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ADEQUACY OF PUBLIC SERVICING REPORT

FOR

ABBOTT'S RUN
PHASES 2, 3, 4A AND 4B

MINTO COMMUNITIES INC.

CITY OF OTTAWA

PROJECT NO.: 22-1295

MAY 2025
2ND SUBMISSION

ADEQUACY OF PUBLIC SERVICING REPORT
FOR
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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has prepared this Adequacy of Public Servicing Report in support of Abbott's Run Phases 2, 3, 4A and 4B on behalf of Minto Communities.

Abbott's Run, formerly known as Kizell Lands, is a proposed development in Ottawa's Fernbank community. The community will consist of a blend of residential areas, commercial spaces, recreational facilities, and institutional sites. Abbott's Run is approximately 87.0ha and is bound by Abbott Street to the south, Iber Road to the west, Hazeldean Road to the north and Bradley Commons Subdivision to the east (Richcraft).

This report will focus on the servicing requirements for Phases 2, 3, 4A and 4B of Abbott's Run. The approximate site and its associated boundaries are shown in **Figure 1.1.**

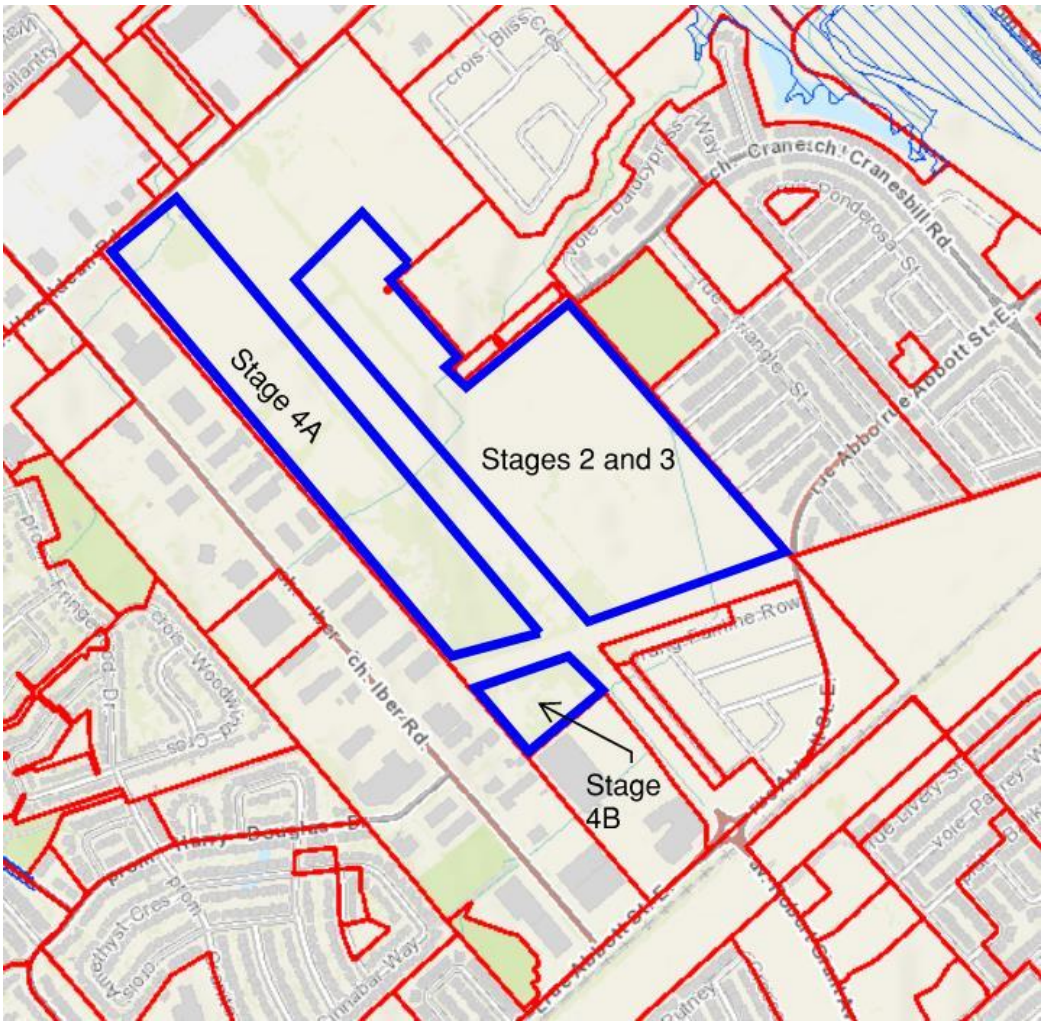

Figure 1.1 Abbott's Run Site Location

1.1 Background

The *Concept Servicing Report Assessment of Adequacy of Public Services and Stormwater Site Management (Concept Servicing Report)* (Novatech Engineering, August 28, 2020), was prepared in support of a draft plan application for the formerly known Kizell Lands. Minto has since purchased the property and are looking to amend certain elements of the draft plan of the subdivision. Generally, the concept plan remains consistent with the draft plan approved for the Kizell Lands and the civil engineering strategies proposed in the *Concept Servicing Report* will be adopted. As outlined in the MSS, Pond 1 will service the Abbott's Run community. The Fernbank Community – Pond 1 Stormwater Management Report (Novatech, Revised January 16, 2024) (SWM Report) goes into detail on the pond's design. A comparison of the Kizell Lands draft plan versus the Minto Lands Abbott's Run updated plan is included in *Appendix A*. The following report

builds off the work presented in the *Concept Servicing Report* and adjusts the strategy as required to support the updated draft plan.

