

Date: June 2, 2023

Halifax Water

450 Cowie Hill Road,
Halifax, NS B3K 5M1

Attention: Kevin Gray, Senior Manager, Regulatory Approvals

RE: 41 Cowie Hill Development – Downstream Wastewater Capacity Analysis
DesignPoint Project #: 22-200

Introduction

The existing property (PID 00274241) is at the corner of Cowie Hill Road and Margaret Road in Halifax, Nova Scotia, and currently has a 109-unit residential building on it. The proposed development maintains the existing multi-unit and includes two additional buildings:

- Building 1: 8 storey, 47 units
- Building 2: 17 storey, 142 units

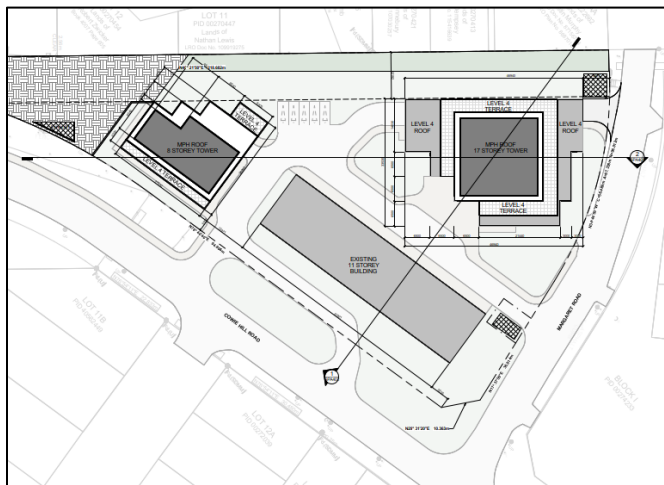


Figure 1: Concept Plan (TFA)

As part of the preliminary servicing review for the proposed development, DesignPoint has completed a downstream wastewater capacity analysis to determine the hydraulic capacity of the existing municipal wastewater system in the project area and its ability to service the proposed development.

This letter summarizes the review DesignPoint has completed for this project.

Wastewater Servicing

The buildings are proposed to be serviced by an existing gravity wastewater system, which consists of a 200/250 mm pipe on Cowie Hill Road that drains to the 300/375 mm trunk sewer on Herring Cove Road.

Downstream Capacity Analysis

The extents of the downstream wastewater system which needed to be analyzed were reviewed and confirmed with Halifax Water. It was determined that the analysis would include up to the existing wastewater manhole MH5777, which is adjacent to Civic 59 Herring Cove Road.

The extents of the existing system which were analyzed are shown in Figure 2.

GIS information and record drawings from Halifax Water were used to compile information for the existing wastewater infrastructure downstream of the proposed development, as well as to determine sewer sheds and tributary areas to the pipes in the study area. See the attached Downstream Wastewater Analysis.

The attached calculation table uses the following criteria to determine a peak design flow for each pipe in the study area. Unless stated otherwise, these values were obtained from the 2022 edition of the Halifax Water Design Specifications.

- Wastewater generation rate of 300 L/day/person for residential dwellings;
- 3.35 people per Townhouse unit;
- 2.25 people per Multi-Unit Residential Unit;
- Inflow and Infiltration allowance of 24 m³/day/ha;
- Factor of Safety of 1.25;
- Commercial and institutional flows were estimated in accordance with Section 3.3.4.3 and 3.3.4.4 in the Atlantic Canada Wastewater System Guidelines (current edition).



Figure 2: Extents of Wastewater Analysis

The Melville Cove Pumping Station is at civic 27 Rosborough Loop, west of Purcells Cove Road. It services a section of the wastewater main on Purcells Cove Road. This pumping station discharges flows to the Herring Cove Road wastewater system, near civic 33 Herring Cove Road, which is within the limits of this study. As such, the theoretical operating point of this pumping station needed to be calculated to determine the flow being discharged from the station to the existing gravity system on Herring Cove Road.

The Hazen-Williams Equation was used to create a system curve, and in conjunction with the pump curve provided by the manufacturer of the corresponding pump models, the theoretical operating point of the station was calculated. It was determined to be approximately 53.5 L/s. Then, it was added to the peak wet weather flow of the gravity system on Herring Cove Road at the manhole MH5773.

Using the criteria previously outlined, the Peak Wet Weather Flow (PWWF) for the existing/proposed development was calculated for each pipe within the study area. This PWWF was then compared to the pipe capacity to identify any pipes that would exceed capacity. See the attached detailed wastewater calculation table.

Results

As shown in the attached table, pipes in the analysis have adequate capacity, ranging in capacity between 14-44%.

Recommendations

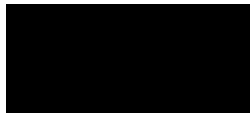
As demonstrated, all existing wastewater pipes within the study area have adequate hydraulic capacity to convey the theoretical wastewater flows generated by the existing and proposed development. As such, no upgrades to the existing wastewater system have been identified to facilitate the proposed development.

