



C.C. Tatham & Associates Ltd.
Consulting Engineers

WASAGA SHORES SUBDIVISION
Town of Wasaga Beach

Preliminary Functional Servicing Report

prepared by:

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prepared for

VanderMeer Homes Ltd.

November 2017

CCTA File 116028

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1 Introduction

C.C. Tatham & Associates Ltd. (CCTA) has been retained by VanderMeer Homes Ltd. to prepare a Stormwater Management Report in support of the proposed 22-lot residential subdivision within the Town of Wasaga Beach, in Simcoe County. This report has been prepared to address the Stormwater Management Criteria associated with this project.

1.1 Site Description

The residential development site is currently a vacant wood lot consisting of a mix of coniferous and deciduous trees along with smaller shrub trees. The site is bounded by Nottawasaga Bay to the north, woodlot, residential lands and Shore Lane to the east, woodlot and residential lands to the south and Constance Boulevard, Betty Boulevard and residential lands to the west. The site is legally described as Part of Lots 34 and 35, Concession 3, Plan 51R-30394 in the Town of Wasaga Beach. We have enclosed Figure 1.0 – Site Location Plan in overleaf for reference.

1.2 Geotechnical Investigation & Reports

Geotechnical investigations and chemical analysis were completed by Soil Engineers Ltd. for the Wasaga Shores development.

The field work consisted of 9 boreholes to depths of 5.0 m to 6.6 m at various locations across the site. The geotechnical report commented and made recommendations for construction of house foundations, underground services, trench backfilling, pavement design, soil parameters, excavation, etc. It was noted that groundwater was detected at depths of 4.0 m and 5.9 m in three of the boreholes, while all other boreholes remained dry upon completion of the field work.

Chemical analysis was undertaken on four soil samples from the geotechnical boreholes to determine requirements for removal of material off-site in accordance with O.Reg 153 Part XV.1 of the Environmental Protection Act. It was concluded that the soil sampled meets Table 1 Standards.

The geotechnical and chemical analysis reports have been provided under separate cover.