The Minto concept plan, which features phases 2, 3, 4A and 4B, is presented in **Figure 1.2.**

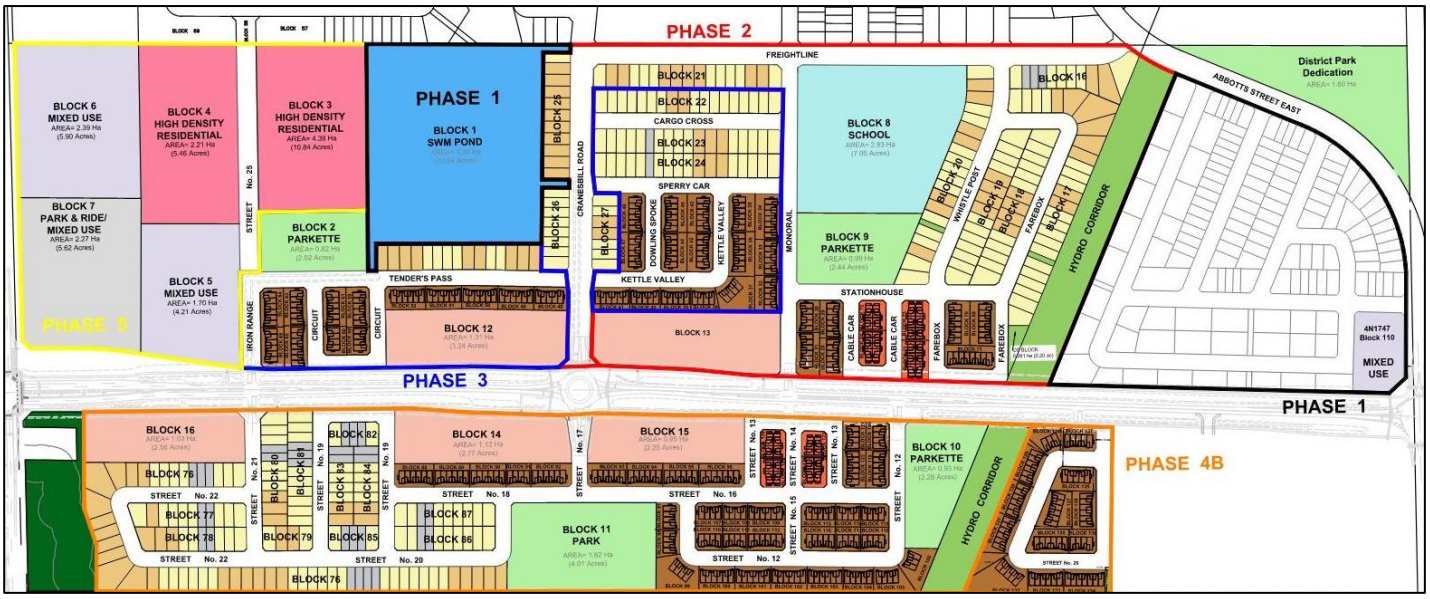

Figure 1.2 Abbott's Run Concept Plan

Table 1.1 presents the development statistics for the concept plan presented above.

Table 1.1: Abbott's Run Development Statistics

Unit Type	Phase 1		Phase 2		Phase 3		Phase 4A		Phase 4B		
	Unit	Pop	Unit	Pop	Unit	Pop	Unit	Pop	Unit	Pop	
Singles	92	313	130	442	69	235	150	510	0	0	
Towns	191	515	87	235	166	448	205	554	71	192	
4-6 Storey Medium Density Condo	0	0	124	223	111	200	246	442	0	0	Phase 5 Projected Statistics
TOTAL	**283**	**828**	**341**	**900**	**346**	**883**	**601**	**1506**	**71**	**192**	**Unit 428** / **Pop 770**
Total for whole buildout: Units = 2049; Population = 4969											
Total for phases 2, 3 and 4B: Units = 737; Population = 1865											

Phase 1 is currently under construction. Phase 5 will be part of a separate application.

As a point of reference, the population numbers from the previously approved *Concept Servicing Report* for the Kizell Lands were extracted and are presented in **Table 1.2**. This table was included to assess the population projections originally used for the Concept Servicing Report compared against those of Minto's proposed development.

The analysis determined that the Kizell Lands considered 2,922 units with a population of 6,147, while Abbott's Run accounts for 2,049 units and a corresponding population of 4,969 across phases 1 through 5. Given that the Kizell Lands accounted for a higher population, the servicing strategies outlined in the approved *Concept Servicing Report* remain appropriate to service Abbott's Run.

Table 1.2: Kizell Lands Development Statistics (Novatech, 2020)

Unit Type	Unit	Pop
Singles	288	979
Towns	475	1283
Medium Density Residential	1039	1870
High Density Residential	360	648
Mixed Use Residential	460	828
Park N Ride Residential	330	540
TOTAL	**2922**	**6147**

2.0 GUIDELINES, PREVIOUS STUDIES AND REPORTS

The following studies were utilized in the preparation of this report.

