

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4



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1.0 INTRODUCTION

1.1 General

Minto Communities Inc. (Minto) has retained the services of J.L. Richards & Associates Limited (JLR) to prepare a Servicing Brief for municipal infrastructure to service their proposed mixed-use development known as Quinn's Pointe Stages 2, 3 & 4 located in the Barrhaven South Urban Expansion Area (BSUEA), in the City of Ottawa. The legal description of the subject property is All of Blocks 253, 254 and 255, Part of Block 252, Registered Plan 4M-1552 And Part of Lots 6 and 7, Concession 3 (Rideau Front) Geographic Township of Nepean, City of Ottawa.

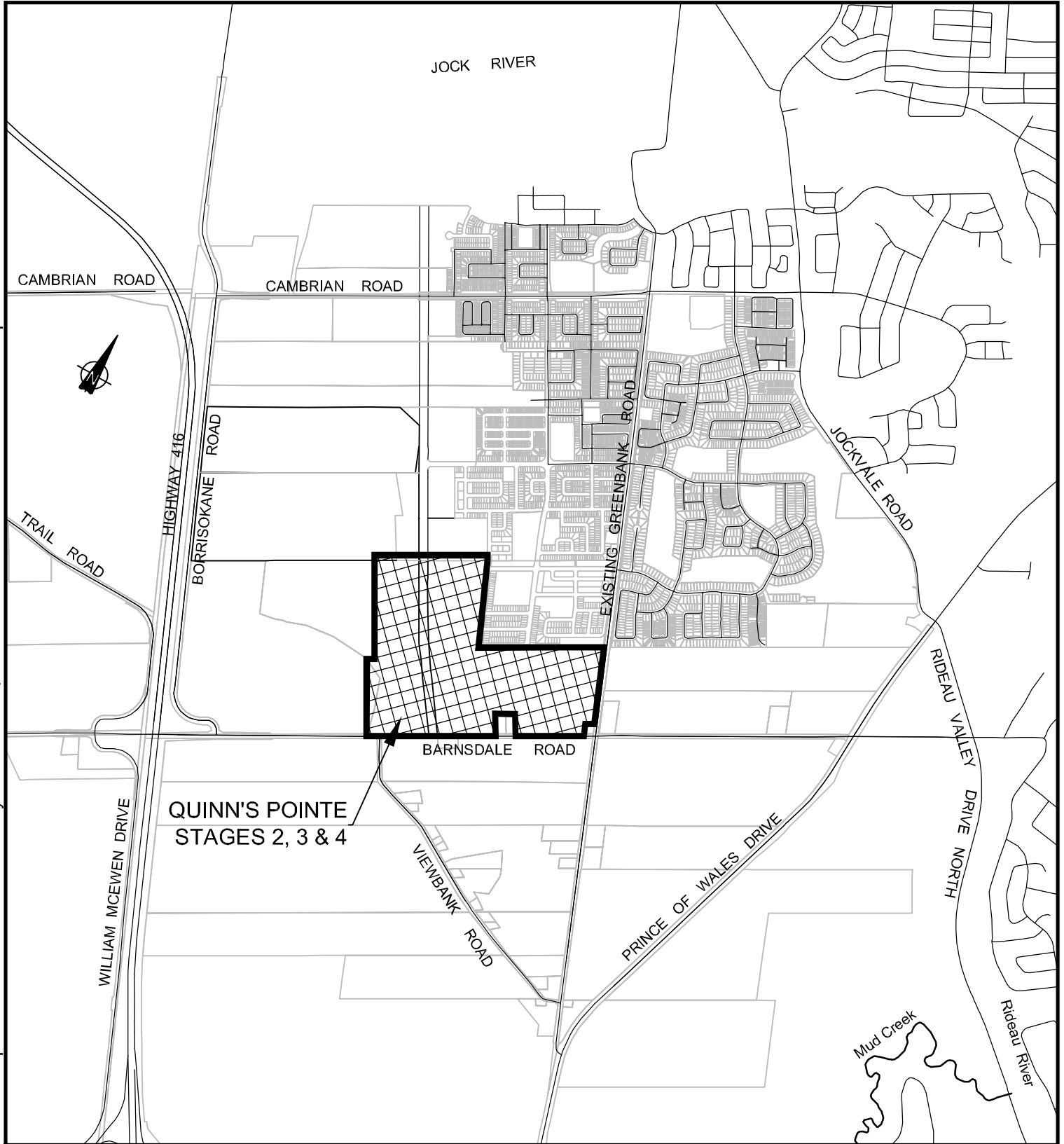
This Servicing Brief outlines the proposed servicing strategy for Quinn's Pointe Stages 2, 3 & 4 in accordance with the approved May 2018 BSUEA Master Servicing Study (MSS), herein referred to as the BSUEA MSS, and the City of Ottawa Servicing Study Guidelines for Development Applications.

1.2 Site Description

The proposed Quinn's Pointe Stages 2, 3 & 4 developments are situated on a ±65 ha parcel of land that is bounded by existing Greenbank Road to the east and Barnsdale Road as well as the new City of Ottawa (City) urban boundary to the south, as shown on Figure 1-1 Location Plan (below). The subject site is also bounded by the new City urban boundary to the west (approximately 900 m from Borrisokane Road) and by future BSUEA development lands to the north. Minto's existing Quinn's Pointe Stage 1 residential subdivision is also located to the northeast of the subject property.


The Quinn's Pointe Stages 2, 3 & 4 lands currently consist of an undeveloped mix of former agricultural land and forested areas. The topography across the site has significant undulations, and there is a knoll located approximately 1 km north of Barnsdale Road.

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PROJECT:	MINTO COMMUNITIES INC. QUINN'S POINTE STAGES 2, 3 & 4 BARRHAVEN SOUTH URBAN EXPANSION AREA
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DRAWING:	LOCATION PLAN
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 J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS www.jlrichards.ca	This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.	DESIGN: GF	JLR NO: 26610-001.1
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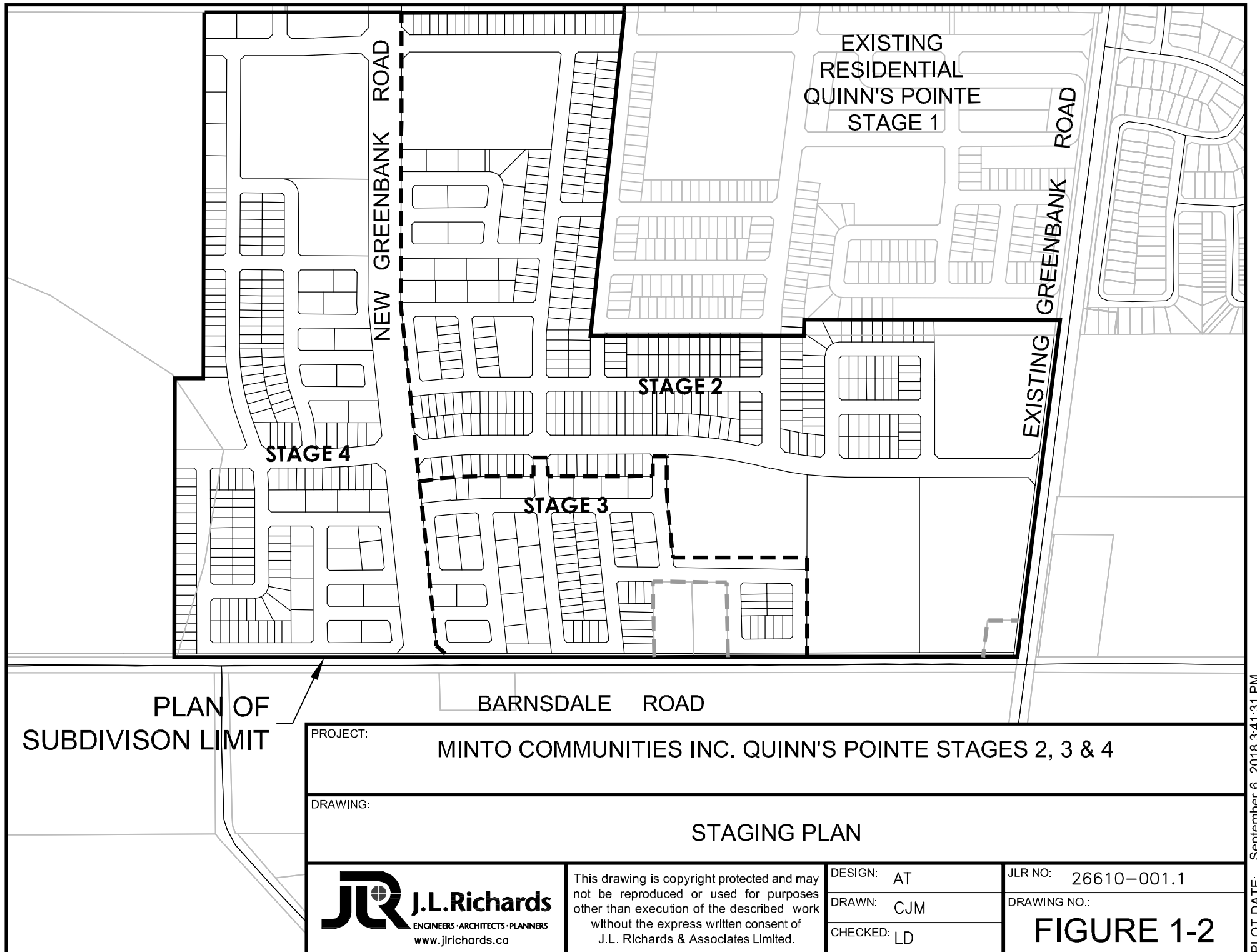
1.3 Proposed Development

Minto's proposed Quinn's Pointe Stages 2, 3 & 4 developments consists of 538 single family dwellings, 321 executive townhouses, 172 avenue (back-to-back) townhouses blocks, and a future condo block. Two (2) blocks (Blocks 622 & 623) have been allocated for future schools (2.36 ha and 2.43 ha) and three (3) blocks (Blocks 624, 625 and 626) have been dedicated for park uses (totaling 4.25 ha). The development also consists of 0.32 ha of commercial development and a 2.55 ha future park and ride facility, as shown on the Draft Plan of Subdivision provided in Appendix 'A'. The future realigned Greenbank Road, herein referred to as New Greenbank Road, bisects the property extending from the northern to the southern property limits.

1.4 Staging

The Quinn's Pointe residential subdivision as shown on Figure 1-1 Location Plan will be developed into four (4) stages, which includes the existing Stage 1. The limits of each phase are shown on Figure 1-2. Minto wishes to develop the remaining Quinn's Pointe Subdivision into the following three (3) future stages:

- **Stage 2:** Quinn's Pointe Stage 2 is bounded by the existing Quinn's Point Stage 1 to the north and to the east, by Street 2 to the south and New Greenbank Road (future) to the west. In addition to the above-noted lands, Stage 2 also includes Block 623 (Institutional), Block 624 (Community Park) and Blocks 627 and 628 (dry ponds). Figure 1-2 depicts the above-noted lands;
- **Stages 2 & 3:** This phase includes the Stage 2 lands (as described above) and Quinn's Pointe Stage 3. These lands are bounded by Block 623 (Institutional) and Block 624 (Community Park) to the east, by Stage 2 to the north, by Barnsdale Road to the south and by New Greenbank Road to the west (refer to Figure 1-2 for details); and
- **Stages 2, 3 & 4:** This phase includes Stages 2 & 3 (as described above) and Quinn's Pointe Stage 4. The latter lands are bounded by New Greenbank Road to the east, by Barnsdale Road to the south and by the Official Plan Boundary to the west (refer to Figure 1-2 for details).



