December 16, 2021

Happy City
312 Main Street, Second Floor
Vancouver, BC V6A 2T2
Attention: Houssan Elokda

RE: Servicing Review of the Proposed Blue Ocean Estates Development
DesignPoint Project #: 21-166

Introduction

The Blue Ocean Estates project is a proposed development in Eastern Passage, Nova Scotia, that involves the construction of 2.34 ha (5.78 acres) of mixed-use residential/commercial lands. The property (PID 00401125) is bordered by Shore Road, the Tallahassee Community School, and several existing residential streets. There is one single family home currently on the site which will be removed as part of the site development. The following counts represent the expected future development on the site:

- 40 Townhouse Units
- 18 Singly-Family Homes
- 12 Stacked Townhouse Units
- 24 Multi-Unit Residential Units
- 5,000 ft^2 of Commercial Space

A Subdivision Application has previously been submitted to HRM for an "as-of-right" residential development consisting of single family and semi-detached homes. This Servicing Review assesses the existing lands and municipal systems in the area to determine if they can adequately service the proposed more densely populated development.

Wastewater Servicing

Based on GIS information provided by Halifax Water, as well as record drawings for the area, there is a 600 mm gravity trunk sewer on Shore Road in front of the western half of the property. There is also an existing 525 mm gravity sewer which passes through the site – this system appears to service several schools and businesses immediately north of the site. As part of the development for this site, the wastewater system running through the site is planned to be rerouted at the lower end of the project through the proposed streets and reconnected to Shore Road, as shown on the attached Servicing Schematic.

The attached table uses the following criteria to evaluate the projected sewage flows from the proposed development. Unless stated otherwise, these criteria were obtained from the current edition of the Halifax Water Design Guidelines:

- Sewage generation rate of 300 L/day/cap for the proposed residential development;
- 3.35 people per Townhouse and Detached unit;
- 2.25 people per Multi-Unit Residential Unit;
- Sewage generation rate for proposed commercial land of 6 $L/m^2/day$ (based on Atlantic Canada Wastewater Guidelines section 2.3.4 and 2.3.5);
- Infiltration and inflow allowance of 24 $m^3/day/ha$ (0.28 L/s/ha);

- Total area for sewage calculation of 2.34 ha (5.78 acres);
- Peaking based on Harmon Peaking Factor for residential, and peaking factor of 3 for institutional/commercial (assumed value); and
- Factor of safety 1.25.

Using these criteria, a Peak Wet Weather Flow (including a 1.25 factor of safety) for the entire site was calculated to be 6.1 L/s.

Through discussions with Halifax Water, it has been determined that there will be adequate additional capacity in the rerouted 525 mm diameter sewer main running through the site to handle the additional proposed development. While there are a few schools and businesses currently serviced by this pipe, this is an especially large wastewater main which may have been originally designed to handle much more tributary development than it currently does.

As part of detailed design, the finalized projected wastewater flows from the proposed development will be provided to Halifax Water, and the preferred diameter of the rerouted wastewater main may be changed from 525 mm. We understand that there may be a desire to reduce the diameter of this pipe to promote more self-scouring velocities during average flow conditions.

Water Servicing

This site will be serviced by the existing 300 mm water main on Shore Road which is within the Eastern Passage Low Pressure zone, which has an operating hydraulic grade line of approximately 265 ft (81 m). The elevations of the existing site range from approximately 7-13 m, resulting in the static pressures within the proposed water system ranging from approximately 95-105 psi.

Individual pressure reducing valves (PRVs) will be recommended for the semi-detached homes and townhouses should the final lot grading result in similar projected static pressures. It is not anticipated that the multi-unit buildings will require individual PRVs, as slightly higher pressures are often desirable for buildings of this type.

Domestic Analysis

The following criteria were used to calculate the projected water demands for the proposed development. Unless stated otherwise, these criteria were obtained from the current edition of the Halifax Water Design Guidelines:

- Average water demand of 375 L/day/cap for the proposed residential;
- 3.35 people per Townhouse and Semi-Detached unit;
- 2.25 people per Multi-Unit Residential Unit;
- Average water demand for proposed commercial land of 7.5 L/m^2/day (based on Atlantic Canada Wastewater Guidelines section 2.3.4 and 2.3.5, assumes wastewater represents 80% of water demand);
- Peaking factors of 1.65 for maximum day and 2.50 for peak hour scenarios for semi-detached and townhouse units;
- Peaking factors of 1.30 for maximum day and 2.50 for peak hour scenarios for multi-unit residential units;
- Peaking factors of 2 for maximum day and 3 for peak hourly for commercial development (assumed values).

Preliminary calculations based on the unit estimates provided by Happy City result in a maximum daily water demand of 124 L/min and a peak hourly demand of 195 L/min.

Fire Flow Analysis

Due to the high static pressures, the large main on Shore Road, and the presence of larger developments (i.e. schools) in the area, we do not anticipate there to be any significant issues with servicing the site with fire flow protection. Prior to detailed design, we are recommending that a hydrant flow test be completed on the existing fire hydrants directly in front of the site on Shore Road. Completing this test will provide more accurate information regarding the hydraulics of the system during high flow scenarios which can be incorporated into the hydraulic water model which will be prepared.

The attached Servicing Schematic shows the proposed water servicing for the site.

Stormwater Servicing

The existing lands of the development site have a moderate slope (5-10%) from the back of the lot to Shore Road. There is an existing ditch on the north side of the property and a ditch on a separate land parcel immediately to the west of the property. The ditch on the parcel west of the site discharges directly to the harbour via a cross-culvert crossing Shore Road, while the ditch on the north side of the property enters the Halifax Water piped system at the end of Shoreview Drive and ultimately discharges to the harbour near the intersection of Shore Road and Shoreview Drive.

