Servicing Impact Assessment Memorandum

To: Nicholas Higginson, P.Eng

Prepared by: Olivia Simpson, Eng. Grad.

Reviewed by: Daniel Searle, P.Eng

Ref: 221-08957-00

Date: 2026-07-06

Subject: 210 Clearview – Servicing Impact Assessment for Additional Residential Units

Background

The purpose of this memorandum is to evaluate the impact of the proposed increase in residential occupancy at 210 Clearview Avenue resulting from revisions to the building layout on Floors 21 to 24.

Since approval of the Site Plan Control (SPC) application on August 21, 2025, the building layout has been modified, resulting in an increase of four (4) residential dwelling units. Homestead Land Holdings Limited is pursuing a Permission to Proceed for this revision and has requested confirmation that the previously approved municipal servicing infrastructure remains adequate to accommodate the additional units.

This memorandum serves as an amendment to the approved Site Servicing Report dated April 28, 2025, and addresses the City of Ottawa's request for confirmation of the following:

- Impact from increase of sanitary sewer flows associated with the additional residential units;
- Impact from increase of domestic water demands associated with the additional residential units; and
- Whether revisions to the approved servicing infrastructure are required.

201-1224 Gardiners Road
Kingston, ON
Canada K7P0G2

T: +1 613 634 7373
F: +1 613 634 3523
wsp.com

Sanitary Servicing Review

The updated analysis was completed using the same methodology, design criteria, and assumptions used in the approved Site Servicing Report. Population estimates, average daily sanitary flow rates, peaking factors, and extraneous flow allowances were applied in accordance with the City of Ottawa Sewer Design Guidelines and the original servicing assessment.

As outlined in the approved Site Servicing Report, the proposed development is serviced by a 200 mm diameter PVC sanitary service installed at a 4.3% slope, discharging to existing SANMH201 on Clearview Avenue. A control maintenance hole is also provided at the property line prior to the connection to the municipal sewer system.

Based on the revised unit count, the total sanitary flow generated by the development was calculated to be 4.35 L/s, corresponding to a population of 358 residents. Updated sanitary flow calculations are provided in Appendix A. A comparison of the previous and updated sanitary design flows is provided in Table 1.

Table 1: Comparison of Previous and Updated Sanitary Flows

	Persons	Flow (L/s)	Velocity (m/s)
Previous	349	4.21	2.16
Updated	358	4.35	2.16

The updated calculations indicate that the increase in sanitary flow associated with the additional four (4) dwelling units is minimal relative to the overall flow generated by the development. The revised sanitary flow represents an increase of approximately 0.14 L/s (3.3%) over the previously approved design flow.

The proposed 200 mm diameter sanitary service at a 4.3% slope continues to convey the updated sanitary flows while maintaining design velocities within the City of Ottawa's recommended range of 0.6 m/s to 3.0 m/s. The calculated velocity remains unchanged at 2.16 m/s, confirming that the proposed sewer continues to provide self-cleaning velocities.

The City previously confirmed that the receiving municipal sanitary sewer on Clearview Avenue had sufficient capacity to accommodate the approved development flows. Given the minor increase in sanitary loading associated with the addition of four dwelling units, the proposed connection to existing SANMH201 remains appropriate and no concerns related to downstream municipal sewer capacity are anticipated.

Based on the updated sanitary flow calculations, the proposed sanitary servicing infrastructure remains adequate to accommodate the revised development. Accordingly, no modifications to the size, alignment, slope, or configuration of the proposed sanitary service are required.

Water Servicing Review

Potable Water

As outlined in the approved Site Servicing Report, the development is serviced through two (2) proposed 200 mm diameter water service connections to the existing 300 mm diameter municipal watermain on Lanark Avenue. The dual-feed arrangement was originally designed in accordance with the City of Ottawa Water Distribution Guidelines, which require redundancy for developments with an average day demand greater than 50 m³/day. No changes to the proposed servicing configuration are required as a result of the revised unit count.

Domestic water demand calculations were updated using the same methodology, design criteria, population assumptions, and peaking factors adopted in the approved Site Servicing Report. A comparison of the previous and updated potable water demands is provided in Table 2. Detailed potable water demand calculations are included in Appendix B.