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1.5 Conceptual Grading

A conceptual Grading Plan (refer to Drawing CG1 in Appendix 'F') has been developed for the Quinn's Pointe Stages 2, 3 & 4 developments. Centreline road grades for the New Greenbank road match those from the Approved Greenbank Road Class Environmental Assessment (Class EA). Centreline road grades from the local and collector streets were conceptually designed to tie into New Greenbank Road as well as existing roads from the adjacent Quinn's Pointe Stage 1 and existing Greenbank Road. In addition, conceptual road grades were developed to convey and safely evacuate runoff in excess of the minor system to strategic low points.

2.0 WATER SERVICING

2.1 Existing Watermains

A Hydraulic Network Analysis (HNA) was completed to demonstrate that the existing and proposed watermains in Quinn's Pointe can provide adequate water supply to Stage 2 as well as future Stages 3 and 4, under both domestic and fire flow conditions while meeting regulatory requirements. Potable water to Quinn's Pointe Stage 2 and future Stages 3 & 4 will be supplied from a number of connections to existing feeder mains (i.e., ≥ 300 mm diameter watermains) as shown in Appendix 'E' Drawing CS1. The proposed connections for Stage 2 include:

- 400 mm diameter watermain on existing Greenbank Road \pm 450 m north of Barnsdale Road;
- 300 mm diameter watermain on River Mist Road; and
- 300 mm diameter watermain on Kilbirnie Drive.

The above-noted connections will be made in accordance with the BSUEA MSS, as shown on the BSUEA Conceptual Watermain Plan (Drawing CWM), provided in Appendix 'B'.

2.2 Proposed Watermain Servicing

The BSUEA MSS presents water servicing details associated with the supply of potable water to the Quinn's Pointe development. Water servicing will be provided by the following feeder mains, as per Drawing CWM in Appendix 'B', and as shown on the Conceptual Site Servicing Plan (Drawing CS1) in Appendix 'E'.

- 400 mm diameter on existing Greenbank Road Extension (from Knockaderry Crescent to Barnsdale Road);
- 300 mm diameter on Street No. 2 (from the western limit of the Stage 2 to existing Greenbank Road);
- 300 mm diameter on Kilbirnie Drive Extension (from the western limit of the Stage 2 to Alex Polowin Avenue);
- 300 mm diameter on New Greenbank Road (from the northern limit of Stage 2 to Barnsdale Road); and

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- 300 mm diameter on River Mist Road Extension (from the southern limit of existing River Mist Road to Street No. 2).

In addition to the above feeder mains, modelling described in the following sections identified the need to construct sections of the New Greenbank Road 300 mm diameter feeder main. A northern section of ± 175 m (between Kilbirnie Drive and Street No. 5) and a southern section ± 260 m (from Street No. 2 and Barnsdale Road). These sections of the 300 mm diameter feeder main were found to be required in order to fulfill fire flow requirements to support the various stages of the Quinn's Pointe subdivision.

2.3 Design Criteria

New developments added to the City's water distribution system are required to be designed in accordance with Section 4.2.2 of the City of Ottawa Water Design Guidelines (July, 2010) and Technical Bulletin ISDTB-2014-02. Specifically, the proposed on-site water mains need to conform to the following criteria, as per the Design Guidelines:

- i. Under maximum hourly demand conditions (peak hour), the pressures shall not fall below 276 kPa (40 psi).
- ii. During periods of simultaneous maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi).
- iii. In accordance with the Ontario Code & Guide for Plumbing, the static pressure at any fixture shall not exceed 552 kPa (80 psi) in areas that may be occupied.
- iv. The maximum pressure at any point in the distribution system shall not exceed 689 kPa (100 psi) in unoccupied areas.

Water supply and pressure under the above demand objectives was recently evaluated (May 2018) as part of the BSUEA MSS. Section 7.0 of the MSS assessed the performance of the proposed water distribution system under existing (2016) and built-out conditions (2031) for the overall BSUEA to confirm the adequacy of the existing and proposed feeder main extensions. In addition, Section 11 of the MSS investigated the performance of the proposed water distribution system for the initial phase of development referred to as Phase 1 in the MSS, which consisted of the Quinn's Pointe Stage 2 combined with Mattamy's residential Lands.

As noted in Section 1.4, Minto wishes to develop the remainder of the Quinn's Pointe subdivision into three (3) separate stages as shown on the Staging Plan (Figure 1-2). The potable water assessment presented below was prepared based on the modelling information presented in Section 7.0 and Section 11 of the BSUEA MSS. However, the MSS analysis was updated to assess the performance of the distribution system under each of the three (3) phases of growth as described in Section 1.4. It should also be noted that a hydraulic network analysis (HNA) will be carried out as part of the detailed design stage of the Quinn's Pointe Stage 2 to confirm sizing of local water mains and subsequent stages. In order to do so, water demands will be calculated from the unit rates and peaking factors presented in Table 4-2 of the City of Ottawa Design Guidelines for Water Distribution System (July, 2010). From those demands under different phases, a request for boundary conditions will be made. However, for the purpose of this Servicing Brief, water demands are consistent with those used in the MSS as described below.

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2.4 Water Demands

Various demands scenarios were developed as part of the MSS based on zone/system level criteria since the overall population for the BSUEA was found to exceed 3,000 people. The system level demands used as part of the MSS are summarized in Table 2-1 below.

Table 2-1: Theoretical Water Consumption Rate

Land Use Type	Consumption Rate	Units
Single Family Residential	180	L/cap/day
Multi-unit Residential (Townhouse / Back to Back)	198	
Apartment Residential	219	
Commercial	50,000	L/ha/day
Institutional	50,000	
Outside Water Demand	1,049	L/SFH/day

For the purpose of this analysis, the above system level demands were applied throughout the various stages of the Quinn's Pointe subdivision, including the existing developed areas in the Barrhaven South Community and those associated with the Mattamy lands and the two (2) aggregate extraction areas part of the BSUEA. Given that extensions of the existing water distribution system are often vulnerable during interim phases of development, this analysis was carried out for each of the three (3) phases.

Based on the above-described phases, water demands were calculated based on the unit rates of Table 2-1 under both basic day (BSDY) and maximum day (MXDY). The simulated demands have been summarized (Table 2-2 below) for each of the three (3) phases of growth.

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Table 2-2: Estimated Water Demands per Phase

Land use	Area (Ha)	Units	Pop.	ADD SFH ¹	ADD MLT ²	ADD APT ³	ADD COM ⁴	ADD INS ⁵	Total BDSW	OWD ⁶	Total MXDY
Stage 2											
Schools	4.8							2.76	2.76		
Commercial											
Single		319	1,085	2.26					2.26	3.87	
Townhouse		131	354		0.81				0.81		
High Density											
Demand Stage 2				2.26	0.81			2.76	5.83	3.87	9.70
Stages 3 (including the Mattamy residential lands)											
Schools											
Commercial											
Single		59	201	0.42					0.42	0.72	
Single (Mattamy)		136	462	0.96					0.96	1.65	
Townhouse		145	392		0.90				0.90		
Townhouse (Mattamy)		78	211		0.48				0.48		
High Density											
Demand Stage 3				1.38	1.38				2.76	2.37	5.13
Demand Stage 2 & Stage 3 with Mattamy Residential Lands				3.64	2.19			2.76	8.59	6.24	14.83
Stages 4 (including the Mattamy Lands and Aggregate Extraction Areas)											
Schools											
Commercial											
Commercial (Mattamy)	2.13						1.23		1.23		
Single		158	537	1.12					1.12	1.92	
Townhouse		217	586		1.34				1.34		
High Density											
Brazeau	24.76	1,194		1.56	0.87	0.17	0.39	0.85	3.84	2.67	
Drummond	20.15	958		1.25	0.69	0.15	0.33	0.72	3.14	2.14	
Demand Stage 4				3.93	2.90	0.32	1.95	1.57	10.67	6.73	17.40
Overall Demand (Stages 2 & 3 & 4 with Mattamy Lands and Aggregate Extraction Areas)				7.57	5.09	0.32	1.95	4.33	19.26	12.97	32.23

¹ Average Daily Demand, Single Family Homes, L/s

² Average Daily Demand, Multi-Units (Townhouses and Back-to-Back Units), L/s

³ Average Daily Demand, Apartment Units, L/s

⁴ Average Daily Demand, Commercial, L/s

⁵ Average Daily Demand, Institutional, L/s

⁶ Outdoor Water Demand, L/s, calculated as 1,049 L per SFH unit per day

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Simulation results under the above phases have been summarized in the following sections.

2.5 Simulation of Fire Flow

Various Design Guidelines are used throughout North America to establish fire flow requirements for different types of buildings. The Guidelines entitled "Water Supply for Public Fire Protection (1999)" developed by the Fire Underwriters Survey (FUS) govern fire flow protection requirements along public rights-of-way (ROWs) within the City of Ottawa. Fire flow requirements will be calculated as part of the upcoming HNA that will be part of detailed design. Once this detailed information is available, the required fire flow (RFF) will be estimated in accordance with ISTB TB-2014-02 and ISTB-2018-02. These Technical Bulletins allow to cap the RFF for singles and townhouses provided that the distance between the back of the units exceeds 10 m and that the town block not exceed seven units and 600 m² in building area. When the distance between the back of the units or between a back and side of an adjacent unit is less than 10 m, the RFF cannot be capped. Similarly, RFF associated with back-to-back units cannot be capped either. Based on the Concept Plan and Draft Plan of Subdivision and the information described above, the RFF has been summarized in Table 2-3 (below) as per the FUS, and the Technical bulletins noted above.

Table 2-3: FUS Fire Flow Requirements

Residential Unit	Required Fire Flow (L/s)	
	Separation > 10 m	Separation < 10 m
Single	167	250
Row Townhouse	167	250
Back-to-Back	250	250
Stacked Townhouse	167	167

The above RFF was targeted in this potable water assessment; however, at detailed design, should the distribution system found not to be capable of fulfilling the RFF for back-to-back units or units with a separation less than the 10 m, then 2-hour rated fire walls will be recommended to lower the RFF.

2.6 Hydraulic Boundary Conditions and Watermain Sizing and Roughness

An extract of the City wide water model was used as part of the BSUEA MSS to investigate the performance of the distribution system. The model's extract, part of the Pressure Zone 3C, included boundary conditions at; i) two (2) connection points under existing conditions (2016), and ii) three (3) connection points under build-out conditions (2031). The same model extract was used in this analysis to assess the performance of the proposed water distribution under the three (3) phases described in Section 2.4.

The existing (2016) supply characteristics was used to simulate Phase 1 as well as for Phases 1 and 2 (refer to Section 2.4 for details) while the build-out (2031) condition was used to simulate Phases 1, 2 and 3 given that the third reservoir reflects the additional supply that will occur from the new connector link along Regional Road 19 (River Road) will be constructed as per the Infrastructure Master Plan. The supply characteristics have been summarized in Table 2-4 below.