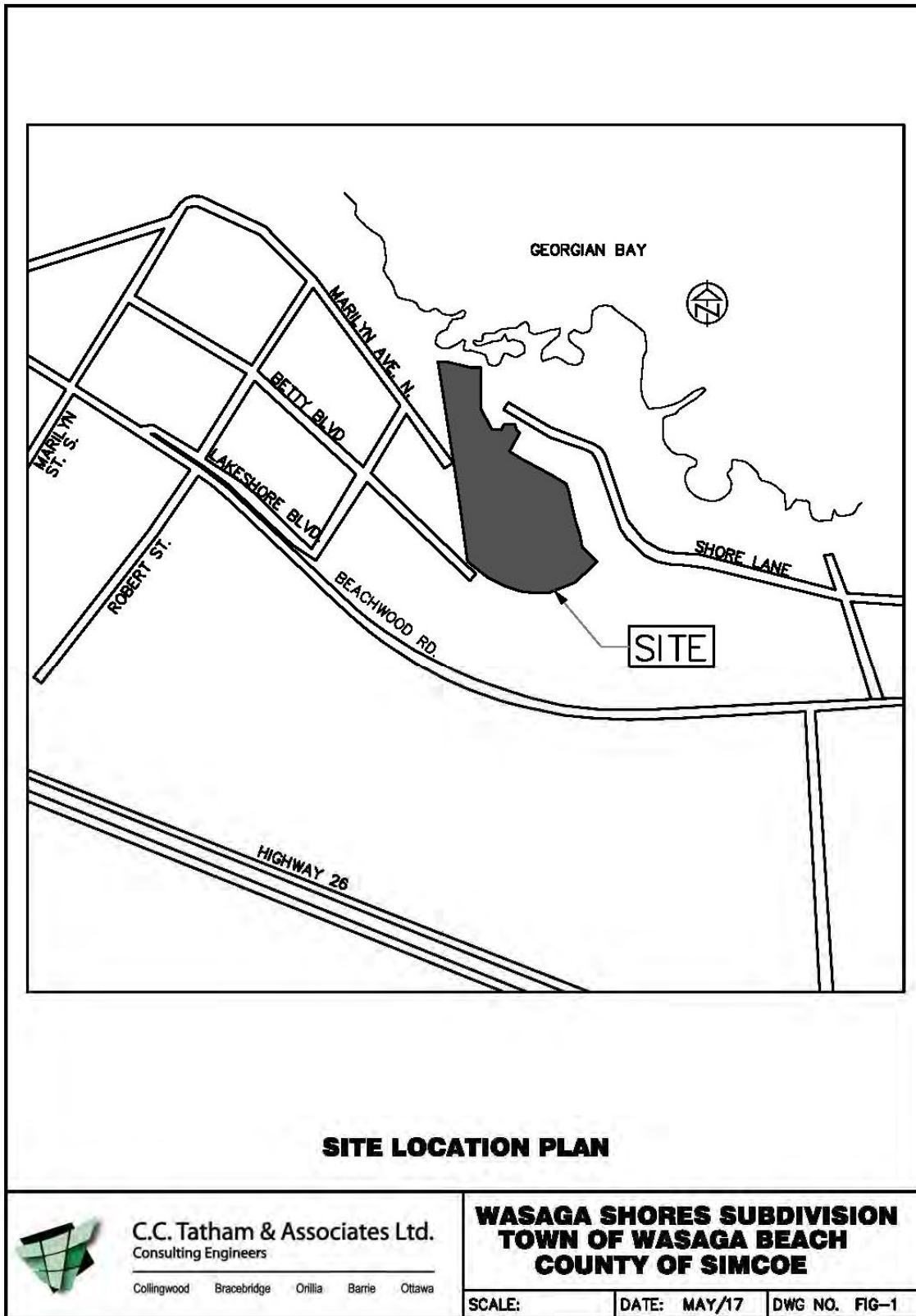
1.3 Existing Land Use

The existing property is currently a vacant woodlot and contains natural forest and wetland cover. The site has a drainage course traversing the property which conveys surface runoff north to the Nottawasaga Bay. The subject site is dedicated under the Town's Zoning By-Law (Schedule B) as R1H.

1.4 Proposed Land Use

Betty Boulevard will be extended northeast to Shore Lane while Constance Boulevard will be extended southeast to bisect the Betty Boulevard extension. The existing lands be subdivided into the proposed 22-lot residential development which accounts for 3.62 ha including the road network and walkways.

Figure 1: Site Location



2 Water & Sanitary Servicing

2.1 Potable Water Design Requirements

Water servicing for the proposed development will consist of installing approximately 315 m of 150 dia. PVC water main connecting into the existing water mains on Shore Lane, Betty Boulevard and Constance Boulevard. The proposed watermain layout is included on the General Servicing Plan (GS-1) included with this report.

Preliminary Potable Water and Fire Flow calculations have been completed in accordance with Town Standards (2015) and MOE Guidelines for Drinking Water Systems (2008) for the proposed development. It is anticipated the proposed development will have a Peak Hour Demand of 2.98 L/s and a Maximum Average Daily Demand of 3.96 L/s.

The minimum flow rate for fire protection is 64 L/s in accordance with the National Fire Protection Associations Guideline 1142 (2007). Therefore, the Maximum Daily Demands including fire flow is 41.96 L/s. Fire flow protection will be supplied by 3 hydrants installed within the development. The hydrants are to be in strict accordance with the National Fire Protection Association (NFPA) standards. The hydrant type and associated materials are to conform with the Town of Wasaga Beach engineering standards. Detailed calculations for the potable water supply are enclosed in Appendix A.

2.2 Sanitary Sewer Design Requirements

Sanitary servicing for the proposed 22-unit residential development will consist of approximately 465 m of 200 mm dia. PVC sewer. The sanitary sewer will connect to the existing 450 mm dia. sanitary sewer at the proposed intersection of Betty Boulevard and Shore Lane. The proposed sanitary sewer layout is included on the Sanitary Plan (SAN-1) included with this report.

The Ministry of the Environment and Climate Change (MOECC) Design Guidelines for Sewage Works (2008) requires the minimum sewer diameter to be 200 mm dia. The average daily residential flow utilized in the design is 350 L/cap/d with a residential unit count of 2.6 people/unit in accordance with Town of Wasaga Beach Engineering Standards. The development will generate an average flow of 1.25 L/s and a peak flow of 1.94 L/s including infiltration. It is anticipated that each unit will be serviced independently by a 125 mm dia. SDR28 PVC sanitary service with cleanout. We have enclosed a copy of the sanitary sewer design sheet in Appendix A for reference.

