

March 17, 2022

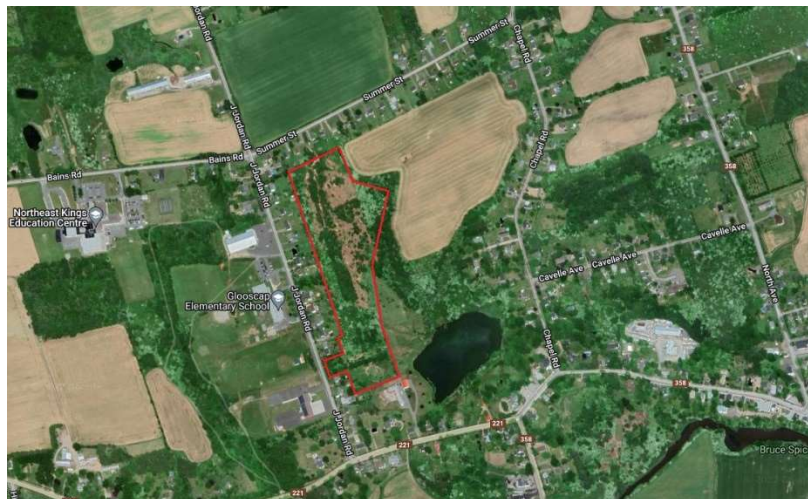
Parsons Green Developments

5880 Spring Garden Road
Halifax, NS B3J 3S9
Attention: Jack Cochrane

RE: Water Servicing Review of Proposed Canning, Nova Scotia Development
DesignPoint Project #: 21-112

Introduction

Parsons Green Developments is assessing the serviceability of a parcel of land in Village of Canning, Nova Scotia PID 55354385, as per the latest concept plan (dated Feb 10, 2022). These lands are bordered on the West side by J Jordan Road, and on the North side by Summer Street. These lands are currently undeveloped, and the intent is to develop them into mixed-use low/high density residential lands with a new public road between J Jordan Road and Summer Street. At full build-out, the proposed development will include 24 townhouse units, and 6 multi-unit buildings with 68 units each.



Parsons Green Developments has hired DesignPoint to assess the water servicing to the site and to determine if the proposed concept for development can be adequately serviced by the existing water infrastructure in the area.

Water Servicing

The existing lands of the parcel slope from north to south, with elevations ranging from 30-14 m, respectively. The Village of Canning is serviced by a single Water tower located along North Avenue. We estimate that the water tower operates between an elevation of approximately 57.9 m – 61.2 m, based on data provided by the County of Kings. The existing water tower is fed from two well-houses, one located further south on North Avenue, and the other located at the corner of Bigelow Street and Pleasant Street.

The existing service area is comprised of mainly single-family residential dwellings, with commercial and institutional buildings spread throughout the village. Notable commercial and institutional buildings within the village are Glooscap Elementary School on J Jordan Road, Northeast Kings Education Centre on Bains Road, the Canning Fire Hall on J Jordan Road, and the Home Hardware on Main Street. Commercial and Institutional water usages were generated using Table 3.1 in the ACWWA Wastewater Guidelines (2020).

The existing water network throughout the village consists of both Ductile Iron and PVC water mains, ranging in size from 150 mm (6-inch) to 200 mm (8-inch) diameters. The existing water main to the north of the proposed development is located along Summer Street and is a 150 mm diameter ductile iron water main. The

existing water main to the west of the proposed development is located along J Jordan Road and is a 200 mm diameter ductile iron water main.

The existing water system is shown on the attached water servicing schematic (WA-01)

System Flow Testing

To better understand the hydraulic characteristics of the existing water system, hydrant flow tests were conducted by Aqua Data Atlantic on March 7, 2022, at approximately 9:00 AM. The test was conducted on J Jordan Road. This test involved measuring the static pressure, then flowing out of the hydrant in front of Glooscap Elementary, while measuring the residual pressure at the hydrant at the intersection of J Jordan Road and Highway 221. The hydrant flow test results are attached. The test results were used to calibrate our hydraulic model and validate the model calculations.

Domestic Analysis

The following criteria were used to calculate the domestic flows to the project site. Unless stated otherwise these criteria were obtained from the latest edition of the Kings County Municipal Specifications:

- Average water demand of 364 L/day/cap for the proposed residential.
- Peaking factors of 2.5 for maximum day and 3.75 for peak hour scenarios for townhouse and multi-unit residential units.