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Table 2-4: Boundary Condition Head Elevations

Scenario	Node Location	Basic Day (m)	Peak Hour (m)	Max Day Plus Fire (m)
2016	3236	146.8	143.0	145.0
2016	18595	146.7	141.0	143.0
2031	3236	146.7	141.8	144.2
2031	18595	146.6	140.0	143.0
2031	F_MWL3	146.1	135.4	140.3

Watermain roughness coefficients used in this analysis were set based on the friction factors presented in Section 4.2.12 of the Design Guidelines and summarized in Table 2-5 below. The internal pipe diameters were modelled based on Section 4.3.5 of the Design Guidelines, as summarized in Table 2-6 below.

Table 2-5: Watermain Roughness Coefficients

Watermain Diameter	C-Factor
150 mm	100
200 to 250 mm	110
300 to 600 mm	120
Over 600 mm	130

Table 2-6: PVC Watermain Internal Diameters

Nominal Diameter	Inside Diameter
150 mm	155 mm
200 mm	204 mm
300 mm	297 mm
400 mm	393

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Quinn's Pointe Stage 2

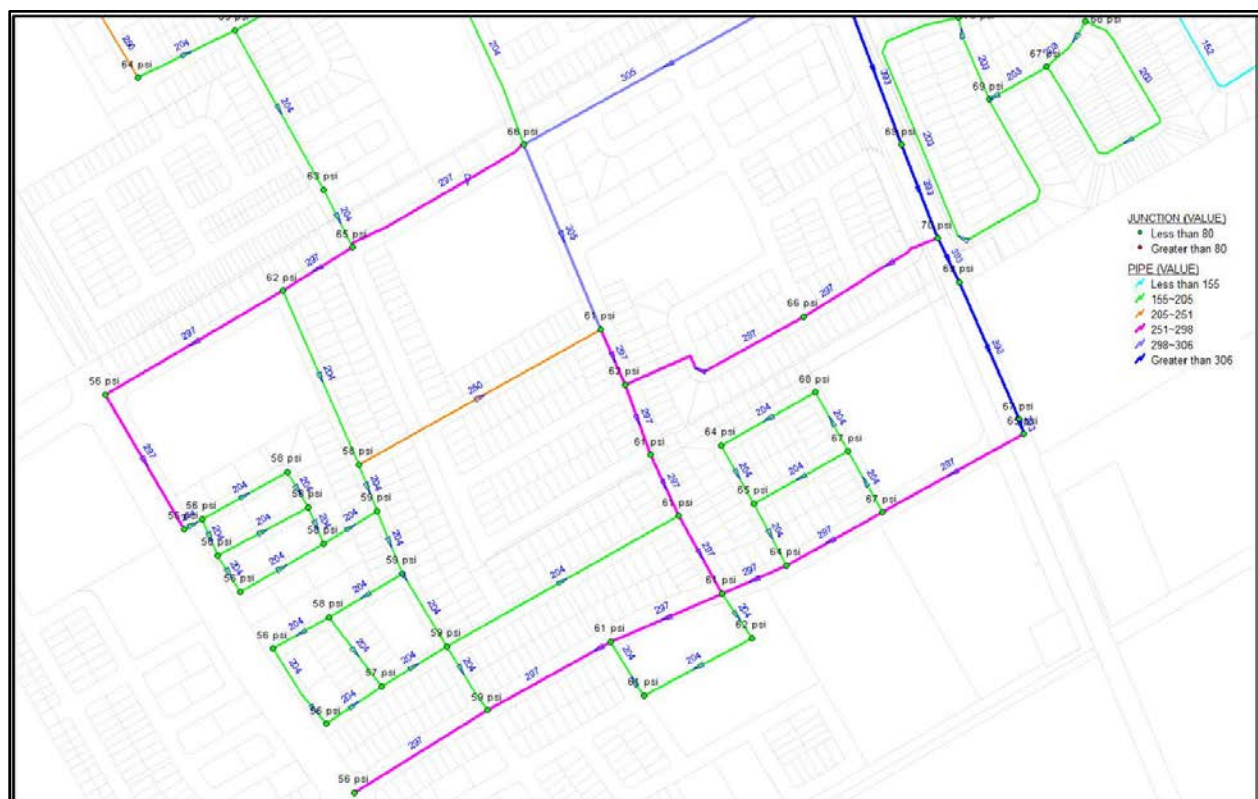
The performance of the proposed watermain was evaluated using the model extract, which includes all developed areas serviced by the twin 400 mm diameter feeder mains along Jockvale Road. The water model was updated by incorporating the demands associated with Stage 2 (including Blocks 622, 625, 623 and 624, as described in Section 1.4) under the 2016 supply characteristics for both domestic and maximum day plus fire flow conditions. In addition to the watermain part of Stage 2, a section of the New Greenbank Road 300 mm diameter feeder main (± 175 m) was added to the servicing (i.e., watermain section adjacent to Block 622) to increase fire flow availabilities in the northern portion of Stage 2. Therefore, this ± 175 m section of the feeder main will need to be constructed as part of the Phase 1 works (i.e., Stage 2) in order to achieve the RFF. Watermain servicing for Stage 2 is shown on Figure 2-2, and will be confirmed at detailed design via a detailed HNA, simulation results are as follows:

Basic Day Demand

- The simulated hydraulic grade line (HGL) elevations were found to be constant at 146.8 m; and
- The simulated pressures (refer to Figure 2-2) were found to range between 54.9 psi (379 kPa) to 68.1 psi (469 kPa).

Based on the above simulation results, no Pressure Reducing Valves (PRVs) are required as the maximum pressure criterion of 80 psi (552 kPa) was not exceeded.

Figure 2-2: Stage 2 Basic Day Simulation Results

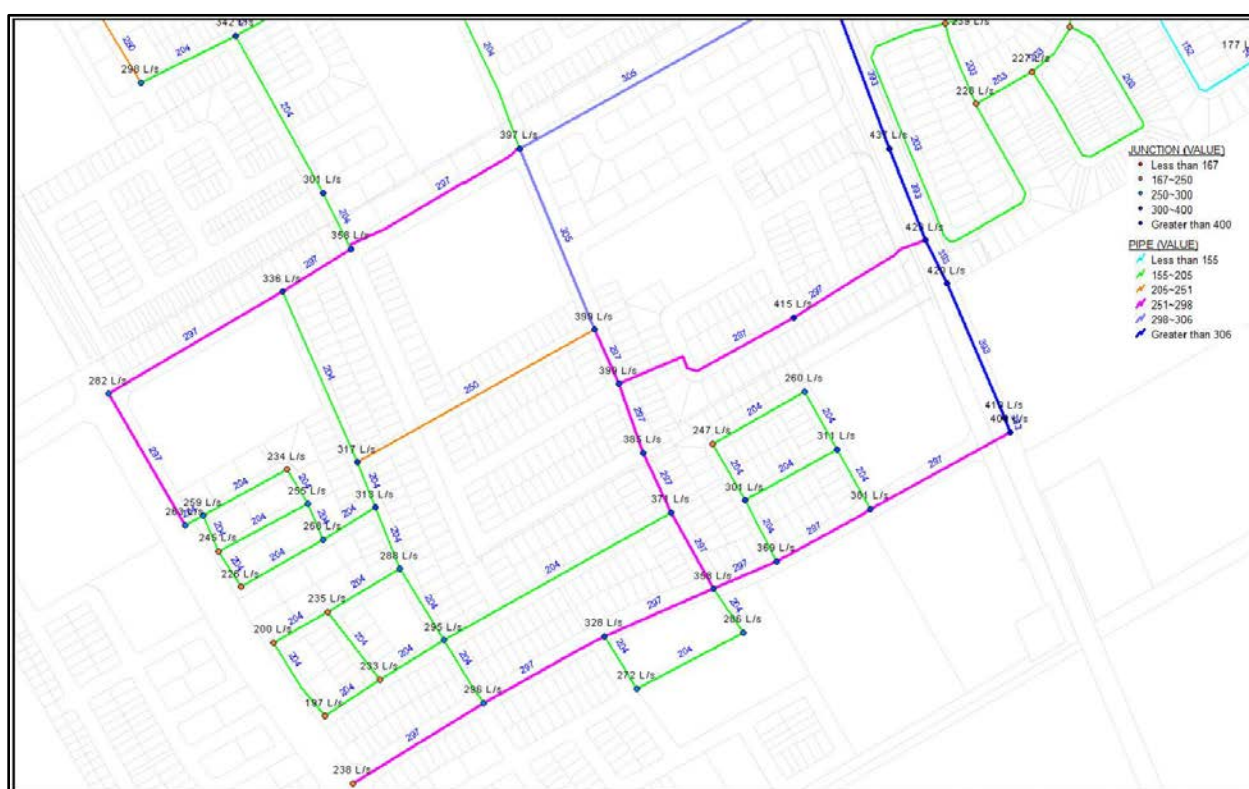


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The watermain layout as depicted on Drawing CWM (including the southerly section of the New Greenbank Road 300 mm diameter feedermain) was found to be capable of delivering fire flows ranging between 11,820 L/min (197 L/s) and 25,540 L/s (409 L/s) within Stage 2. As shown on Figure 2-4 (below), most of the nodes below 15,000 L/min (250 L/s) are associated with areas that will meet the minimum 10 m separation and, therefore, will only require to achieve 10,000 L/min (167 L/s). Fire flow availability for the back-to-back units (south of Block 622) were found to range between 13,560 L/min (226 L/s) and 16,080 L/min (268 L/s), which may not meet the RFF when calculated at detailed design. Should the distribution system not be capable to meet the RFF of the back-to-back at detailed design, then 2-hour rated fire walls would be recommended in those units to lower the RFF.

Figure 2-4: Stage 2 Maximum Day plus Fire Flow Simulation Results



2.7 Quinn's Pointe Stages 2 & 3

The performance of the proposed watermains was evaluated with the demands associated with Stages 2 & 3 (including the Mattamy residential Lands, as described in Section 1.4) under the 2016 supply characteristics for domestic and maximum day plus fire flow condition. To support this growth, it was determined via modelling that: i) a southerly section (± 260 m) of the New Greenbank Road 300 mm diameter feedermain (from Street No. 2 to Barnsdale Road) was required and, ii) an extension of the Greenbank Road 400 mm diameter feedermain up to Barnsdale Road was required as shown on Figure 2-5 (below). Simulation results for Stages 2 & 3 (Minto lands) are as follows:

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Basic Day Demand

- The simulated hydraulic grade line (HGL) elevations within Stages 2 & 3 were found to be constant at 146.7 m; and
- The simulated pressures (refer to Figure 2-5) within Stages 2 and 3 were found to range between 55 psi (379 kPa) to 68 psi (469 kPa).

Based on the above simulation results, no Pressure Reducing Valves (PRVs) are required within Stages 2 & 3 as the maximum pressure criterion of 80 psi (552 kPa) was not exceeded.

Figure 2-5: Stages 2 & 3 Basic Day Simulation Results



Peak Hour Demand

The performance of the distribution system was evaluated under a peak hour demand. Simulation results are as follows:

- The minimum HGL elevations encountered during this 72-hour simulation were found to range between 135.34 m and 135.36 m; and
- The minimum pressures encountered during this 72-hour simulation (refer to Figure 2-6) were found to range between 39 psi (269 kPa) and 52 psi (359 kPa) with the exception of two (2) nodes along the section of feedermain along New Greenbank Road where a simulated pressure of 39 psi (269 kPa) was found; however, this section of the 400 mm

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diameter feedermain will not provide any direct service connections. Consequently, the minimum pressure criterion of 40 psi (276 kPa) is met.