- **Ottawa Sewer Design Guidelines**
  City of Ottawa, October 2012
  (City Standards)
  - **Technical Bulletin ISDTB-2014-01**, Revisions to Ottawa Design Guidelines - Sewer
    City of Ottawa, February 5, 2014
    (ITSB-2014-01)
  - **Technical Bulletin PIEDTB-2016-01**, Revisions to Ottawa Design Guidelines – Sewer
    City of Ottawa, September 6, 2016
    (PIEDTB-2016-01)
  - **Technical Bulletin ISTB-2018-04**, Revisions to Ottawa Design Guidelines – Sewer
    City of Ottawa, June 27, 2018
    (ISTB-2018-04)
  - **Technical Bulletin ISTB-2019-02**, Revisions to Ottawa Design Guidelines – Sewer
    City of Ottawa, July 8, 2019
    (ISDTB-2019-02)

- **Ottawa Design Guidelines – Water Distribution**

City of Ottawa, July 2010
(Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010
    (ISDTB-2010-2)
  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014
    (ISDTB-2014-02)
  - **Technical Bulletin ISTB-2021-03**
    City of Ottawa, August 18, 2021
    (ISTB-2021-03)

- City of Ottawa Official Plan
  adopted by Council 2003.
  (Official Plan)

- **Stormwater Management Planning and Design Manual**
  Ministry of Environment, March 2003
  (SWMP Design Manual)

- **Erosion & Sediment Control Guidelines for Urban Construction**
  Toronto and Region Conservation Authority (TRCA), 2019
  (ECS Guidelines)

- **Fernbank Community Design Plan**
  Stantec, June 2009
  (CDP)

- **Concept Servicing Report – Assessment of Adequacy of Public Services and Stormwater Site Management - Kizell Lands – Fernbank**
  Novatech, Revised August 28, 2020
  (Concept Servicing Report)

- **Fernbank Community – Pond 1 Stormwater Management Report**
  Novatech, Revised January 16, 2024
  (SWM Report)

- **Geotechnical Investigation**
  Paterson Group, October 7, 2022
  (PG6165-1 Revision 1)

3.0 WATER SUPPLY SERVICING

3.1 Existing Infrastructure

There are currently no municipal water services that run within the Abbott's Run development. However, there are several potential watermain connections which surround these lands. **Figure 3.1** below outlines the existing watermain infrastructure surrounding Abbotts Run, outlined in red. To the north, Hazeldean Road currently has a 900mm diameter watermain which connects to the Glen Cairn Water Reservoir and Pump Station. To the south of the development is a 400mm diameter watermain that runs parallel to Abbott Street in addition to a 300mm diameter watermain that runs along Abbott Street. Additionally, there are several 200mm diameter watermain stubs to the east of Abbott's Run on Plank Street, Warrior Street, Thunderbolt Street and Honeylocust Avenue. There is also a 300mm diameter watermain stub on Cranesbill Road to the east of the subject lands.

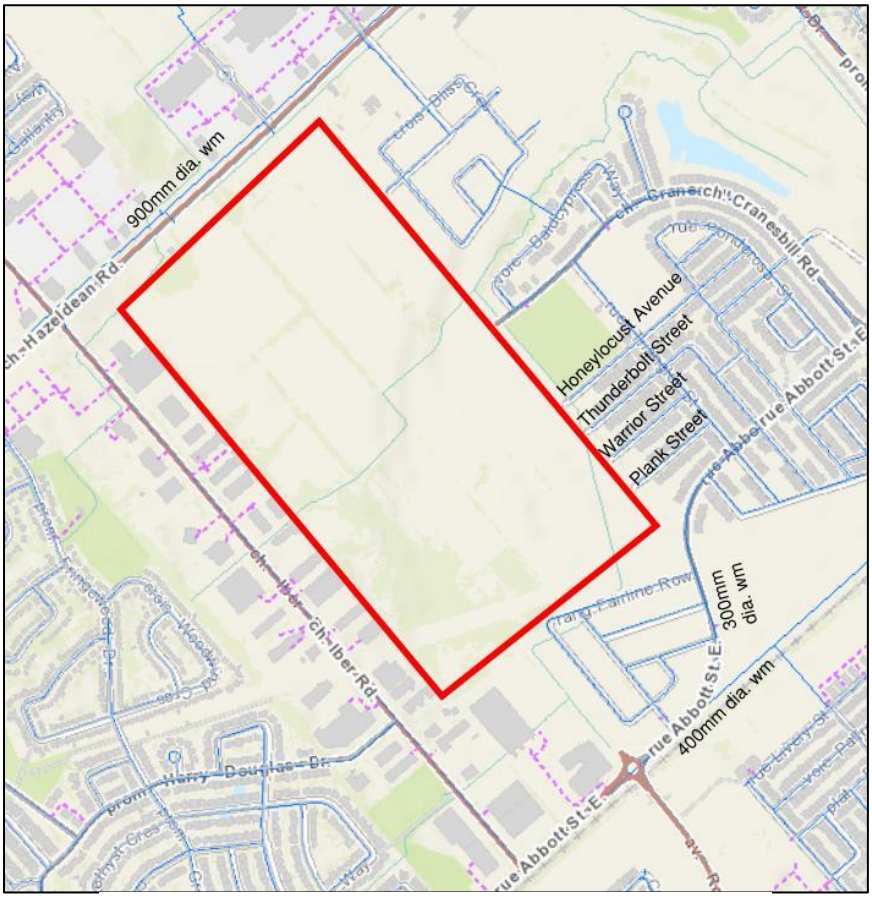

Figure 3.1 Existing Water Servicing

3.2 Kizell Lands Water Supply Servicing Design

The *Concept Servicing Report* proposed five connection points to the existing water services for the new distribution system, see **Figure 3.2**. The same approach is proposed to service the Abbott's Run development as shown on the Watermain Servicing Plan appended to this report.

