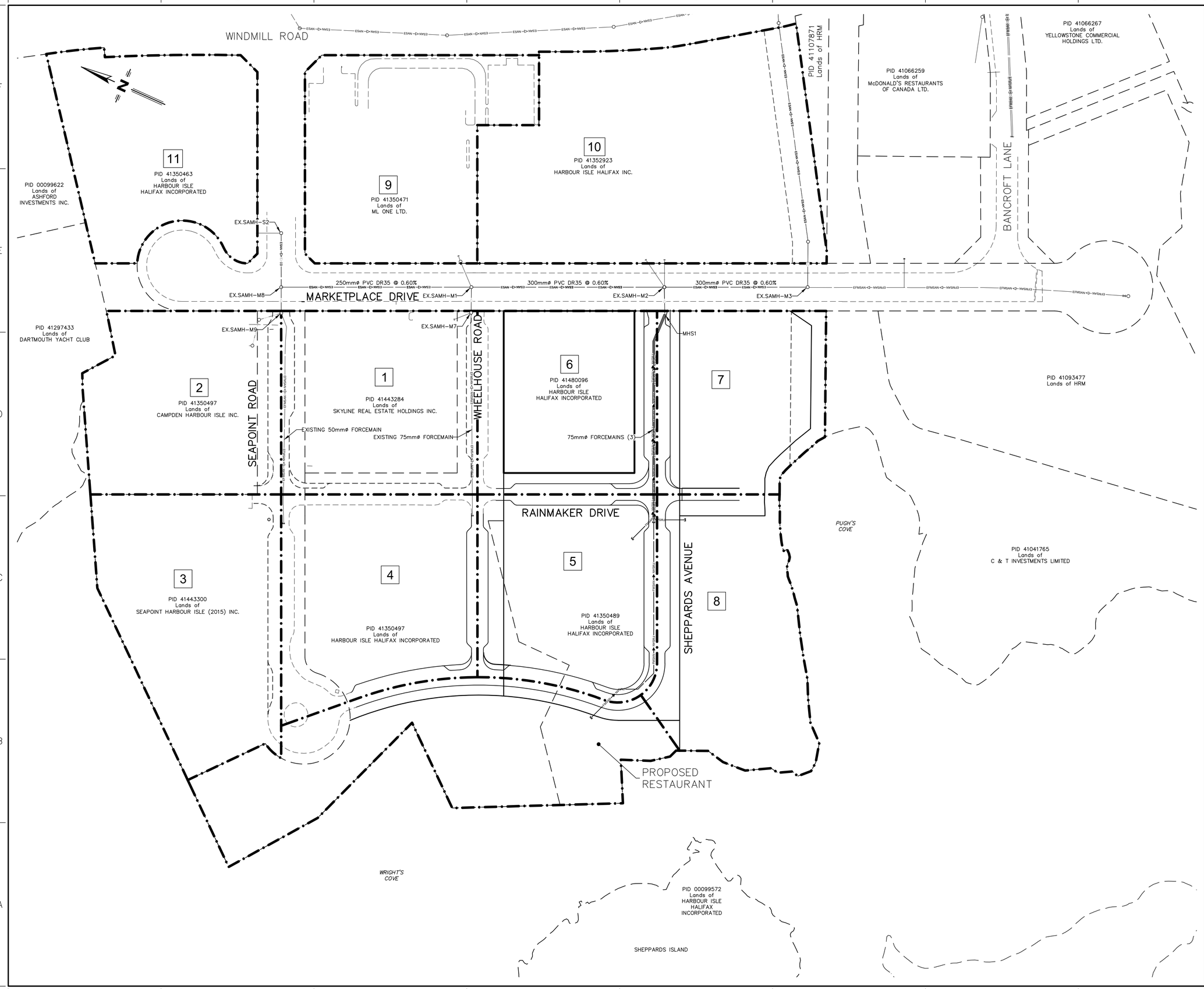
Infiltration Allowance = 24,000 L/Ha/d

Residential Wastewater Loading = 300 L/person/day

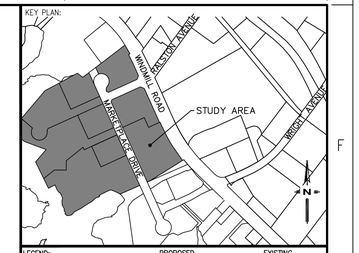
Commercial Wastewater Loading = 6 L/m²/d

Restraunt Wastewater Loading = 225 L/seat/day

Hotel Wastewater Loading = 340 L/room/d



KEY PLAN:



LEGEND:	PROPOSED	EXISTING
EDGE OF PAVEMENT		
LOTLINE		
WATERMAIN & GATE VALVE	W — W	EW — W3
SANITARY PIPE & MANHOLE	SAN — MHS	ESAN — MHS3
STORM PIPE & MANHOLE	STM — MHS	ESTM — MHS3
UTILITY LINES & POLE	OH — HO	EOH — HO3
STREET BOUNDARY		SANITARY LATERAL
PROPERTY BOUNDARY		STORM LATERAL
EASEMENT		WATER LATERAL
CURB & DRIVEWAY CUT		CATCH BASIN LEAD
CATCH BASIN	ENDCAP	CULVERT
FIRE HYDRANT	LIGHT STANDARD	HEADWALL
STREET TREE	PHONE PEDESTAL	SIDEWALK
ROAD SIGN	URD BOX	FENCE

SEAL:

REGISTERED PROFESSIONAL ENGINEER
DATE 2022/03/28
C. A. MUTCH
8031
PROVINCE OF NOVA SCOTIA

REVISION:

NO.	DATE YYYY/MM/DD	DESCRIPTION
0	2022/03/28	ISSUED FOR STUDY

PROJECT NUMBER: 221-11759	DATE: (YYYY/MM/DD) 2022/03/28
ORIGINAL SCALE: HORIZONTAL: 1:750 VERTICAL: N/A	IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm
DESIGNED BY: C. MUTCH	DRAWN BY: A. THIBAULT
CHECKED BY: C. MUTCH	APPROVED BY:

SCALE: 1:750 METRIC
15 10 5 0 15 30 45

WSP
WSP Canada Inc.
1 Spectacle Lake Drive
Dartmouth, Nova Scotia, Canada B3B 1X7
T 902-835-9955 F 902-835-1645 www.wspgroup.com

CLIENT:
HARBOUR ISLE HALIFAX INC.
ELM MANAGEMENT HALIFAX INC.
CLIENT REF. #:

PROJECT:
HARBOUR ISLE
DARTMOUTH, NOVA SCOTIA

TITLE:
WASTEWATER SCHEMATIC
FIGURE 1

SHEET NUMBER: 1
SHEET #: 1 OF 1

ISSUE: ISSUED FOR STUDY
DATE OF: 2022/03/28
REV # 0

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