Figure 2-6: Stages 2 & 3 Peak Hour Simulation Results (Minimum Pressure)



Maximum Day plus Fire Flow

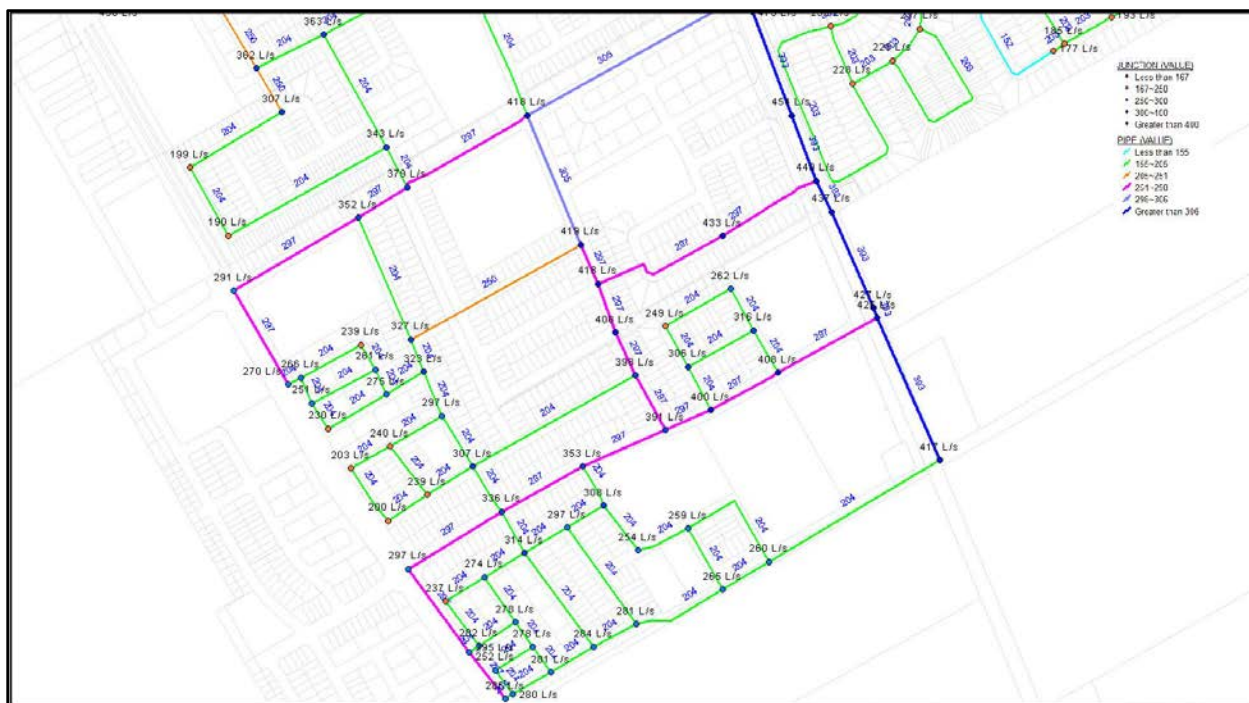
To ensure adequate fire protection, a maximum day demand was simultaneously combined with a fire flow along the proposed watermains part of Stages 2 & 3. As per Section 2.5, a RFF of 10,000 L/min (167 L/s) was targeted in this analysis with an increased RFF of 15,000 L/min (250 L/s) when the capped fire flow cannot be applied.

The watermain layout as depicted on Drawing CWM was found to be capable of delivering fire flows ranging between 12,000 L/min (200 L/s) and 265,620 L/s (427 L/s) within Stages 2 and 3. As shown on Figure 2-7, most of the nodes below 15,000 L/min (250 L/s) are associated with areas that will meet the minimum 10 m separation and, therefore, will only require 10,000 L/min (167 L/s). However, fire flow availability for the back-to-back units (i.e., south of Block 622) or units with flankage (with less than 10 m separation), may not meet the RFF when calculated at detailed design. Should the distribution system found not be capable of meeting the RFF at detailed design, 2-hour rated fire walls will be introduced in the back-to-back units or units with flankage to lower the RFF.

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Figure 2-7: Stages 2 & 3 Maximum Day plus Fire Flow Simulation Results



2.8 Quinn's Pointe Stages 2, 3 & 4

The performance of the proposed watermain was evaluated with the demands associated with Stages 2, 3 & 4 as described in Section 1.4 (including the Mattamy and aggregate extraction areas) using the 2031 supply characteristics under domestic and maximum day plus fire flow conditions. Modelling of Stages 2, 3 & 4 indicated that the two (2) sections of the New Greenbank Road 300 mm diameter feedermain as previously noted in Section 2.8 was sufficient to meet regulatory requirements. Simulation results for all stages of Quinn's Pointe are as follows:

Basic Day Demand

- The simulated hydraulic grade line (HGL) elevations within all stages of Quinn's Pointe were found to be constant at 146.4 m; and
- The simulated pressures (refer to Figure 2-8) within all Stages of Quinn's Pointe were found to range between 50.4 psi (347 kPa) to 67.7 psi (467 kPa).

Based on the above simulation results, no Pressure Reducing Valves (PRVs) are required as the maximum pressure criterion of 80 psi (552 kPa) was not exceeded.

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Figure 2-8: Stages 2, 3 & 4 Basic Day Simulation Results



Peak Hour Demand

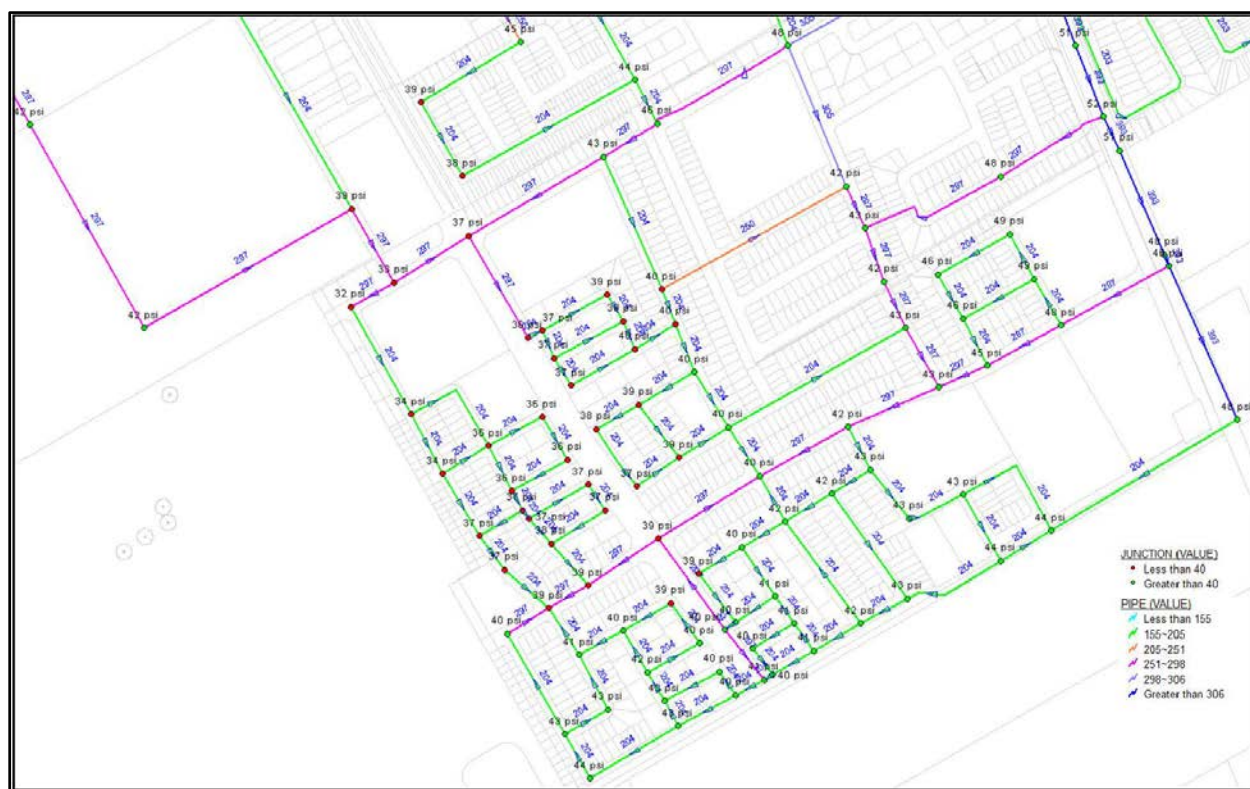
The performance of the distribution system was evaluated for Stages 2, 3 & 4 under a peak hour demand. Simulation results are as follows (Figure 2-9):

- The minimum HGL elevations encountered during this 72-hour simulation were found to constant at 133.6 m; and
- The minimum pressures encountered during this 72-hour simulation (refer to Figure 2-9) were found to range between 32.1 psi (221 kPa) and 49.4 psi (340 kPa). In general, nodes under 40 psi (275 kPa) are located within an area bounded by: New Greenbank Road to the east, by Street No. 2 to the south, by Street No. 23 to the west and by Street No. 1.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

Figure 2-9: Stages 2, 3 & 4 Peak Hour Simulation Results (Minimum Pressure)



Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

Figure 2-10: Stages 2, 3 & 4 Peak Hour Simulation Results (Average Pressure)



Maximum Day plus Fire Flow

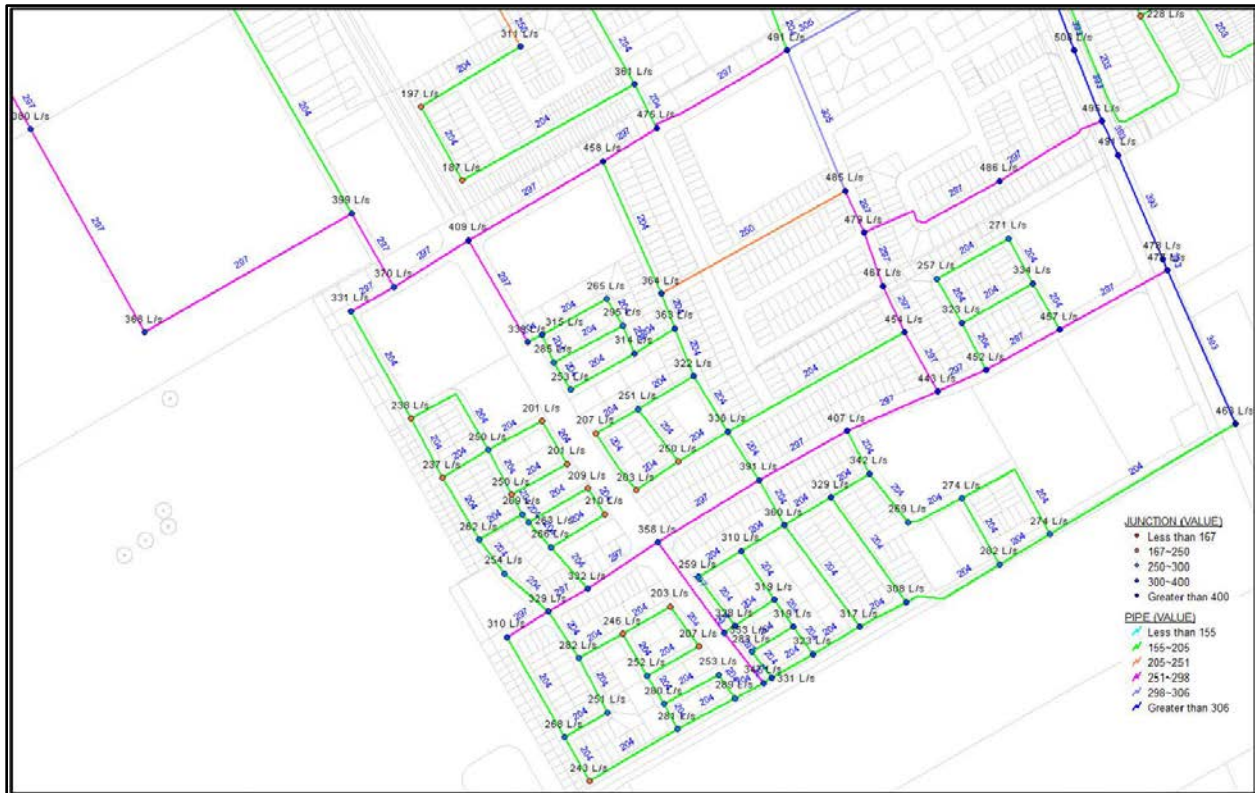
To ensure adequate fire protection, a maximum day demand was simultaneously combined with a fire flow along the proposed watermain part of Stages 2, 3 & 4. As per Section 2.5, a minimum fire flow of 10,000 L/min (167 L/s) was targeted in this analysis with an increased RFF of 15,000 L/min (250 L/s) when the capped fire flow cannot be applied.