3 Stormwater Management

A *Preliminary Stormwater Management Report (November 2017)* that reviews the existing and proposed stormwater conditions for the development has been completed by CCTA under separate cover and should be read in conjunction with this report.

3.1 Stormwater Management Criteria

The Stormwater Management (SWM) Report demonstrates the development complies with the following design criteria:

- The SWM plan safely conveys the Regional Storm event to an existing Nottawasaga Bay outlet;
- The SWM plan achieves Level 1 “Enhanced” stormwater runoff treatment including 80% removal of Total Suspended Solids and treatment of 90% of the total runoff volume through the use of enhanced bioswales and an oil-grit separator;
- Due to the site’s proximity to Nottawasaga Bay, stormwater quantity control was not required in an effort to “Beat the Peak”;
- The SWM plan promotes groundwater recharge and infiltration by utilizing bioswales and grassed side-yard swales for the individual lots; and
- The proposal includes the removal of pocket wetlands and the provision for offsetting this removal by way of providing an offset of enhanced plantings and bioswale creation.

3.2 Siltation and Erosion Controls

Siltation and erosion controls will be implemented for all construction activities; including topsoil stripping, material stockpiling, road construction activities and grading operations. The detailed sediment and erosion control measures proposed will be implemented during and after construction and will be provided during final design. Sediment and erosion controls may include the following:

- Heavy duty silt fence erected around the perimeter of the site prior to any grading operations to control sediment movement;
- A construction vehicle entrance will be constructed and maintained consisting of a stone mud mat to reduce off-site tracking of material; and
- Rock check flow dams and straw bale check flow dams will be installed prior to construction and will be maintained and inspected throughout the course of construction as required to prevent transportation of sediment and deleterious materials offsite.

4 Transportation

A Traffic Impact Study is being completed by C.C. Tatham & Associates Ltd. and will be submitted at final design under separate cover.

5 Utility Network

It has been acknowledged that the following utility regulators have services in the immediate area:

- Bell Canada;
- Enbridge Gas;
- Wasaga Distribution; and
- Rogers Cable.

Each of these companies will be contacted in advance of the final design to ensure that sufficient capacity exists within the current installations to support the proposed development.

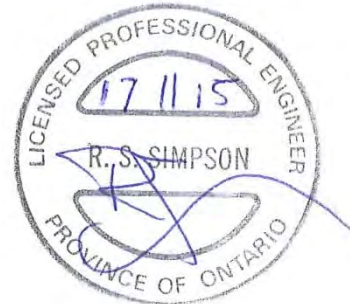
6 Conclusions & Recommendations

The proposed Functional Servicing Report demonstrates the development will meet the established criteria with respect to general servicing and stormwater management, and can proceed without negatively impacting the existing infrastructure and the local drainage system. Water quality control in the form of 80% TSS removal will be satisfied utilizing an oil-grit separator and enhanced bioswales in accordance with the MOECC Guidelines. Water quantity control is not required due to the site's proximity to Nottawasaga Bay. Sediment and erosion control measures will be implemented during and after construction to prevent transport of deleterious materials downstream.

In conclusion, the proposed Functional Servicing Report supports the concept of an environmentally sustainable development and will mitigate stormwater impacts associated with the construction of the proposed development.



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Intern Engineer



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Senior Engineer, Project Manager

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**APPENDIX A:
SUPPORTING INFORMATION**

WASAGA SHORES SUBDIVISION - SANITARY SEWER DESIGN SHEET

Approved:



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

FLOW CRITERIA

Average Flow Rate: 350 l/cap/d²
 Infiltration Rate: 0.28 l/s/ha
 Population: 2.60 cap/unit²
 Total Res. Units: 22 units
 Peaking Factor: 4 Harmon

Project Name: Wasaga Shores Subdivision
 Project Number: 116028
 Municipality: Town of Wasaga Beach
 Designed By: AS
 Date: June 2017
 Revised By:
 Date:
 Checked By:
 Date:
 Revision Number: 1