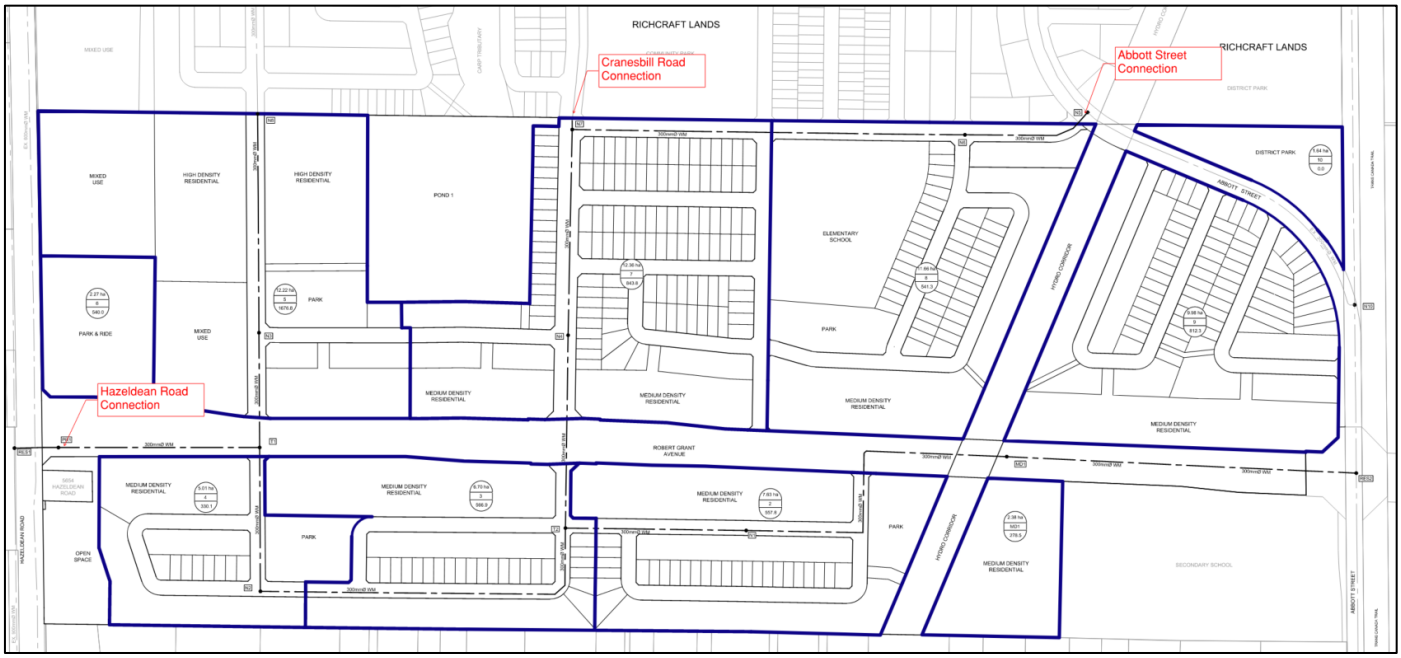

Figure 3.2 Kizell Lands Proposed Watermain (Novatech, August 28, 2020)

Table 3.1 outlines the design criteria for watermains in the City of Ottawa.

Table 3.1 Watermain Design Criteria

Design Parameter	Design Criteria
Single Family Home Population	3.4 people/unit
Townhouse Population	2.7 people/unit
Medium Density/High Density/Mixed Use Population	1.8 people/unit
Park and Ride Unit Density	300 Units
Residential Demand	280 L/c/d
Institutional/Commercial Demand	28,000 L/gross ha/day
Maximum Day Demand	2.5 x Average Day
Peak Hour Demand	2.2 x Maximum Day

Institutional/Commercial Max Day	1.5 x Average Day
Institutional/Commercial Peak Hour	1.8 x Maximum Day
Fire Demand (Residential Areas)	167 L/s
Fire Demand (Institutional and Commercial Areas)	266 L/s
Maximum Pressure	690 kPa (100psi) unoccupied areas
Maximum Pressure	552 kPa (80psi) occupied areas outside of ROW
Minimum Pressure	275 kPa (40 psi) except during fire flow
Minimum Pressure (Fire)	140 kPa (20 psi)

Updated boundary conditions were requested from the City for the new Minto development. The updated boundary conditions considered all phases of the Minto Abbott's Run developments. Correspondence with the City including updated demands and corresponding boundary conditions are included in *Appendix B*. As expected, the updated boundary conditions are very close to those presented Novatech's *Concept Servicing Report* as demands are similar. The demands for the Abott's site are shown in **Table 3.2**.