Preliminary calculations based on the unit and floor area estimates provided by Parsons Green Developments result in a maximum daily water demand of 626 L/min and a peak hourly demand of 940 L/min. A hydraulic Water model was created using Bentley WaterCAD to assess system pressures during domestic demand scenarios throughout the proposed development. Results from the water model indicated that during domestic demand scenarios pressures would range from approximately 40 – 55 psi.

Fire Flow Analysis

In addition to the domestic demand analysis, a fire flow analysis was completed to check the capacity of the existing and proposed systems for the proposed development. The fire flow applies the fire demand to a junction, checks all the remaining junctions for residual pressure, and then repeats this process for each junction of interest until all the junctions have been analyzed. The Kings County Municipal Specifications reference fire underwriters survey in determining fire flow requirements. Due to the building schematic being preliminary and subject to change, we used Halifax Water General fire flow requirements. During detailed design, actual fire flow requirements for each building should be determined. The fire flow requirements set forth by Halifax Water are as follows:

- Fire flow demand for multi-unit, commercial, and institutional buildings of 13,620 L/min (3,600 usgpm);
- Fire flow demand for Townhouses of 4,542 L/min
- Minimum residual and system pressure of 20 psi, and;
- Maximum pipe velocity of 2.4 m/s.

Our model indicated that fire flow to the proposed development is limited to approximately 2030 L/min (540 usgpm) before minimum pressures of 20 psi are experienced throughout the system. This is likely due to small surrounding pipe diameters and limited available pressure head from the water supply. The design of the proposed buildings will need to be completed in accordance with this available fire flow.

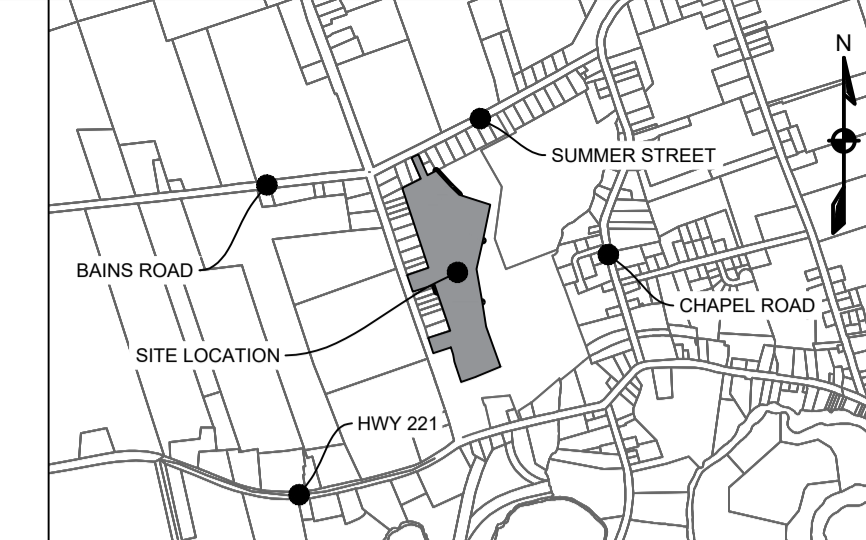
Closing

As demonstrated, the existing water network can supply a maximum fire flow of 5040 L/min (540 USGPM) to the proposed development before having system pressures drop below 20 psi throughout the network. The design of the proposed buildings will need to be completed in accordance with this available fire flow. Fire flow availability could be improved with upgrades to the surrounding water network, through increases in diameters, or an increase in operating levels of the reservoir.

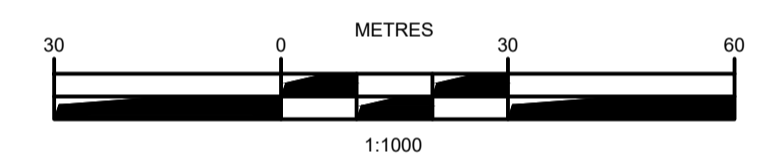
Thank you,
DesignPoint Engineering & Surveying Ltd.

A handwritten signature in blue ink that reads "Neil Fougere".