Closing

Please reach out should you have any questions or should you require any additional information.

Thank you,

DesignPoint Engineering & Surveying Ltd.



Logan King, P.Eng.
Civil / Water Resources Engineer & Principal

Attachments: Downstream Wastewater Capacity Analysis

Ex.Wastewater System Review

Project Name: 41 Cowie Hill Development

Project Number: 22-200

Date: June 2, 2023



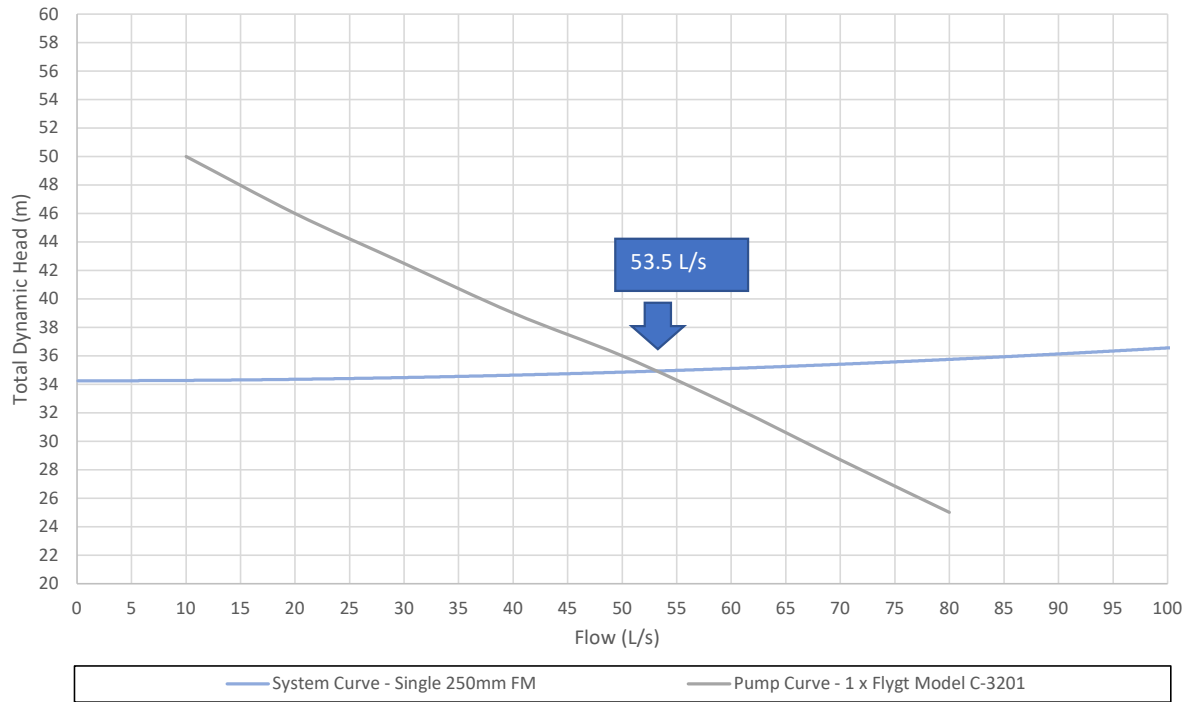
Sewershed Areas

Area ID	Total Area (ha)	Res Units @ 3.35 ppu	Res Units @ 2.25 ppu	Population	Peak Commercial (L/s)	Pump Station (L/s)
A1	0.21	0	47	106	0.00	0.00
X1	16.06	82	237	808	3.07	0.00
X2	0.06	0	0	0	0.00	0.00
A2	0.70	0	251	565	0.00	0.00
X3	1.75	19	8	82	0.00	0.00
X4	0.14	0	0	0	0.00	0.00
X5	0.67	3	37	93	0.00	0.00
X6	34.54	480	262	2198	3.52	0.00
X7	0.07	0	0	0	0.00	0.00
X8	0.16	0	0	0	0.00	0.00
X9	10.10	73	0	245	2.56	0.00
X10	0.31	3	0	10	0.00	0.00
X11	0.20	1	0	3	0.00	53.50
X12	0.38	5	0	17	0.00	0.00

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Melville Cove Theoretical Operating Point