Table 3.2 Abbott's Run Water Demands

Scenario	Demand (L/s)
Average Day Demand (ADD)	13.24
Maximum Day Demand (MDD)	19.53
Peak Hour Demand (PHD)	39.03
Fire Flow Demand #1	150
Fire Flow Demand #2	266.67

Updated boundary conditions were requested at 3 locations (one more than the concept servicing report). Connection 1 is at Hazeldean Road, connection 2 is at Cranesbill Road and connection 3 is at Abbott Street. As the *Concept Servicing Report* (Kizzel) had demonstrated serviceability through water modelling, boundary conditions were compared between the old (Kizell Lands) and new (Abott's Run) developments. A comparison of the boundary conditions are presented in Table 3.3 and Table 3.4.

Table 3.3 Connection 1 - Hazeldean Road Boundary Conditions

	Hazeldean Connection (900mm Feedermain)		
	Boundary Conditions Kizell	Boundary Conditions From Abbotts Run Hydraulic Analysis	
	Head (m)	Head (m)	% Diff
Max HGL	162.4	161.1	-0.8%
Peak Hr.	155.5	154.9	-0.4%
MDD+FF1 (167L/s)	155.6	156.7	0.7%
MDD+FF2	155.6	156.2	0.4%

Table 3.4 Connection 3 - Abbott Street Boundary Conditions

	Abbott (400mm Feedermain)		
	Boundary Conditions Received for Kizell	Boundary Conditions for Abbotts Run	
	Head (m)	Head (m)	% Diff
Max HGL	162.1	161.1	-0.6%
Peak Hr.	154.5	154.2	-0.2%
MDD+FF1 (167L/s)	154.5	154.2	-0.2%
MDD+FF2	153.6	152	-1.1%

As expected, the boundary conditions remain essentially unchanged from those presented in the concept serving report. The *Concept Servicing Report* demonstrated that the system pressures are adequate to service the site, as confirmed through water modeling. Given that both the boundary conditions and the site layout are consistent with the original analysis, the site was not re-modeled at this stage. Pressures at the boundary are anticipated to be more than sufficient to meet the site's servicing requirements. Detailed water modeling will be completed during detailed design to confirm system performance. For reference, the modeling results from the Concept Servicing Report are included in Appendix B. These results indicated that maximum pressures may exceed 552 kPa under average demand conditions, and pressure-reducing valves (PRVs) may be required. The need for PRVs will be confirmed through detailed design modeling.

3.3 Proposed Water Supply Servicing

Phases 2, 3, 4A and 4B will be serviced via looped local watermains. To ensure adequate watermain looping to the site, several connections to existing water services are proposed.

The proposed connections to service Minto's Abbott's Run are consistent with those from the *Concept Servicing Report*. Given the population for Minto's Abbott's Run is less than the population considered at the time of the *Concept Servicing Report*, the modelling results are deemed adequate to confirm that the Abbott's Run site can adequately be serviced. An updated detailed hydraulic analysis will be conducted at the detailed design phase.

4.0 WASTEWATER SERVICING

4.1 Existing Infrastructure

There is an existing 900mm dia. sanitary pipe within the future Robert Grant right-of-way that's tributary to the Kanata West Pump Station. **Figure 4.1** shows relevant surrounding sanitary sewers which include a 300mm diameter PVC sanitary sewer on Abbott Street and a 250mm diameter PVC sanitary pipe on Energy Street that are tributary to the Hazeldean Pump Station.