Neil Fougere, P.Eng.
Project Engineer, Principal
Enclosures (2): Water Servicing Schematic (WA-01), Hydrant Flow Tests



LEGEND	
NEW 200mmØ PIPE	
EX. 150mmØ PIPE	
EX. 200mmØ PIPE	
EX. 250mmØ PIPE	



ISSUE	DATE	DESCRIPTION
1	MAR. 17, 2022	ISSUED FOR PERMIT

DESIGNPOINT
engineering • surveying • solutions

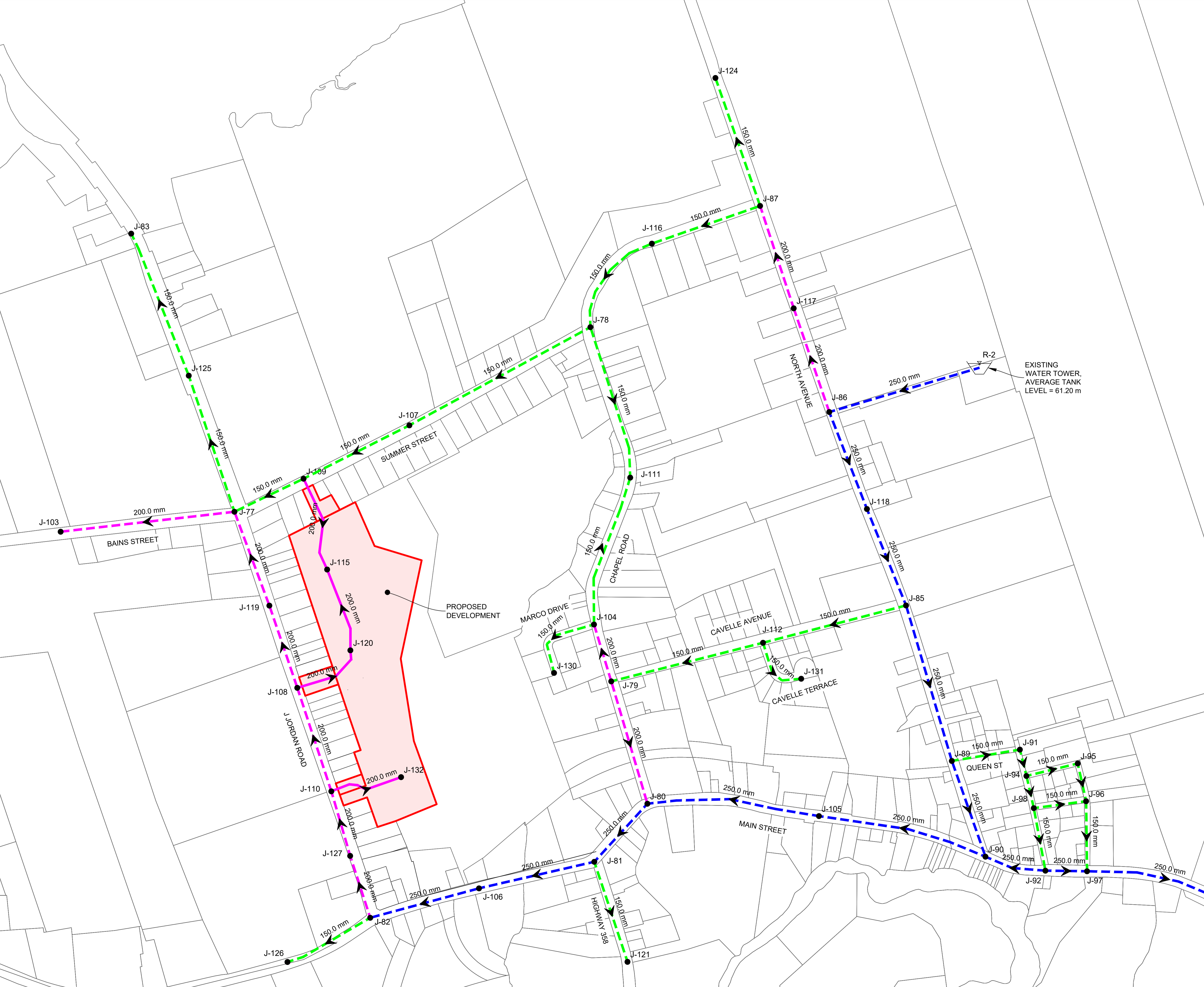
902.832.5597 designpoint.ca



CLIENT
PARSONS GREEN - J. JORDAN ROAD DEVELOPMENT
CANNING, NOVA SCOTIA
SHEET DESCRIPTION

WATER SYSTEM SCHEMATIC

Drawn J. WYATT	Engineer N. FOUGERE	Project No. 21-112	Drawing No. WA-01
Scale	Filename 21-112_WA.dwg		1 of 1