LOCATION OF SECTION	AREA LABEL	UPSTREAM MAINTENANCE HOLE	DOWNSTREAM MAINTENANCE HOLE	DEVELOPMENT UNITS	POPULATION	ACCUMULATED POPULATION	PEAKING FACTOR	AREA	ACCUMULATED AREA	AVERAGE FLOW			PEAK FLOW			PROPOSED SEWER					
										RESIDENTIAL	INFILTRATION	TOTAL	RESIDENTIAL	INFILTRATION	TOTAL	LENGTH OF PIPE	PIPE DIAMETER	GRADE	FULL FLOW CAPACITY	FULL FLOW VELOCITY	PEAK FLOW VELOCITY
		MH No.	MH No.	No.	cap.	cap.		ha	ha	l/s	l/s	l/s	l/s	l/s	l/s	m	mm	%	l/s	m/s	m/s
Constance Boulevard	200	MH1A	MH2A	5	13.0	13.0	4.00	1.07	1.07	0.05	0.30	0.35	0.21	0.30	0.51	60.0	200	1.10%	34.40	1.09	0.40
Constance Boulevard	201	MH2A	MH3A	8	20.8	33.8	4.00	1.01	2.08	0.14	0.58	0.72	0.55	0.58	1.13	66.0	200	1.00%	32.80	1.04	0.48
Constance Boulevard	202	MH3A	MH4A	4	10.4	44.2	4.00	0.60	2.68	0.18	0.75	0.93	0.72	0.75	1.47	83.0	200	1.00%	32.80	1.04	0.52
Constance Boulevard	-	MH4A	MH5A	-	-	44.2	4.00	-	2.68	0.18	0.75	0.93	0.72	0.75	1.47	83.0	200	1.00%	32.80	1.04	0.52
Betty Boulevard	203	MH9A	MH8A	2	5.2	5.2	4.00	0.40	0.40	0.02	0.11	0.13	0.08	0.11	0.20	75.0	200	2.10%	47.52	1.51	0.40
Betty Boulevard	-	MH8A	MH5A	-	-	5.2	4.00	-	0.40	0.02	0.11	0.13	0.08	0.11	0.20	83.0	200	2.10%	47.52	1.51	0.40
Betty Boulevard	204	MH5A	MH6A	2	5.2	54.6	4.00	0.34	3.42	0.22	0.96	1.18	0.88	0.96	1.84	60.0	200	1.00%	32.80	1.04	0.55
Betty Boulevard	-	MH6A	MH7A	-	-	54.6	4.00	-	3.42	0.22	0.96	1.18	0.88	0.96	1.84	83.0	200	1.00%	32.80	1.04	0.55
Betty Boulevard	205	MH7A	MH10A	1	2.6	57.2	4.00	0.20	3.62	0.23	1.01	1.25	0.93	1.01	1.94	90.0	200	1.00%	32.80	1.04	0.56

Notes:

1. Refer to Preliminary Sanitary Drainage Plan drawing SAN-1 prepared by C.C. Tatham and Associates (dated June 2017) for catchment areas and pipe details.



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Braemarbridge Orillia Barrie

Project: Wasaga Sands Subdivision

Date: June 2017

File No.: 116028

Designed: AS

Subject: Water Supply Calculation

Checked:

Potable Water Supply & Fire Flow Calculations

Design Criteria:

Population Density	=	2.60	ppl/unit	(Town Standard, 2015)
Average Daily per cap. Flow	=	350	L/cap./d	(Town Standard, 2015)
Minimum Fire Flow	=	38	L/s	(600 gal./min.) (MOE, 2008)
Maximum Day Factor	=	8.43		(MOE, 2008)
Peak Hour Factor	=	12.69		(MOE, 2008)

Residential Development:

Number of Units	=	22		
Equivalent Population	=	57.20	ppl	(Say 58.00 ppl)
Average Daily Demand	=	20.30	cu.m/day	

Design Flow Calculations :

Maximum Daily Demand	=	171.06	cu.m/day	or	3.96	L/s
Peak Hour Demand	=	10.73	cu.m/hr	or	2.98	L/s
Max Daily plus Fire Flow	=	41.96	L/s			