Table 2: Comparison of Previous and Updated Potable Water Demands

		Average Daily Demand (L/s)	Maximum Daily Demand, MDD (L/s)	Maximum Hourly Demand, MHD (L/s)
Previous	Residential Units	1.13	2.83	6.22
	Amenity Space	0.04	0.09	0.16
	Total	**1.17**	**2.92**	**6.38**
Updated	Residential Units	1.16	2.90	6.38
	Amenity Space	0.05	0.12	0.22
	Total	**1.21**	**3.02**	**6.60**

Fire Water

Based on the review, there has been no increase in floor area beyond that which was previously accounted for in the Site Plan Control (SPC) submission. In addition, the building form, construction type, occupancy classification, sprinkler protection, and overall fire protection strategy remain unchanged. Therefore, the required fire flow demand remains unchanged from that reported in the approved SPC submission.

Watermain Modelling and Results

To confirm that the proposed water servicing infrastructure remains adequate to accommodate the additional four (4) dwelling units, the WaterGEMS (Version 10.03.01.08) steady-state hydraulic model

developed for the approved Site Servicing Report was updated and rerun using the revised domestic water demands.

The model was updated using the same watermain configuration, boundary conditions, hydraulic grade line elevations, demand scenarios, and pressure criteria adopted in the approved Site Servicing Report. The assessment continued to evaluate the performance of the proposed dual 200 mm diameter water service connections from Lanark Avenue under the same design scenarios previously analyzed, including maximum daily demand, maximum daily demand plus fire flow demand, and maximum daily demand plus sprinkler demand conditions.

The updated model scenarios, assigned demands, and resulting pressures are provided in Table 3, along with a comparison of relative pressures of the previously approved design.

Table 3: Comparison of Previous and Updated Water Model Results

	Updated		Previous
Scenarios	**Demands**	**System Residual Pressure (at the building)**	**System Residual Pressure (at the building)**
Average Daily Demand (ADD)	1.21 L/s	**73.24 psi**	73.24 psi
Maximum Hourly Demand (MHD)	6.60 L/s	**73.24 psi**	73.24 psi
Maximum Daily Demand + FUS Fire Flow (MDD+FF)	86.32 L/s	**73.13 psi**	73.12 psi
Maximum Daily Demand + Sprinkler Demand (MDD+SPK)	34.57 L/s	**73.22 psi**	73.22 psi

The updated modelling confirms that the proposed dual water service connections continue to satisfy all applicable City of Ottawa pressure requirements under both domestic and fire flow conditions. Available pressures at the building remain above the minimum required (or assumed required) values for all design scenarios evaluated.

Based on the updated potable water demand calculations and hydraulic modelling results, the proposed water servicing infrastructure has sufficient capacity to accommodate the additional four (4) dwelling units. Accordingly, no modifications to the size, alignment, or configuration of the proposed water service connections or internal watermain network are required. Detailed WaterGEMS modelling outputs are provided in Appendix C.

Conclusion

Based on the updated sanitary flow and water demand assessment completed for the revised residential unit count at 210 Clearview Avenue, it is our opinion that the approved servicing infrastructure remains adequate to accommodate the addition of four dwelling units resulting from the revised layout of Floors 21 through 24.

The increase in occupancy results in a minor increase in sanitary flows and domestic water demands that can be accommodated by the approved servicing infrastructure without modification.

It should be noted that this review has not assessed the interior building plumbing works, only the exterior works. It is recommended that a review of the interior plumbing (water and sanitary) works be reviewed by a qualified mechanical engineer.

List of Appendices

Appendix A – Updated Sanitary Flow Calculations

Appendix B – Updated Water Demand Flow Calculations

Appendix C – WaterGEMS Modelling Outputs



Appendix A – Updated Sanitary Flow Calculations

Table A1 - Proposed Development

DESIGNED BY: Olivia Simpson
CHECKED BY: Scott Taylor, P.Eng.