Type of Area:	Residential	Test No:	Test #1
Location:	J Jordan Road, Canning, NS	Test By:	Tom Cameron
Municipality:	County of Kings	Date:	March 7, 2022

• SYSTEM DATA

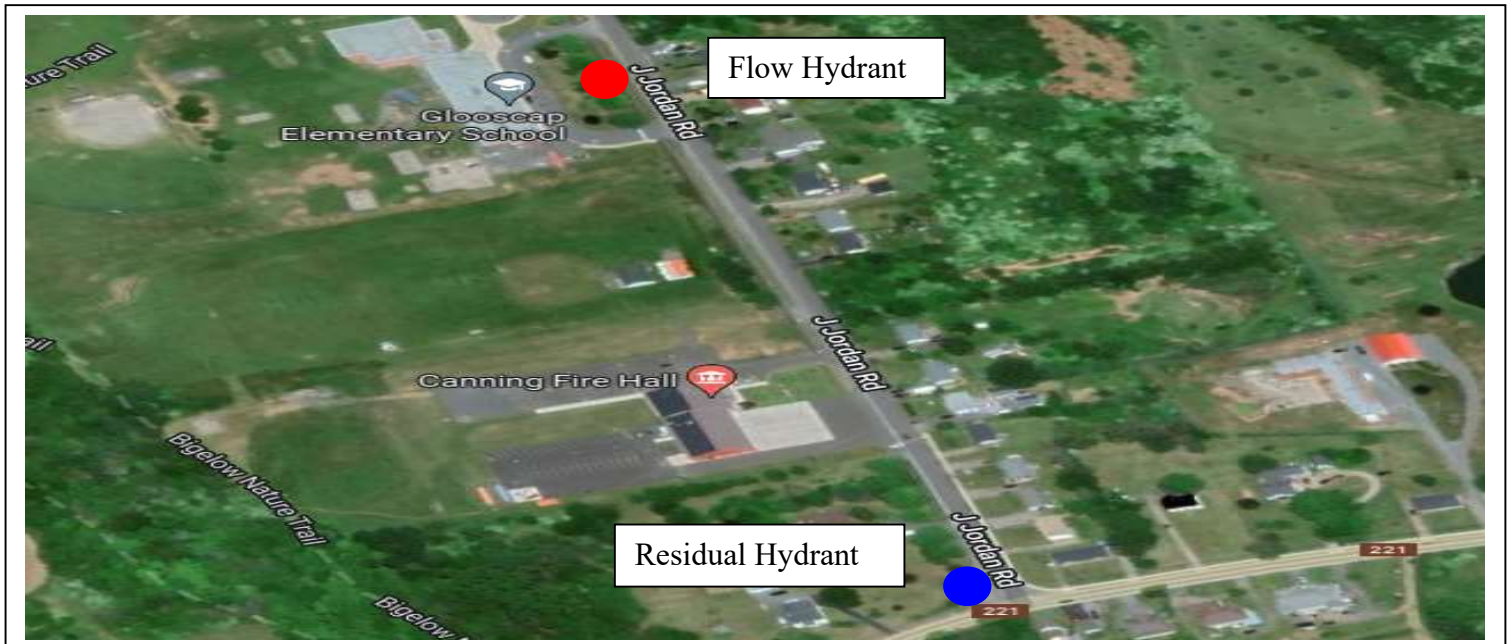
Size of Main:		Dead End:		Two Ways:		Loop:	
Source Reliable:			If not, explain:				
Comments:	Results are in US GPM and PSI. Hyd coefficient is 0.09						

• TEST DATA

Location of Test Hydrants: Residual:	See sketch below for location						
Flow:	See sketch below for location						
Normal Pressure:	64	Time:	9:00	A.M.	<input type="checkbox"/>	P.M.	<input checked="" type="checkbox"/>

Test No.	No. of Outlets	Orifice Size (IN)	Pitotless Nozzle Reading (PSI)	Equivalent Flow (US GPM)	Total Flow (US GPM)	Residual Pressure (PSI)	Comments
1	1	2.5"	17	689	689	58	
2	2	2.5"	10 / 10	529 / 529	1058	50	
3							
4							

Hydrant flow information from the files of the Aqua Data Atlantic, regardless of their original source, are maintained for internal use only. Although such information is often shared with others, people or firms who make use of this data do so at their own risk.





Water Flow Test Summary

Location J Jordan Rd Municipality Canning, NS Date March 7, 2022