The watermain layout as depicted on Drawing CWM was found to be capable of delivering fire flows ranging between 12,060 L/min (201 L/s) and 19,920 L/s (332 L/s) within Stage 4. As shown on Figure 2-11, most of the nodes below 15,000 L/min (250 L/s) are associated with areas that will meet the minimum 10 m separation and, therefore, will only require 10,000 L/min (167 L/s). However, fire flow availability for the back-to-back units along Streets 27 and 28 south will likely not meet the RFF when calculated at detailed design. Should the distribution system be found not be capable of meeting the RFF at detailed design, 2-hour rated fire walls will be introduced in the back-to-back units to lower the RFF. The review of the fire flow availability for the units with flankage (i.e., less than the 10 m separation) exceed the 15,000 L/min (250 L/s) as those units are fronting onto Street No. 2.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

Figure 2-11: Stages 2, 3 & 4 Maximum Day plus Fire Flow Simulation Results



2.9 Summary and Conclusions

Based on the updated potable water assessment, the water distribution system shown on the Conceptual Site Servicing Plan (Drawing CS1) in Appendix 'E', was found to fulfill the demands and pressure criteria under both domestic and fire flow conditions. However, it is recommended that mitigation measures be explored at detailed design for the units not providing the minimum 40 psi (275 kPa). In addition, if at detailed design the distribution system cannot meet the RFF, 2-hour fire walls will be introduced to reduce the RFF. As previously noted, the HNA will be further refined and water servicing specifics such as local watermain and service lateral sizing, hydrant spacing and watermain looping will be addressed at the engineering detailed design stage. The HNA will demonstrate that the proposed water distribution system within the Stages 2, 3 & 4 can deliver water during the peak hourly and maximum day plus fire flow conditions while meeting the pressure requirements prescribed in Design Guidelines.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

3.0 WASTEWATER SERVICING

3.1 Background

Wastewater servicing in Quinn's Pointe Stages 2, 3 & 4 was conceptually designed as part of the BSUEA MSS to outlet to existing gravity sanitary sewers in the Barrhaven South Community, which outlet to the existing Greenbank Road 900 mm diameter trunk sanitary sewer. The existing Greenbank Road trunk sanitary sewer ultimately discharges to the South Nepean Collector (SNC) and to the West Rideau Collector (WRC) which, in turn, outlets to the Robert O. Pickard Environmental Centre (ROPEC) where wastewater is processed and treated prior to discharge into the Ottawa River.

3.2 Design Criteria

Trunk sanitary sewers located within Quinn's Pointe Stages 2, 3 & 4 were designed as part of the BSUEA MSS in accordance with the design criteria summarized below, in accordance with Technical Bulletin ISTB-2018-01.

Table 3-1: Design Criteria

Criteria	Value (units)
Residential Average Flow Rate	280 L/capita/day
Commercial/Institutional average flow rate	28,000 L/ha/day
Residential peaking factor	Harmon formula
Commercial/Institutional peaking factor	1.5
Infiltration allowance	0.33 L/s/ha
Manning roughness coefficient	0.013
Minimum velocity	0.6 m/s
Maximum velocity	3.0 m/s

3.3 Proposed Sanitary Servicing and Calculations

Theoretical residential wastewater peak flows generated in the Quinn's Pointe Stages 2, 3 & 4 were calculated as part of the BSUEA MSS. Population forecasts used to calculate peak flows were obtained using the projected number of residential units and corresponding population densities prescribed in the 2012 Design Guidelines. Four (4) different types of residential densities were identified in the subdivision concept plan and a corresponding population was calculated for each unit type. Appendix 'C' contains the 2018 MSS design sheets with flow allocations along with the residual capacities for the critical reaches downstream of the proposed development.

Based on the land uses identified on the Draft Plan of Subdivision in Appendix 'A' and the projected residential populations, theoretical peak wastewater flows for Quinn's Pointe Stage 2, 3 & 4 were calculated as per the criteria in Table 3-1 and are summarized in Table 3-2 below. The Park and Ride block was assumed to have four (4) washbasins that deliver 375 L/d and four (4) water closets that generate 150 L/hr for 10 hr/day resulting in a total flow of 7,500 L/day, as per the BSUEA MSS. The community park (block 624) was assumed to generate 4L/s.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

Table 3-2: Sanitary Design Flow Summary

Area Type	Area	Unit Count	Unit Density	Average Flow	Peak Flow	Infiltration Flow	Total Flow
Singles	52.55 ha	538	3.4 person/unit	280 L/cap/day	31.8 L/s	17.3 L/s	49.1 L/s
Towns		321	2.7 person/unit	280 L/cap/day			
Back-to-Back Towns		172	2.7 person/unit	280 L/cap/day			
Future Condos		115*	1.8 person/unit	280 L/cap/day			
Schools	4.79 ha	-	-	28,000 L/ha/d	2.3 L/s	1.6 L/s	3.9 L/s
Commercial	0.32 ha	-	-	28,000 L/ha/d	0.16 L/s	0.11 L/s	0.27 L/s
Parks	4.25 ha	-	-	4 L/s	4 L/s	1.4 L/s	5.4 L/s
Park and Ride	2.55 ha	-	-	7,500 L/day	0.09L/s	0.84 L/s	0.93 L/s
Total	64.46 ha						59.6 L/s
*Note: The Condo unit count is theoretical and as per 2018 BSUEA MSS. The Condo block peak flow to be verified at detailed design and site plan approval.							

As per the table above, a total peak wastewater flow of 59.6 L/s was calculated for Quinn's Pointe Stages 2, 3 & 4. This is based on a total population of 3360 people based on the draft plan provided in Appendix 'A'. The peak flow is slightly more (2.34 L/s) than the allocated flow in the 2018 MSS based on the design sheets for the BSUEA (Appendix 'C') however the existing downstream sanitary sewers can accommodate this additional peak flow as the critical reach on the downstream system on existing Greenbank Road has an adequate additional capacity (refer to Appendix 'C' for residual capacity tables). Furthermore the excess in flow represents less than 1% of the residual capacity. Populations based on unit counts will be verified at detailed design and the peak flow may be refined.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

3.4 Proposed Wastewater Servicing

A trunk sanitary sewer system for Quinn's Pointe Stage 2, 3 & 4 was developed as part of the BSUEA MSS. Sanitary sewers were sized based on the design criteria identified in Table 3-1 and the drainage areas depicted on the Master Sanitary Drainage Area Plan (Drawing MSAN) provided in Appendix 'C'. Trunk sanitary sewers servicing the Stage 2 lands will outlet to the following three (3) existing sewers, as per the 2018 BSUEA MSS:

1. Existing Greenbank Road
2. Kilbirnie Drive
3. Fameflower Street

Details associated with the three outlets are presented below:

1. Greenbank Road Outlet

Wastewater generated by the majority of the proposed development (i.e., ±58.6 ha) will outlet to the existing 600 mm diameter Greenbank Road trunk sanitary sewer (± 420 m north of Barnsdale Road). Wastewater generated from Quinn's Pointe Stages 2, 3 & 4 will be conveyed to the Greenbank Road trunk via two main trunk sanitary sewers: i) along Street No. 2, and ii) along the southern limit of the Stage 2 lands/Barnsdale Road, as shown on the Conceptual Site Servicing Plan (CS1). The majority of the lands situated to the north of Street No. 2 will outlet to the Street No. 2 trunk, while Stage 3 & 4 lands to the south of the Street No. 2 will outlet to the trunk sewer located along the southern site limit of the site and Barnsdale Road. Both trunk sanitary sewers will range in size between 200 mm and 450 mm in diameter.

An extension of the existing Greenbank Road trunk sanitary sewer is required to provide the necessary connections to the proposed trunks and therefore a portion of the trunk will need to be constructed as part of Stage 2. A 525 mm diameter trunk will be constructed as part of Stage 3 to convey wastewater along Greenbank Road from Barnsdale Road to the Street No. 2 (MH 538-519 on drawing CSAN in Appendix 'C') and a 600 mm diameter trunk sewer will convey wastewater from Street No. 2 to the existing sewer at MH EX120 (refer to drawing CSAN in Appendix 'C').

Some of the existing wastewater generated from the existing Quinn's Pointe Stage 1 development (±1.12 ha) will be redirected away from the existing River Mist Road trunk sanitary sewer to the Greenbank Road sanitary sewer via the Stage 2 sanitary sewers. The purpose of this diversion is to increase the available capacity in the River Mist Road sanitary sewer in order to accommodate additional peak flows generated from the Stage 2 development and discharging to the Kilbirnie Drive sanitary sewer.

2. Kilbirnie Drive Outlet

Wastewater generated by residential units and the school (Block 622) fronting Kilbirnie Drive east of New Greenbank Road, as well as the northern portion of Street No. 3 will outlet to the existing 200 mm diameter sewer on Kilbirnie Drive at existing MH10. The existing Kilbirnie Drive local sanitary sewer conveys wastewater easterly to the River Mist Road sanitary sewer which ultimately outlets to the Greenbank Road trunk sewer.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

3. Fameflower Street Outlet

The commercial block, located west of New Greenbank Road, will be serviced by a local 200 mm diameter sewer within Mattamy's future BSUEA residential lands to the north that will outlet to the existing 200 mm diameter sanitary sewer located on Fameflower Street at MH EX 217. The existing Fameflower Street sewer conveys wastewater to the Dundonald Drive sanitary sewer, which ultimately outlets to the existing River Mist Road sanitary sewer. In the BSUEA MSS, Minto's 0.32 ha commercial block formed part of a larger 2.13 ha block. Should development of Minto's portion of the commercial block proceed in advance of the commercial block to the north or Mattamy's residential development, then alternate sanitary servicing could be provided via a local sanitary sewer on Street No. 23.