U/S MH	D/S MH	TRIBUTARY AREAS	Total Area (Ha)	Pump Station (L/s)	Tot. Pop. "P"	Domestic Load (L/day)	Average Dry Weather (L/day)	Average Dry Weather (L/s)	Harmon Peaking Factor	Peak Commercial Load (L/day)	Peak Commercial Load (L/s)	Peak Dry Weather (L/day)	Peak Dry Weather (L/s)	Safety Factor	Peak Dry Weather incl SF (L/s)	I/I Allowance (L/s/Ha)	I/I Loading (L/s)	Peak Wet Weather (L/s)	Pipe Size (mm)	Approx. Upstream Elevation m	Approx. Downstream Elevation m	Length m	Pipe Slope (%)	Pipe Manning's "n"	Pipe Capacity (L/s)	Percent Full (%)	Notes
MH5458	MH5456	A1, X1, X2	16.33	0.00	914	300	274110	3.17	3.82	265528	3.07	1313979	15.2	1.25	19.0	0.28	4.5	23.5	200	51.885	48.218	26.1	14.04%	0.011	145.4	16	
MH5456	MH5454	A1, X1, X2, X3, X4	18.21	0.00	995	300	298605	3.46	3.80	265528	3.07	1400616	16.2	1.25	20.3	0.28	5.1	25.3	250	48.148	43.058	55.8	9.12%	0.013	179.7	14	
MH5454	MH5453	A1, A2, X1, X2, X3, X4, X5	19.58	0.00	1653	300	496020	5.74	3.65	265528	3.07	2075298	24.0	1.25	30.0	0.28	5.4	35.5	250	43.046	41.253	48.0	3.74%	0.013	115.1	31	
MH5453	MH5426	A1, A2, X1, X2, X3, X4, X5, X7	19.65	0.00	1653	300	496020	5.74	3.65	265528	3.07	2075298	24.0	1.25	30.0	0.28	5.5	35.5	250	41.232	40.473	42.3	1.80%	0.013	79.8	44	
MH5426	MH5420	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8	54.35	0.00	3851	300	1155270	13.37	3.35	569392	6.59	4437304	51.4	1.25	64.2	0.28	15.1	79.3	300	39.394	37.450	44.5	4.37%	0.013	202.3	39	
MH5420	MH5421	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8, X9	64.45	0.00	4095	300	1228635	14.22	3.32	790792	9.15	4874952	56.4	1.25	70.5	0.28	17.9	88.4	300	36.919	34.432	44.1	5.64%	0.013	230.0	38	
MH5421	MH5422	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8, X9	64.45	0.00	4095	300	1228635	14.22	3.32	790792	9.15	4874952	56.4	1.25	70.5	0.28	17.9	88.4	300	34.432	33.499	11.6	8.04%	0.013	274.6	32	
MH5422	MH5773	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10	64.77	0.00	4106	300	1231650	14.26	3.32	790792	9.15	4883796	56.5	1.25	70.7	0.28	18.0	88.6	300	33.499	31.619	33.3	5.65%	0.013	230.1	39	
MH5773	MH5774	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11	64.97	53.50	4109	300	1232655	14.27	3.32	790792	9.15	4886743	56.6	1.25	70.7	0.28	18.0	142.2	375	31.617	27.871	45.6	8.22%	0.013	503.3	28	Pumping station discharge point
MH5774	MH5777	A1, A2, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12	65.35	53.50	4126	300	1237680	14.33	3.32	790792	9.15	4901473	56.7	1.25	70.9	0.28	18.2	142.6	375	27.871	24.505	66.6	5.05%	0.013	394.6	36	Pumping station upstream



LEGEND

EX 200 mm PIPE	SAE	SAE	SAE	SAE	SAE
EX 250 mm PIPE	SAE	SAE	SAE	SAE	SAE
EX 300 mm PIPE	SAE	SAE	SAE	SAE	SAE
EX 375 mm PIPE	SAE	SAE	SAE	SAE	SAE
SEWERSHED AREA	SAE				
EXISTING	PROPOSED				
-10	MAJOR CONTOUR				
-10	MINOR CONTOUR				
---	EASEMENT				
---	RIGHT OF WAY				
---	LOT LINE				
○	SANITARY PIPE				
---	FORCE MAIN				

SUBCATCHMENT ID

EXISTING	PROPOSED
	A1

NOTES:
 1. CONTOUR INTERVAL IS 2 METRES. CONTOUR DATA OBTAINED FROM PROVINCIAL LIDAR.
 2. EX. SANITARY PIPES COLOUR CODED FOR PIPES INCLUDED IN DOWNSTREAM ANALYSIS ONLY.

1	JUNE 2, 2023	ISSUED FOR REVIEW
ISSUE	DATE	DESCRIPTION
		CONSULTANT

DESIGNPOINT
 engineering • surveying • solutions

902.832.5597 designpoint.ca

CLIENT

HAZELVIEW DEVELOPMENTS

PROJECT DESCRIPTION

41 COWIE HILL ROAD DEVELOPMENT

HALIFAX, NOVA SCOTIA

SHEET DESCRIPTION

DOWNSTREAM WASTEWATER CAPACITY SCHEMATIC

Drawn	Engineer	Project No.	Drawing No.
A. KITSUTA	L. KING	22-200	C-SCH01
Scale	Filename		
1:2500	22-200_SAN.dwg		1 of 1