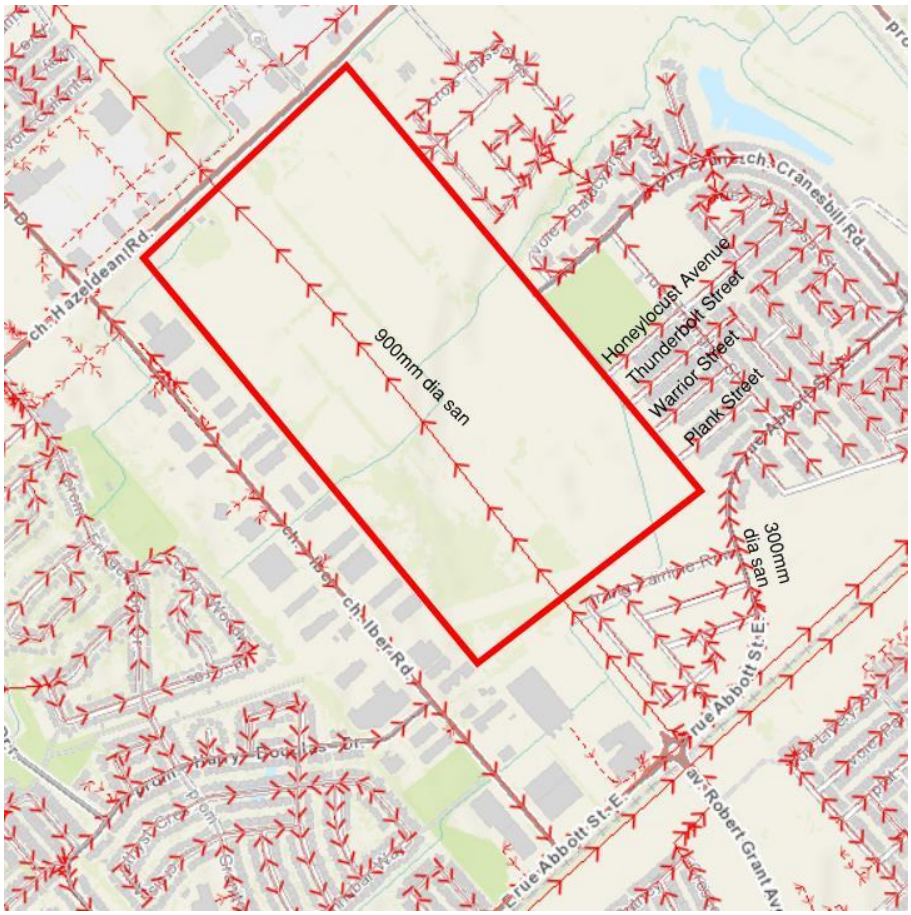

Figure 4.1 Existing Sanitary Services

Table 4.1 Sanitary Sewer Design Parameters

Design Parameter	Value
Low Density Residential	3.4 p/unit
Medium Density Residential	2.7 p/unit
High Density	2.3 p/unit
Peak Wastewater Generation per Person	280 L/p/d
Peaking Factor Applied	Harmon's Equation $P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000} \right)^{1/2}} \right) \times K$ K = 0.8
Institutional Flows	28,000 L/ha/day
Institutional Peaking Factor	1.0 (Contribution Area <= 20%), 1.5 (>20%)
Infiltration and Inflow Allowance	0.28 L/s/ha (wet) 0.05L/s/ha (dry) 0.33L/s/ha (total I/I)
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Service Lateral Size	135 mm dia PVC SDR 28 with a minimum slope of 1.0%
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Additional Considerations	Sewers servicing less than 10 residential connections to have a minimum gradient of 0.65%
	Where expected depth of flow is less than 1/3 pipe diameter, calculate actual flowing velocity and increase slope as required to achieve 0.6 m/s.
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012. Amended by Technical Bulletin ISTB-2018-01 (March 21, 2018)	

Table 4.1 above presents the design criteria applied in the Concept Servicing Report's wastewater servicing design.

4.2 Proposed Wastewater Servicing

A portion of Phase 2 of Abbott's Run is proposed to outlet to the existing 300mm diameter pipe on Abbott Street. The remainder of Phase 2 is proposed to outlet to the 900mm diameter trunk on future Robert Grant Avenue which ultimately leads to the Kanata West Pump Station. Phases 3, 4A and 4B of Abbott's Run also outlet to the 900mm diameter

trunk on future Robert Grant. This strategy is consistent with the sanitary servicing strategy outlined in the Concept Servicing Report as shown in **Figure 4.2** below.

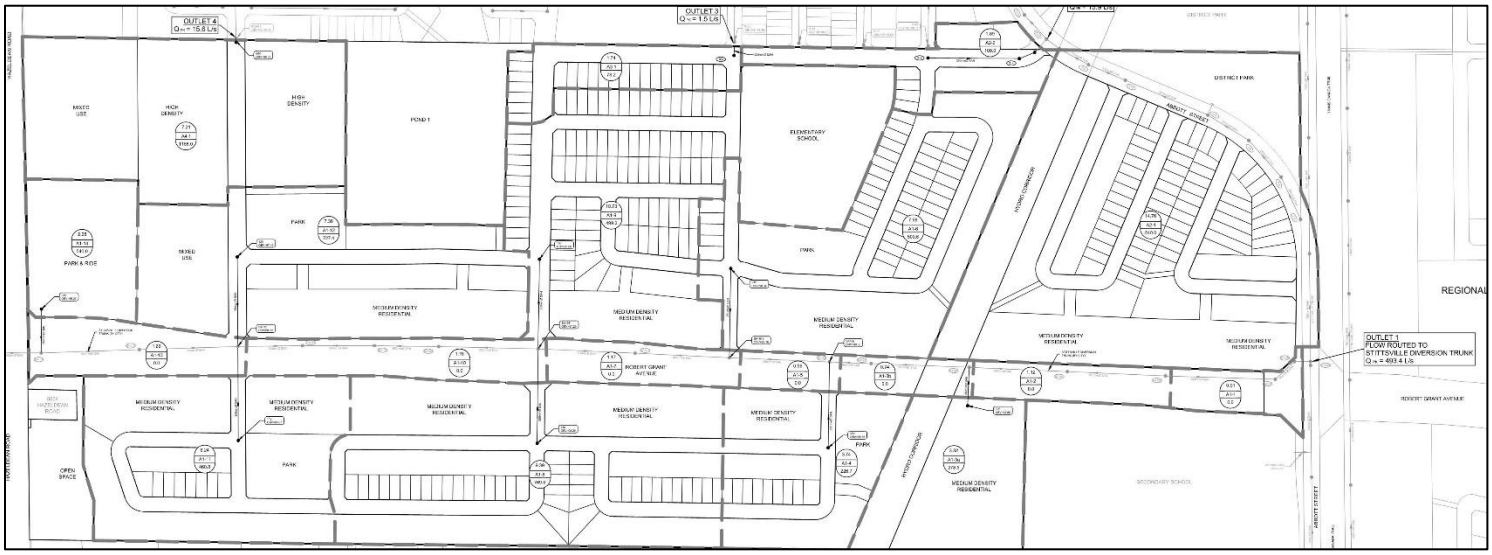

Figure 4.2: Kizell Lands Proposed Sanitary Servicing (Novatech, August 2020)

The majority of sanitary flows from Abbott's Run will be directed to the 900mm diameter sanitary sewers along Robert Grant Avenue. The projected flow from the sanitary design sheet, presented in *Appendix C,* indicate a peak flow of 545.16 L/s. This flow includes both existing flows in the Robert Grant sewer and the flows generated by Abbott's Run. The most restrictive leg of the Robrt Grant Sewer is from MH 74252 to 74253 where the pipe is at 46% capacity. This value includes both existing flows and the Abbotts Run flows. Given that the pipe is under capacity, the flows from Abbott's Run will be safely conveyed through the pipe network.