3.5 Summary and Conclusions

Wastewater servicing for Quinn's Pointe Stage 2, 3 & 4 will be provided in accordance with the 2018 BSUEA MSS and will include trunk sanitary sewers shown on the Conceptual Servicing Plan (Drawing CS1) and three (3) connections to existing sanitary sewers on existing Greenbank Road, Kilbirnie Drive and Fameflower Street.

4.0 STORM SERVICING AND STORMWATER MANAGEMENT

4.1 Background

Storm servicing and stormwater management for Quinn's Pointe Stages 2, 3 & 4 was conceptually designed as part of the BSUEA MSS to convey runoff via minor and major system drainage systems to the existing 1800 mm diameter trunk storm sewer on existing Greenbank Road (\pm 420m north of Barnsdale Road). The existing Greenbank Road trunk storm sewer ultimately discharges to the Jock River via the existing Corrigan Stormwater Management Facility. As part of the BSUEA MSS, it was also proposed that the traditional minor storm sewer system be supplemented by an Etobicoke Exfiltration System (EES) to preserve pre-infiltration levels.

4.2 Design Criteria

The functional design of the storm sewer system was developed for Minto's Quinn's Pointe Stages 2, 3 & 4 lands as part of the BSUEA MSS in accordance with the City of Ottawa 2012 Sewer Design Guidelines (OSDG) and Technical Bulletin PIEDTB-2016, while the sizing of the Stormwater Management Facilities (SWMFs) was based on the Ontario Ministry of Environment (MOE) 2003 Stormwater Management Planning and Design Manual (SWMPDM). Specifics and design criteria that will be applied at detailed design for both minor and major systems are described below.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

4.2.1 Minor System

Design Capture and Level of Service

- Minimum 1:2 year capture for local and collector roads
- 1:10 year capture for arterial roads.

Design Flows

- Initial sizing of the storm sewers with Rational Method design sheets and final sizing confirmed with a HGL analysis;
- IDF Rainfall statistics as per OSDG;
- Time of concentration (T_c) based on a minimum inlet time of 10 minutes;
- Runoff coefficients based on recently approved developments of similar nature as per Section 5.4.5.2.2 of the OSDG (to be verified at the detailed design stage).

Sewer Design Criteria

Design Criteria as per the OSDG

- Minimum velocity 0.80 m/s;
- Maximum velocity 6.0 m/s;
- Manning roughness coefficient 0.013;
- Minimum allowable slopes as per Table 6.1 of the OSDG;
- Minimum depth of cover 2.0 m;
- Minor losses at maintenance holes set in accordance with Appendix 6B of the OSDG;

Minor system flows to be restricted with inlet control devices (ICDs) with minimum capture of 1:2 year for local roads and collector roads and 1:10 year for arterials.

4.2.2 Major System

Maximum Flow Velocity on Streets

The product of velocity (m/s) and depth (m) of overland flow on streets shall not exceed 0.6 m²/s under the 1:100 year design event.

Major System Flow Outlets

Major system flow is to be conveyed and outlet to a watercourse or a SWMF. Given that the lands abut and are bisected by both existing Greenbank Road and new Greenbank Road major system flows cannot cross either of these arterials, as per the OSDG.

Road types and Allowable Flow Depths

- Local: 350 mm at edge of pavement
- Collector: 250 mm at edge of pavement
- Urban Arterial: No barrier curb overtopping; arterial should be designed to leave one lane free of water in each direction during the 1:100 year design storm
- In the absence of barrier curbs, flow shall not encroach into adjacent private property.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

4.2.3 Stormwater Management Facilities (SWMFs)

SWMFs designed in accordance with Section 8 of the OSDG, the Draft Stormwater Management Facility Design Guidelines (2012) and MOE's publication entitled "SWM Planning and Design Manual, 2003".

For safety reasons, the live storage in dry ponds is kept to a maximum depth of 1.5 m as per the OSDG. A minimum 300 mm freeboard is provided between the 1:100 year water surface elevation and the overflow elevation.

4.2.4 Water Balance

The Hydrogeological Existing Conditions Report prepared by Paterson Group Inc. (Paterson) for the BSUEA (dated 2017) recommended that infiltration measures be incorporated into the BSUEA storm servicing since the area contributes to groundwater recharge of an esker, which should be preserved. Paterson recommended that:

- Distributed infiltration be achieved to promote recharge of overburden aquifer and to preserve the pre-infiltration condition for the three (3) subwatersheds; and,
- Only captured runoff that is relatively free of roadway salts be infiltrated to minimize adverse impacts on the esker.

An EES was, therefore, presented as part of the proposed storm strategy for the BSUEA to satisfy these requirements.

4.3 Proposed Storm Servicing

Two dry ponds are proposed to capture and control runoff generated in Stages 2 through 4 prior to discharging to the existing Greenbank Road trunk storm sewer, as shown on the Conceptual Site Servicing Plan (Drawing CS1) in Appendix 'E'. In accordance with the BSUEA MSS, the northern dry pond, will be sited on a ± 2.2 ha block to the north of Street No. 2 at the intersection with Greenbank Road and will service the majority of the Stage 2 development north of Street No. 2 and east of New Greenbank Road. A small portion (± 2.84 ha) of the development at the northeast corner will drain towards the existing Quinn's Pointe Stage 1 minor system which will also ultimately outlet to the northern dry pond.

A southern dry pond will be sited on a ± 2.8 ha block on the south side of Street No. 2 at the Greenbank Road intersection and will service Stages 2, 3 & 4 lands south of Street No. 2 as well as lands west of New Greenbank Road. In addition, for lands west of New Greenbank Road, since no major overland flow can cross New Greenbank Road, an additional spill-over dry pond is proposed at the southwest corner of the development. This dry pond will capture major overland flow generated on the west side of New Greenbank Road and release the captured flow, at a restricted rate, into the minor system, which in turn, will convey the restricted flows to the southern dry pond at Greenbank Road.

The capacity of the existing Greenbank Road trunk storm sewer system is detailed in the BSUEA MSS. The capacity of the existing Greenbank Road outlet sewer was confirmed by work undertaken by IBI, the model keeper for the Corrigan SWMF and the designer of the Greenbank Road trunk sewer system. IBI's Report entitled "Stormwater Management – Barrhaven South,

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

October, 2014" identified the following allowable peak flows extracted from their model at existing MH102 located at the Kilbirnie Drive and Greenbank Road intersection:

- 1:100 year Qp (3 hour Chicago) = 3.515 m³/s
- 1:100 year Qp (24 hour SCS) = 3.580 m³/s

Most of the above allowable peak flow is already utilized by the existing Quinn's Pointe Stage 1 subdivision to the north of the subject site. It is, therefore, proposed to integrate the servicing of existing Quinn's Pointe Stage 1 with proposed Stage 2 as follows, in accordance with the BSUEA MSS:

- Decommission and remove the existing spill-over dry pond currently servicing Quinn's Point Stage 1 which is currently located partly within the future stages lands. Flows in excess of the capacity of the Stage 1 minor and major systems will cascade to the proposed Stage 2, 3 & 4 northern dry pond at Block 628.
- Connect the outlet sewers of the proposed dry ponds to the existing 1800 mm diameter trunk storm sewer on Greenbank Road, complete with inlet control devices (ICD) to limit minor system flows to 3.5 m³/s, so as to respect the integrity of the existing downstream storm sewer system.

The above-noted retrofit would allow for the two proposed dry pond SWMFs to fully utilize the dedicated capacity of the Greenbank Road trunk storm sewer. The two dry ponds were sized as part of the BSUEA MSS to store runoff in excess of the restricted minor system release rate and up to the 1:100 year event.

As previously noted, the EES will be used in the subdivision to satisfy the infiltration criteria, in accordance with the BSUEA MSS. Due to the salting practice within the City, it is proposed to incorporate the EES on local roads where the captured runoff is relatively free of roadway salts (the current salting practice is that salt is not applied on local roads only on a regular basis). A conventional storm sewer system is proposed along collector and arterial Roads, including new Greenbank Road, Street No. 2 and Kilbirnie Drive, which are anticipated to be regularly salted.

There are locations where the traditional minor system will cross the EES systems. As part of the BSUEA MSS, Plan and profile drawings were prepared along the trunk storm sewers that confirmed feasibility and adequate clearance between the systems when intersecting. At detailed design, Plan and Profiles will be generated for local and collector roads where each crossing will be verified and its feasibility confirmed.

The EES will provide water quality treatment to 80% total suspended solids (TSS) removal and will achieve an enhanced protection, as discussed in the MSS. Consequently, no further water quality treatment downstream of EES sewers will be necessary for local roads. Water quality control will still be required for the areas draining to the conventional sewer system, including the arterial and collector roads, as well as any other land use areas with potential salt applications. Due to the smaller extent of these areas and the minimal runoff generated during frequent storm events, the proposed servicing strategy includes the provision of two (2) hydrodynamic separators (HDS) at the downstream end of the conventional storm sewer system: one on Street No. 2, at Greenbank Road and one on Kilbirnie Drive at Alex Polowin Avenue.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

4.4 Summary and Conclusions

The stormwater servicing and management concept, including EES, as presented in the 2018 BSUEA MSS, is proposed to provide stormwater servicing for Quinn's Pointe Stages 2, 3 & 4, as shown on the Conceptual Site Servicing Plan (Drawing CS1).

5.0 CONCLUSIONS

Servicing of Minto's Quinn's Pointe Stages 2, 3 & 4 development will generally consist of the following, in accordance with the 2018 BSUEA MSS, and as depicted on the Conceptual Site Servicing Plan and Conceptual Grading Plan at the back of this Brief:

- Water servicing will be provided by connections to existing watermains on Greenbank Road, Rivermist Road and Kilbirnie Drive and by new feeder mains located on New Greenbank Road, Street No. 2, Kilbirnie Drive and River Mist Road.
- Wastewater servicing will be provided by a local sanitary sewer system that will outlet to existing sanitary sewers on Greenbank Road, Kilbirnie Drive and Fameflower Street.
- Stormwater servicing will be provided by a conventional storm sewer system, an EES, three (3) dry ponds and two (2) hydrodynamic separators (HDS). Runoff will ultimately outlet to the existing Greenbank Road trunk storm sewer at a restricted release rate so as to maintain integrity of the downstream sewer system.

Servicing Brief

Quinn's Pointe Residential Stages 2, 3 & 4

This Report has been prepared for the exclusive use of Minto, for the stated purpose, for the named facility. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of Minto and may not be used or relied on by any other party without the express written consent of JLR.