Proposed Building Space Allocation

Building Type	No. of Units	Total Capita	Area (ha)
1 Bedroom Unit (1.4 Persons/Unit)	62	87	-
2 Bedroom Unit (2.1 Persons/Unit)	129	271	-
Amenity Space	-	-	0.1677
Total	**191**	**358**	**0.1677**

Table A2 - Sanitary Sewer Calculation

DRAINAGE DESCRIPTION													OUTLET PIPE DATA				
			Contributing Area			Average Daily Flow, Individual*	Average Daily Flow	M	Cumulative Peak Flow	Cumaltive Peak Flow	Peak Extraneous Flow	Q	SIZE	Slope	CAP	Q/Qfull	Velocity
AREA DESCRIPTION	FROM	TO	No.	Ac	Ha	(L/d)	(L/s)		(L/d)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(L/s)		(m/s)
Apartment Building	Manhole	Street			0.54	104,936	1.21	3.44	360,524	4.17	0.18	**4.35**	**200**	**4.30%**	**68.0**	**0.1**	**2.16**
(Total to ROW)																	

DESIGN PARAMETER			
Manning's n =	0.013		City of Ottawa Sewer Design Guidelines (2012), Technical Bulletins
1 & 2 Bedroom Daily Flow (q)=	280	L/cap/d	
Amenity Space (q)=	28,000	L/ha/d	
Infiltration Rate (I) =	0.33	L/s/Ha	
Peaking Factor (M) = $1+14/(4+P^{0.5})*0.8$	3.44	Harmon Formula	

Notes: Refer to Table A1 for population calculations.

Designed By: Olivia Simpson

Checked By: Scott Taylor, P.Eng.

Project Number: 221-08957-00

PROJECT: **210 Clearview Avenue**

LOCATION: **Ottawa, Ontario**

Date: June 30, 2026

Appendix B – Updated Water Demand Flow Calculations

Table A3 - Proposed Domestic Demands
210 Clearview Avenue

PROPOSED DOMESTIC DEMANDS			REFERENCES
Average Day Demand			
Residential	280	L/cap/d	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Other Commercial	28,000	L/gross ha/d	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2 Technical Bulletins to Water Design Guidelines
Average Day Demand (ADD):			
Residential Population	358	capita	Statistics provided by Architect (Project Statistics dated July 31, 2024)
349 capita x 280 L/cap/d	100,240	L/day	
$ADD_{Residential}$ =	**1.16**	**L/s**	
Amenity Space	0.1677	ha	Statistics provided by Architect (Project Statistics dated July 31, 2024)
0.1235 ha x 28,000 L/gross ha/d	4,696	L/day	
$ADD_{Amenity\ Space}$ =	**0.05**	**L/s**	
ADD_{TOTAL} =	1.21	L/s	Sum of ADD
Maximum Day Demand (MDD):			
Maximum Day $Factor_{Residential}$ =	2.5	x $ADD_{Residential}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Maximum Day $Factor_{Amenity\ Space}$ =	2.2	x $ADD_{Amenity\ Space}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
$MDD_{Residential}$ =	2.90	L/s	Average Day Demand x Maximum Day Factor
$MDD_{Amenity\ Space}$ =	0.12	L/s	Average Day Demand x Maximum Day Factor
MDD_{TOTAL} =	3.02	L/s	Sum of MDD
Maximum Hour Demand (MHD):			
Maximum Day $Factor_{Residential}$ =	2.2	x $MDD_{Residential}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Maximum Day $Factor_{Amenity\ Space}$ =	1.8	x $MDD_{Amenity\ Space}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
$MHD_{Residential}$ =	6.38	L/s	Maximum Day Demand x Maximum Hour Factor
$MHD_{Amenity\ Space}$ =	0.22	L/s	Maximum Day Demand x Maximum Hour Factor
MHD_{TOTAL} =	6.60	L/s	Sum of MHD

Designed By: Olivia Simpson	**Project:** **210 Clearview Avenue**
Checked By: Scott Taylor, P.Eng.	**Location:** **Ottawa, Ontario**
Project Number: 221-08957-00	**Dwg. Reference:** N/A

Appendix C – WaterGEMS Modelling Outputs

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Hydraulic Model Properties

Title	210 Clearview - Water Model (Servicing Assessment)
Engineer	Daniel Searle, PENG.
Company	WSP Canada Inc.
Date	2026-07-03
Notes	Servicing Assessment - Additional Units

Scenario Summary

ID	1
Label	Average Day Demand
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Base Physical
Demand	Base Demand
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	FUS
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	ADD
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	2000-01-01
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	X (m)	Y (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Is Active?
32	J-1	58.30	-34.17	5.06	1.21	109.90	73.24	True
52	J-4	58.17	-44.13	5.13	0.00	109.90	73.43	True