The sanitary flows from the remaining southern portions of Phase 2 will be directed to the 300mm diameter sewers along Abbott Street, which will convey these flows to the Hazeldean Pump Station. The anticipated flow from Abbott's Run into the Abbott Street sewers is 4.66 L/s. From the *Concept Servicing Report,* the allocation for Abbott's Run phases 1 and 2 into the Abbott Street sewer is 17.4 L/s. The total peak flow in the Abbott Street sewer from phase 1 and 2 is 18.84 L/s. This yields 1.44 L/s of additional flow than what was considered in the *Concept Servicing Report*.

To account for the additional flow, compared to the Concept Servicing Report, the Abbott Street sanitary sewer design sheets were reviewed to confirm sufficient capacity. The design sheets for the existing sanitary on Abbott's Street are provided in *Appendix C*. Based on the revised analysis, the most constrained segment of the Abbott Street sewer, from MH59A to MH60A, is expected to operate at 83% capacity with the additional flow. Given this, the flows from Abbott's Run can be safely conveyed via the Abbott Street sanitary sewer without exceeding its capacity constraints.

5.0 STORMWATER CONVEYANCE

5.1 Background

Pond 1 has been designed and constructed to service most phases of the Abbott's Run development. Phases 2, 3, 4A and 4B, the subject of this report, are tributary to the newly constructed Pond 1. Tributary drainage areas, imperviousness and pipe sizes were all coordinated between DSEL and the Pond 1 designers, Novatech Engineering, during both the design and construction of Pond 1. The Fernbank Community – Pond 1 Stormwater Management Report (Novatech, Revised January 16, 2024) (SWM Report) provides the details for Pond 1. **Figure 5.1** depicts the approximate boundaries of Abbott's Run against the existing stormwater conditions.

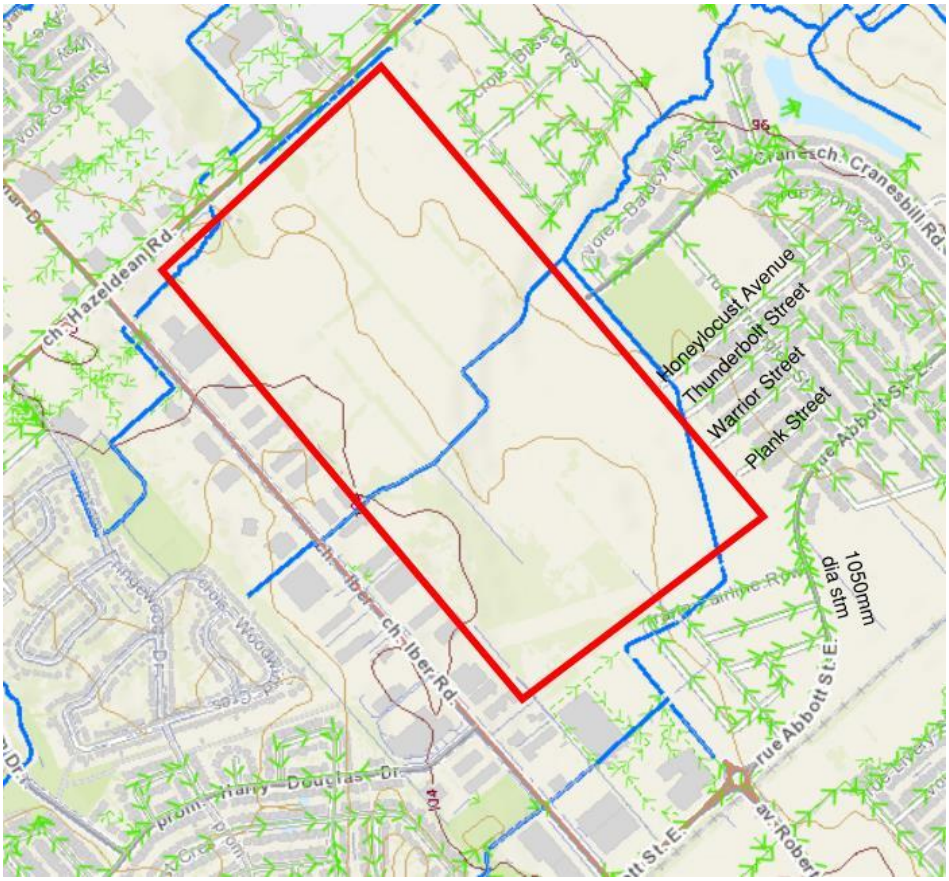

Figure 5.1 Existing Stormwater Servicing and Features

Design criteria for the major and minor systems will follow the standard City of Ottawa design parameters.

The design parameters for the storm sewers are presented below.