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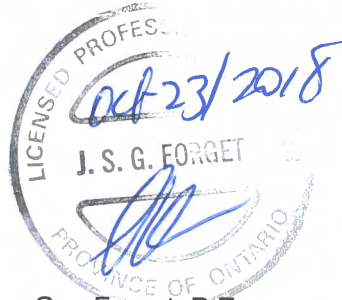
J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Alexandre Tourigny, EIT

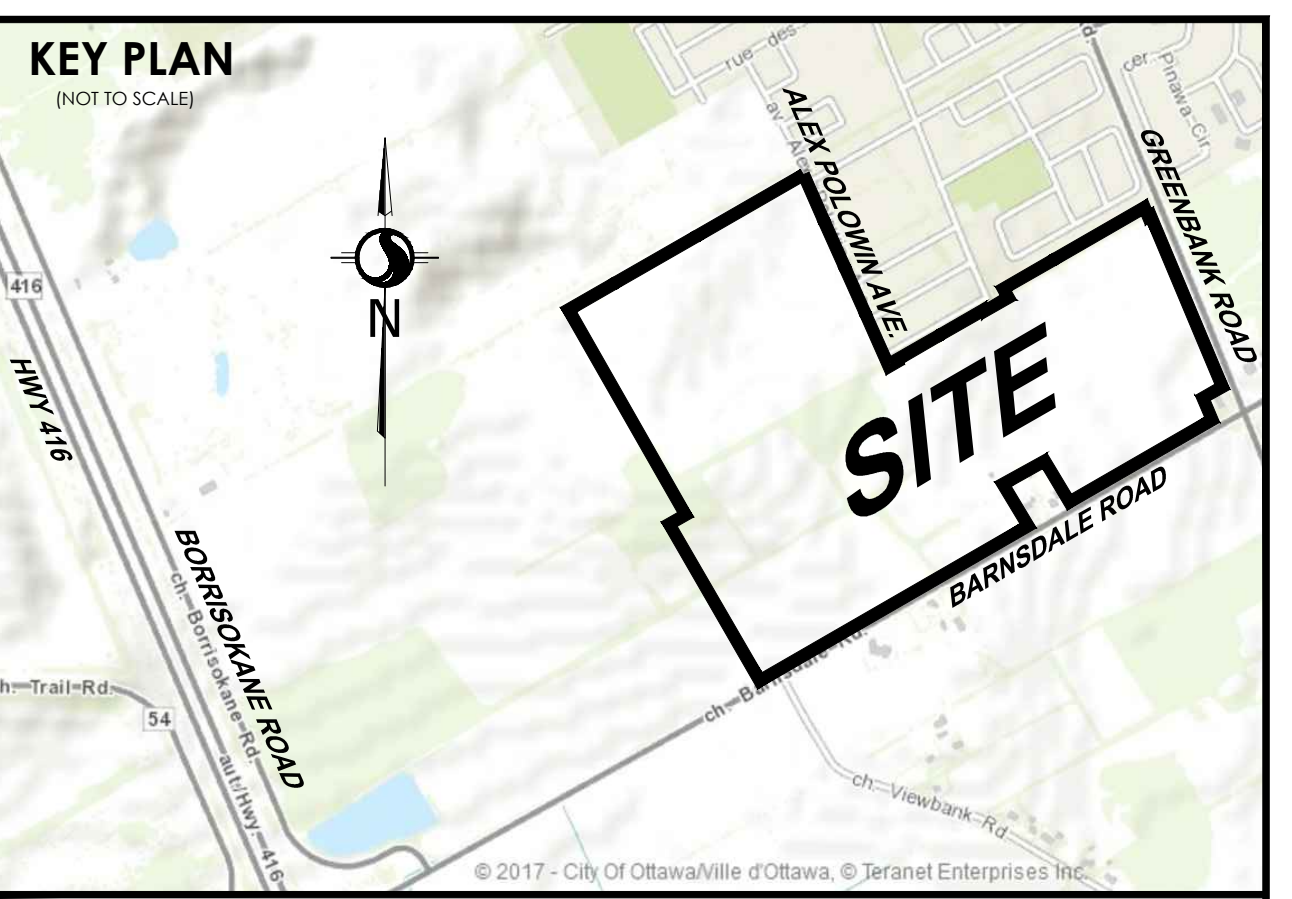
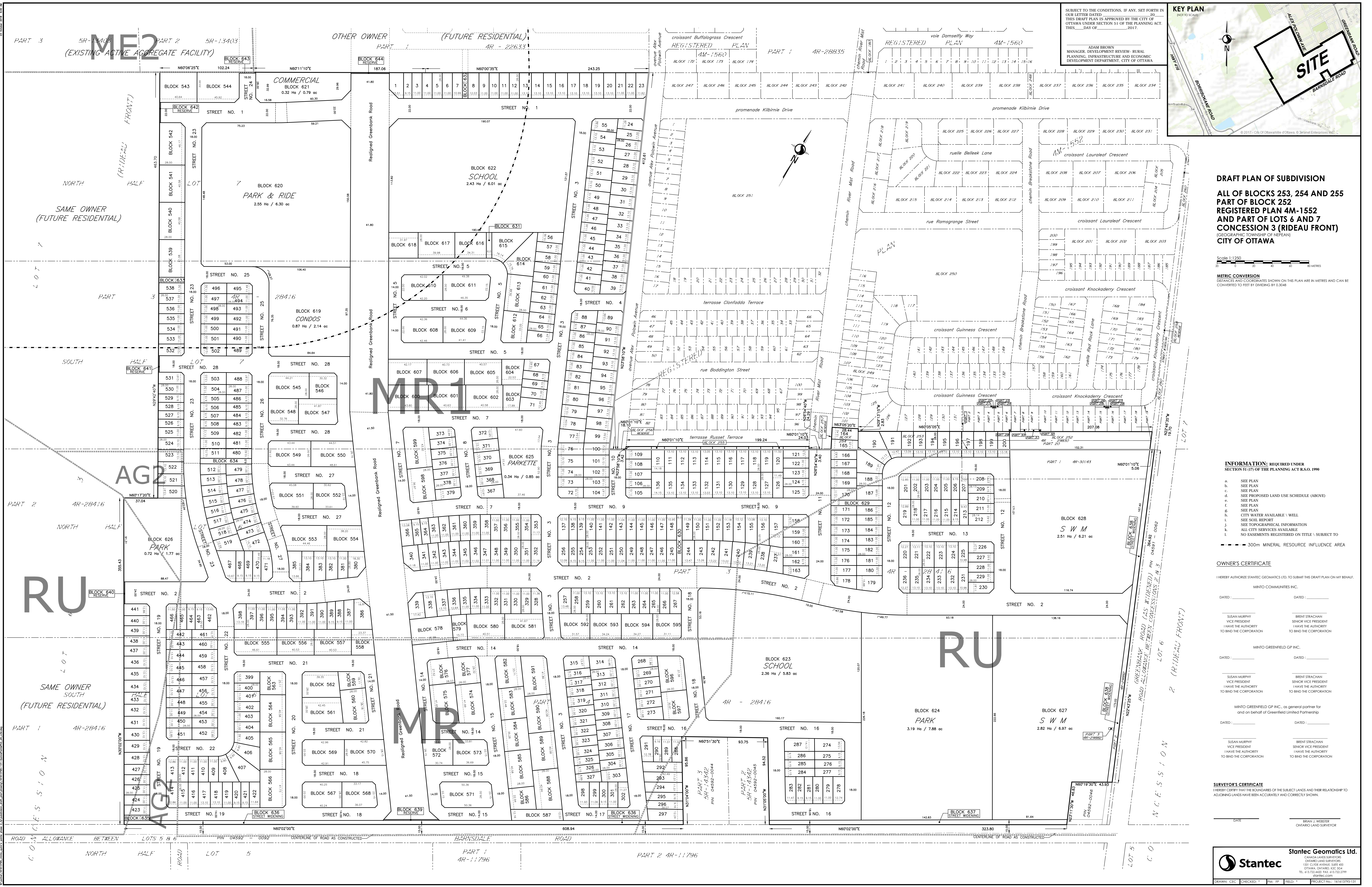
Reviewed by:



Guy Forget, P.Eng.

Appendix A

Draft Plan of Subdivision



DRAFT PLAN OF SUBDIVISION
ALL OF BLOCKS 253, 254 AND 255
PART OF BLOCK 252
REGISTERED PLAN 4M-1552
AND PART OF LOTS 6 AND 7
CONCESSION 3 (RIDEAU FRONT)
CITY OF OTTAWA

Scale 1:1250
METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE
CONVERTED TO FEET BY DIVIDING BY 0.3048

INFORMATION: REQUIRED UNDER
SECTION 51 (17) OF THE PLANNING ACT R.S.O. 1990

a.	SEE PLAN
b.	SEE PLAN
c.	SEE PLAN
d.	SEE PROPOSED LAND USE SCHEDULE (ABOVE)
e.	SEE PLAN
f.	SEE PLAN
g.	SEE PLAN
h.	CITY WATER AVAILABLE \ WELL
i.	SEE SOIL REPORT
j.	SEE TOPOGRAPHICAL INFORMATION
k.	ALL CITY SERVICES AVAILABLE
l.	NO EASEMENTS REGISTERED ON TITLE \ SUBJECT TO

--- 300m MINERAL RESOURCE INFLUENCE AREA

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE STANTEC GEOMATICS LTD. TO SUBMIT THIS DRAFT PLAN ON MY BEHALF.

MINTO COMMUNITIES INC.

DATED: _____	DATED: _____
SUSAN MURPHY VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION	BRENT STRACHAN SENIOR VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION

MINTO GREENFIELD GP INC.

DATED: _____	DATED: _____
SUSAN MURPHY VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION	BRENT STRACHAN SENIOR VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION

MINTO GREENFIELD GP INC., as general partner for
and on behalf of Greenfield Limited Partnership

DATED: _____	DATED: _____
SUSAN MURPHY VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION	BRENT STRACHAN SENIOR VICE PRESIDENT I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO
ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