Pipe Table - Time: 0.00 hours

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Length (User Defined) (m)	Has User Defined Length?	Start Node	Stop Node
35	P-1	11	7	True	J-4	J-1
54	P-2(2)	10	7	True	J-4	J-1
53	P-2(1)	9	1	True	R-1	J-4

Diameter (mm)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Unified)	Flow (L/s)	Velocity (m/s)	Is Active?
204.0	PVC	110.0	False	0.000	0.61	0.02	True
204.0	PVC	110.0	False	0.000	0.60	0.02	True
1,000.0	Ductile Iron	140.0	False	0.000	1.21	0.00	True

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Zone	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	<None>	1.21	109.90

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Scenario Summary

ID	41
Label	Maximum Hour Demand
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Peak Hour
Demand	Peak Hour
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	FUS
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	MHD
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	2000-01-01
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	X (m)	Y (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Is Active?
32	J-1	58.30	-34.17	5.06	6.60	109.90	73.24	True
52	J-4	58.17	-44.13	5.13	0.00	109.90	73.43	True

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Length (User Defined) (m)	Has User Defined Length?	Start Node	Stop Node
35	P-1	11	7	True	J-4	J-1
54	P-2(2)	10	7	True	J-4	J-1
53	P-2(1)	9	1	True	R-1	J-4

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Pipe Table - Time: 0.00 hours

Diameter (mm)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Unified)	Flow (L/s)	Velocity (m/s)	Is Active?
204.0	PVC	110.0	False	0.000	3.32	0.10	True
204.0	PVC	110.0	False	0.000	3.28	0.10	True
1,000.0	PVC	140.0	False	0.000	6.60	0.01	True

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Zone	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	<None>	6.60	109.90

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Scenario Summary

ID	47
Label	Max Day + Fire Flow (FUS)
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Max Day + FF
Demand	Max Day + FF
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	FUS
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	MDD+FF
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	2000-01-01
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	X (m)	Y (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Is Active?
32	J-1	58.30	-34.17	5.06	86.32	109.82	73.13	True
52	J-4	58.20	-44.13	5.13	0.00	109.90	73.39	True

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Length (User Defined) (m)	Has User Defined Length?	Start Node	Stop Node
35	P-1	11	7	True	J-4	J-1
54	P-2(2)	10	7	True	J-4	J-1
53	P-2(1)	9	1	True	R-1	J-4

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Pipe Table - Time: 0.00 hours

Diameter (mm)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Unified)	Flow (L/s)	Velocity (m/s)	Is Active?
204.0	PVC	110.0	False	0.000	43.43	1.33	True
204.0	PVC	110.0	False	0.000	42.89	1.31	True
1,000.0	Ductile Iron	140.0	False	0.000	86.32	0.11	True

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Zone	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	<None>	86.32	109.90

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Scenario Summary

ID	61
Label	Max Day + SPK (OBC)
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Max Day + FF
Demand	Max Day + SPK
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	FUS
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	MDD+FF
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	2000-01-01
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	X (m)	Y (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Is Active?
32	J-1	58.30	-34.17	5.06	34.57	109.88	73.22	True
52	J-4	58.20	-44.13	5.13	0.00	109.90	73.39	True

Pipe Table - Time: 0.00 hours

ID	Label	Length (Scaled) (m)	Length (User Defined) (m)	Has User Defined Length?	Start Node	Stop Node
35	P-1	11	7	True	J-4	J-1
54	P-2(2)	10	7	True	J-4	J-1
53	P-2(1)	9	1	True	R-1	J-4

210 CLEARVIEW - WATERGEMS MODEL OUTPUT

Pipe Table - Time: 0.00 hours

Diameter (mm)	Material	Hazen-Williams C	Has Check Valve?	Minor Loss Coefficient (Unified)	Flow (L/s)	Velocity (m/s)	Is Active?
204.0	PVC	110.0	False	0.000	17.39	0.53	True
204.0	PVC	110.0	False	0.000	17.18	0.53	True
1,000.0	Ductile Iron	140.0	False	0.000	34.57	0.04	True

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Zone	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	<None>	34.57	109.90

MODEL MAP