5.1.1 Minor System

Abbott's Run Phases 2, 3, 4A and 4B will be serviced by a network of gravity storm sewers designed in accordance with the Ottawa Design Guidelines, including all amendments.

Table 5.1 summarizes the relevant City Standards employed in the design of the proposed storm sewer system referred to as the minor system.

Table 5.1 Storm Design Criteria

Design Parameter	Value
Minor System Design Return Period	2-Year (Local Streets), 5-Year (Collector Streets), 10-Year (Arterial Streets) – PIEDTB-2016-01
Major System Design Return Period	100-Year
Intensity Duration Frequency Curve (IDF) 5-year storm event. A = 998.071 B = 6.053 C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Initial Time of Concentration	10 minutes
Rational Method	$Q = CiA$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n'	0.013
Service Lateral Size	100 mm dia PVC SDR 28 with a minimum slope of 1.0%
Minimum Depth of Cover	2.0 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.8 m/s
Maximum Full Flowing Velocity	6.0 m/s (above 3.0 m/s may require protection against displacement by sudden jarring)
Clearance from 100-Year HGL	Not above ground surface in areas with sump pumps 0.30 m for USF in areas without sump pumps
Max Allowable Flow Depth on Municipal Roads	35 cm above gutter (PIEDTB-2016-01)
Extracted from Sections 5 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012	

Three inlets have been constructed for Pond 1. The minor system from Abbott's Phases 2, 3, 4A and 4B will connect to the existing inlet pipes constructed for the pond.

5.1.2 Major System

Major system flow will be directed towards Pond 1. As major overland flow is not allowed to cross Robert Grant, 1:100 year capture is provided at the intersection of Robert Grant Avenue and the entrances to the local streets for all phases.

The maximum depth of flow on local and collector streets will be designed to 0.35 m during the 100-year event. The depth of flow may extend adjacent to the right-of-way provided that the water level must not touch any part of the building envelope and must remain below the lowest building opening during the stress test event (100 year + 20%). There must be at least 15 cm of vertical clearance between the spill elevation on the street and the ground elevation at the nearest building envelope.

5.1.3 Proposed Outlet – Stormwater Management (SWM) Pond

The Fernbank Community – Pond 1 was identified in the *Fernbank Community MSS* to service Abbott's Run and has been approved and constructed. Details can be found in the *Fernbank Community – Pond 1 Stormwater Management Report* (Novatech, 2024). Excerpted figures are enclosed in *Appendix E* for reference.

5.1.3.1 Water Quality Control

Quality control is provided by Pond 1.

5.1.3.2 Water Quantity Control

Quantity control is provided by Pond 1. Total drainage area and overall imperviousness for all of Abbott's Run contribution to Pond 1 are presented in ***Table 5.2***, along with a comparison between the imperviousness that was projected as Novatech Pond 1 Design.

Table 5.2 Pond 1 Drainage Area Comparison

Adequacy of Public Servicing Report (DSEL, 2025)		**Fernbank Community – Pond 1 Stormwater Management Report (Novatech, 2024)**	
Area (ha)	Imperviousness	Area (ha)	Imperviousness
72.55	70%	73.41	73%

Pond 1 was originally designed and approved to provide both quality and quantity control, with a capacity exceeding the basic requirements for quality treatment. The Abbott's Run subdivision's runoff coefficient has been calculated at 70%, slightly lower than the 73% used in the pond's design. The pond requires 13,923 m^3 of storage for quality control; however, it has been designed with a significantly larger quality control capacity of 29,380 m^3. Considering the decrease in runoff, the pond can accommodate the anticipated stormwater runoff from Abbott's Run.

6.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate, and topography. The extent of erosion losses is exaggerated during construction where the vegetation has been removed and the top layer of soil is disturbed.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Installation of mud mats at construction accesses.
- Construction of temporary sedimentation ponds to treat water prior to outletting to existing wetlands and watercourses.
- Plan construction at proper time to avoid flooding.

A detailed erosion and sediment control plan will be prepared for Abbott's Run prior to construction to ensure there are no negative impacts on the natural areas. A preliminary erosion and sediment control plan is depicted in ***Figure 9***.

7.0 CONCLUSION

A summary of the Functional Servicing and Stormwater Management Report for Abbott's Run is as follows:

- The City of Ottawa has been pre-consulted regarding this application. Approvals will be required from the City of Ottawa, Ministry of the Environment, Conservation and Parks and Mississippi Valley Conservation Authority.
- Watermains will be designed as per the City of Ottawa guidelines and connect to existing watermains in existing Bradley Commons, Abbott Street and future Robert Grant Avenue.
- Sanitary sewers are designed as per the City of Ottawa guidelines and will discharge to existing sanitary trunk sewers within the 900mm diameter sanitary trunk along Robert Grant and the sanitary sewer along Abbot Street. The downstream infrastructure was designed with capacity for Abbott's Run.
- Storm sewers are designed as per the City of Ottawa guidelines, including the amendments.
- The storm sewers will outlet to Pond 1, where the flows will be treated for quality and quantity control prior to discharging to the Carp River West Tributary Alignment.
- Pond 1 is designed to provide quality control treatment to achieve an enhanced level of protection (80% TSS removal per MECP guidelines).
- Erosion and sediment control measures will be implemented and maintained throughout construction. The Carp River West Tributary Alignment will be protected from any negative impacts from construction.

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