We are proposing that the developed site have a centralized stormwater sewer which crosses Shore Road and discharges to the lands across the street, which are owned by HRM. These lands are immediately adjacent to the ocean, so there would be no requirements to "balance" the pre and post-development flows if this discharge is allowed. This would remove the need for stormwater management measures (i.e. ponds) onsite to attenuate the post-development flows. Low Impact Developments (LIDs, such as bio-swales, perforated pipe, rain gardens, etc.) would still be required to treat the stormwater leaving the multi-unit buildings and parking lots to be compliant with HRM's Stormwater Management regulations. We have shown preliminary LID measures on the attached Servicing Schematic which are subject to detailed design.

By discharging the stormwater directly to the ocean, it would significantly reduce the flows to the piped system on Shore Road which is owned and operated by Halifax Water.

Closing

Based on the preliminary review detailed in this letter, the existing wastewater and water systems have adequate capacity to support the proposed development. The existing 525 mm diameter wastewater main which passes through the site will be rerouted at the lower end of the project site through the proposed streets and reconnected to the existing system on Shore Road. As the site is in close proximity to the ocean, if HRM allows the development to discharge its stormwater onto the lands across the street on Shore Road, stormwater management measures will not be necessary to balance the pre and post-development flows. Low Impact Development methods will still be required for the multi-unit building and the parking areas to be compliant with HRM's Stormwater Management regulations.

Please note that the building and road layouts are preliminary only and are subject to detailed design.

Thank you,

Original Signed

Original Signed

Project Engineer, Principal

Enclosures (2): Wastewater System Review Table; Servicing Schematic

Wastewater System Review

Happy City - Blue Ocean Estates

Project Number: 21-166

Date: December 16, 2021

Total Area	Tot. Pop. "P"	Domestic Load	Average Dry Weather (Residential)	Average Dry Weather Flow (Comm.)	Average Dry Weather Flow (ADWF)	Harmon Peaking	Peak Dry Weather*	Peak Dry Weather Flow (PDWF)	I/I Allowance	I/I Loading	Peak Wet Weather Flow (PWWF)	Safety Factor	Peak Wet Weather Flow incl. SF (PWWF)
(Ha)	People	(L/day)	(L/day)	(L/day)	(L/s)	Factor	(L/day)	(L/s)	(L/s/Ha)	(L/s)	(L/s)		(L/s)
2.34	289	300	86550	2787	1.0	4.09	361975	4.2	0.278	0.7	4.8	1.25	6.1

LEGEND

EXISTING		PROPOSED
	EASEMENT	
WATE	WATER PIPE	WAT — WAT
SAE	SANITARY PIPE	SA — SA
STE	STORM PIPE	ST — ST
	SIDEWALK	
	TOP OF SLOPE	
	BOTTOM OF SLOPE	

	EXISTING	PROPOSED		EXISTING	PROPOSED
REDUCER			HYDRANT		
PRECAST HEADWALL			CATCHBASIN		

1. ALL WORKS TO BE IN ACCORDANCE WITH HALIFAX WATER AND HRM SPECIFICATIONS.
2. ALL WORKS TO BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATION FOR MUNICIPAL SERVICES" PREPARED JOINTLY BY THE NOVA SCOTIA ROADBUILDERS ASSOCIATION AND THE CONSULTING ENGINEERS OF NOVA SCOTIA (CURRENT EDITION).
3. ALL WORKS TO BE IN ACCORDANCE WITH REQUIREMENTS OF ALL PERMITS AND REGULATIONS AS ISSUED BY THE NOVA SCOTIA DEPARTMENT OF ENVIRONMENT.
4. LOCATIONS OF EXISTING INFRASTRUCTURE IS BASED ON BEST AVAILABLE INFORMATION, INCLUDING RECORD INFORMATION, AND IS APPROXIMATE.
5. EXISTING SERVICES BASED ON RECORD INFORMATION AND LOCATIONS ARE APPROXIMATE ONLY.
6. DRAWINGS SUBJECT TO APPROVAL BY THE APPLICABLE APPROVAL AGENCIES (i.e. HALIFAX WATER, HRM, NOVA SCOTIA DEPARTMENT OF ENVIRONMENT) PRIOR TO CONSTRUCTION.
7. PROPOSED PIPE LAYOUT AND SIZING IS PRELIMINARY AND SUBJECT TO DETAILED DESIGN AND APPROVAL.
8. STORMWATER QUALITY MANAGEMENT REQUIRED TO COMPLY WITH HRM'S STORMWATER MANAGEMENT STANDARDS AND IS TO BE REVIEWED AS PART OF DETAILED DESIGN.

METRES
10 0 20 30
1:400

ISSUE	DATE	DESCRIPTION
3	16-DEC-2021	REVISED LOT LAYOUT
2	06-DEC-2021	REVISED AS PER HRM / HW COMMENTS
1	28-JUN-2021	ISSUED FOR REVIEW

CONSULTANT

DESIGNPOINT
engineering • surveying • solutions
PHONE: 902.832.5597
www.designpoint.ca

Original Signed

CLIENT

BLUE OCEAN ESTATES LTD.

PROJECT DESCRIPTION

BLUE OCEAN ESTATES

EASTERN PASSAGE, NOVA SCOTIA

SHEET DESCRIPTION

SERVICING SCHEMATIC

Drawn	Engineer	Project No.	Drawing No.
L. KING	L.KING	21-166	C-102
Scale	Filename		2 of 2
1:400	21-166 Base.dwg		