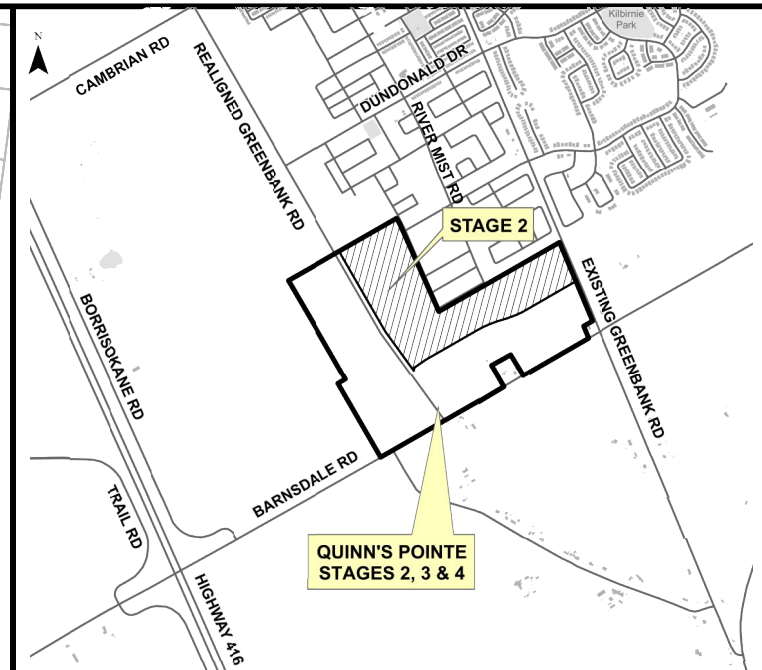
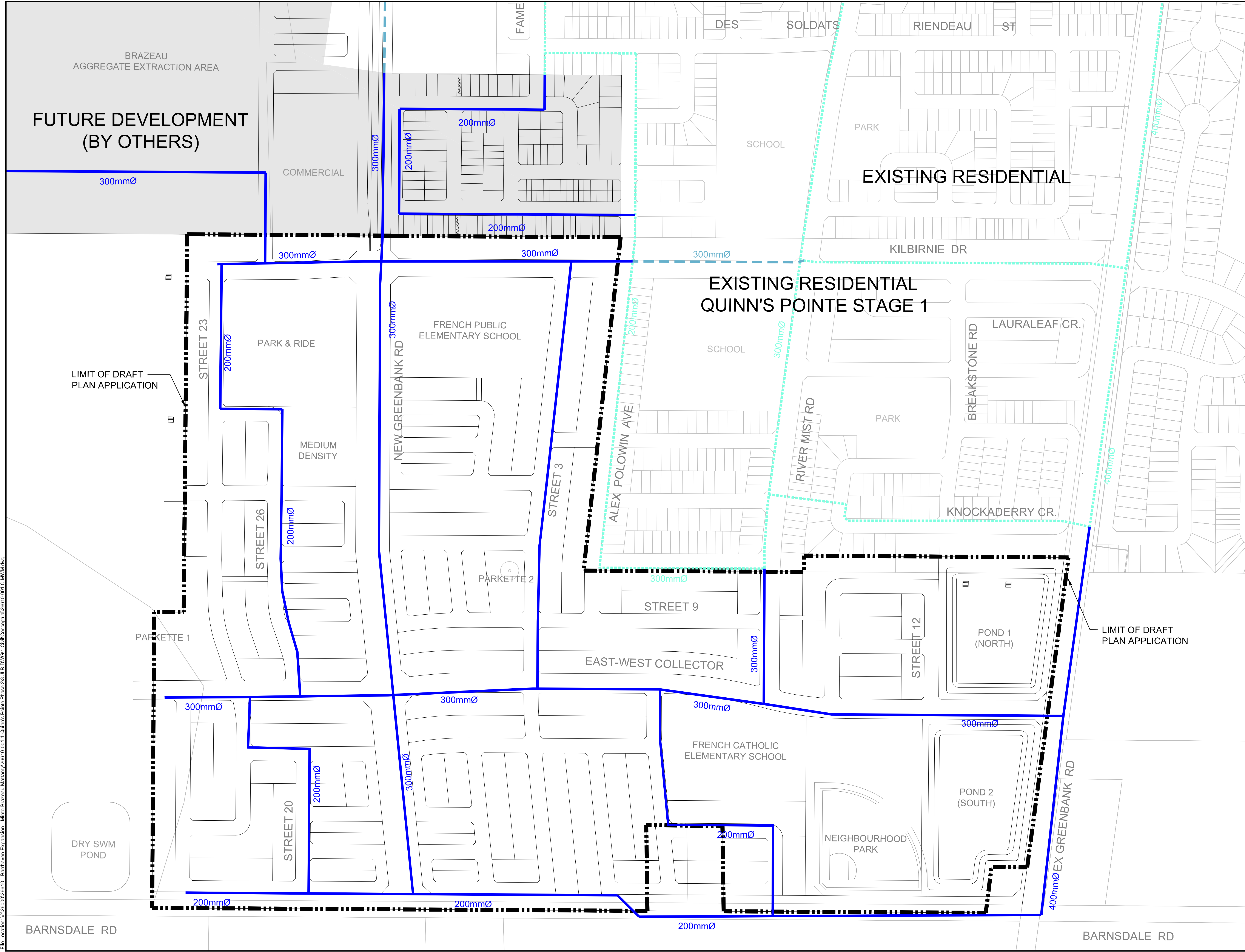
DATE _____

BRIAN J. WINTER
ONTARIO LAND SURVEYOR

Stantec Geomatics Ltd.
CANADIAN LAND SURVEYORS
1311 CLIVE AVENUE, SUITE 400
OTTAWA, ONTARIO K1G 3H4
TEL: 416-772-4400 FAX: 416-772-2779
STANTEC.COM

DRAWN: CEC CHECKED: * PM: TP FIELD: * PROJECT NO.: 16161375-13

Appendix B
Background Water Servicing
Documents



LEGEND	
—	PROPOSED WATERMAIN, PER 2018 BSUEA MSS
---	FUTURE WATERMAIN PER 2014 BS MSS
---	EXISTING WATERMAIN
---	LIMIT OF STUDY AREA FOR BSUEA

2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION		12/09/18
1	ISSUED WITH SERVICING BRIEF - 1st SUBMISSION		07/08/18
No.	ISSUE / REVISION		DD/MM/YY
This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.			
VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING.			
SCALE:		1:2000	

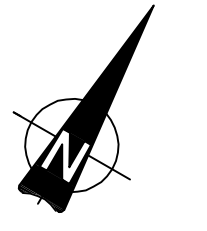
CLIENT:

CONSULTANT:

**J.L.Richards**
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH


PROJECT:

MINTO COMMUNITIES INC.
QUINN'S POINTE STAGES 2, 3 & 4

DRAWING:

BSUEA
CONCEPTUAL WATERMAIN

DESIGN: AT	DRAWING #:
DRAWN: CJM	CWM
CHECKED: LD	
JLR #: 26610-001.1	

File Location: V:\26610\26610 - Barrhaven Expansion - Minto Brazeau Mallany\26610-001.1 Quinn's Pointe Phase 2\3-JLR DWG\1-ChildConceptual\26610-001 C.MWM.dwg

PLOT DATE: September 13, 2018 9:22:03 AM

Appendix C
Background Wastewater
Servicing Documents

DESIGN PARAMETERS			
Residential Population Density	63.9	pers/ha**	q = 280 L/cap/day I = 0.330 L/s/ha Inst. = 28000 L/ha/day ICI Peaking Factor* = 1.0/1.5
Manning's Coeff. N =	0.013		

*ICI Peaking Factor = 1.5 if ICI in contributing area is >20%, 1.0 if ICI in contributing area is <20%

Portion of Contributing Flows from Existing Quinn's Pointe Stage 1 Subdivision

STREET	M.H. #		RESIDENTIAL										COMMERCIAL		INSTITUTIONAL				PLUG FLOW I/s	PEAK DES. FLOW I/s	SEWER DATA					RESIDUAL		UPSTREAM				DOWNSTREAM				ICI Peaking Factor	
	FROM	TO	SING.	MULT.	APT.	Infiltration Only Area (ha)	Residential Area ha	Total Area ha	POPUL. peop.	POPUL. peop.	AREA ha	PEAKING FACTOR	POPUL. FLOW I/s	AREA ha	CUMM. AREA ha	INST. FLOW I/s	AREA ha	CUMM. AREA ha			INST. FLOW I/s	PEAK EXTR. FLOW I/s	DIA. mm	SLOPE %	CAPAC. I/s	VEL. m/s	LENGTH m	CAP. I/s	Center Line	Obvert	Invert	Cover	Center Line	Obvert	Invert	Cover	ICI TOTAL
MINTO LANDS WITHIN BSUEA (OUTLETS TO RIVER MIST.)																																					
Kilbirnie Dr. (Street 1)	572	511					0.64	0.64	41	41	0.64	3.67	0.49		0.00	0.00	2.43	2.43	1.18	1.01					136.50	55.23	107.40	102.79	102.59	4.61	103.50	98.88	98.68	4.62	0.79	1.50	
Kilbirnie Dr.	511	512					0.82	0.82	52	93	1.46	3.60	1.09		0.00	0.00	0.00	2.43	1.18	1.28					97.52	27.05	103.50	98.88	98.68	4.62	103.40	98.10	97.90	5.30	0.62	1.50	
Street 3	514	512					1.07	1.07	68	68	1.07	3.63	0.80		0.00	0.00	0.00	0.00	0.00	0.35					212.06	28.28	105.60	99.67	99.47	5.93	103.40	98.10	97.90	5.30	0.00	1.00	
Kilbirnie Dr.	512	10 (ex.)							0	161	2.53	3.54	1.85		0.00	0.00	0.00	2.43	1.18	1.64					74.41	38.61	103.40	98.10	97.90	5.30	101.18	96.91	96.71	4.27	0.49	1.50	
Alex Polowin Ave.	13(ex.)	12(ex.)	5				0.46	0.46	29	29	0.46	3.69	0.35		0.00	0.00	0.00	0.00	0.00	0.15					74.36	33.89	105.32	101.76	101.56	3.76	104.96	101.01	100.81	3.97	0.00	1.00	
Alex Polowin Ave.	12(ex.)	11(ex.)	8				0.74	0.74	45	74	1.20	3.62	0.87		0.00	0.00	0.00	0.00	0.40	1.26					107.77	48.79	104.98	101.00	100.80	3.98	102.80	98.69	98.49	4.11	0.00	1.00	
Alex Polowin Ave.	11(ex.)	10(ex.)	9				0.71	0.71	47	121	1.910	3.58	1.40		0.00	0.00	0.00	0.00	0.63	2.03					103.97	41.92	102.80	96.67	98.47	4.13	101.20	96.95	96.75	4.25	0.00	1.00	
MINTO LANDS WITHIN BSUEA (OUTLETS TO EXISTING GREENBANK)																																					
Street 3	514	516					3.49	3.49	223	223	3.49	3.50	2.53		0.00	0.00		0.00	0.00	1.15					127.86	16.56	105.60	102.70	102.50	2.90	105.40	102.25	102.05	3.15	0.00	1.00	
Street 3	516	554				0.35	2.83	3.18	181	404	6.67	3.42	4.47		0.00	0.00		0.00	0.00	2.20					170.90	13.57	105.40	102.25	102.05	3.15	105.20	101.65	101.45	3.55	0.00	1.00	
Street 26	500	502			120		5.11	7.68	485	485	7.68	3.38	5.32		0.00	0.00		0.00	0.00	2.53					174.02	12.29	108.10	105.03	104.827	3.07	107.90	104.42	104.218	3.48	0.00	1.00	
Street 26	502	551					1.55	1.55	99	584	9.23	3.35	6.34		0.00	0.00		0.00	0.00	3.05					168.60	22.79	107.90	104.42	104.218	3.48	105.90	102.92	102.717	2.98	0.00	1.00	
East-West Collector	550	551				0.94	1.04	1.98	67	67	1.98	3.63	0.79		0.00	0.00		0.00	0.00	0.65					161.54	18.80	105.50	103.20	103.00	2.30	105.90	102.63	102.43	3.27	0.00	1.00	
East-West Collector	551	552					1.49	1.49	95	746	12.70	3.30	7.98		0.00	0.00		0.00	0.00	4.19					113.56	7.97	105.90	102.63	102.43	3.27	106.15	102.24	102.03	3.91	0.00	1.00	
East-West Collector	552	554				2.12	1.24	3.36	79	825	16.06	3.28	8.77		0.00	0.00		0.00	0.00	5.30					178.26	6.07	106.15	102.24	102.03	3.91	105.20	101.61	101.41	3.59	0.00	1.00	
East-West Collector	554	556					1.81	1.81	116	1345	24.54	3.17	13.82		0.00	0.00		0.00	0.00	8.10					13.62	105.20	101.61	101.36	3.59	103.55	100.64	100.38	2.91	0.00	1.00		
Street 4	517	564					2.07	2.07	132	132	2.07	3.57	1.53		0.00	0.00		0.00	0.00	0.68					282.43	23.94	105.30	102.10	101.90	3.20	103.65	100.45	100.25	3.20	0.00	1.00	
Alex Polowin Ave.	13 (ex.)	14 (ex.)	5				0.54	0.54	32	32	0.54	3.68	0.38		0.00	0.00		0.00	0.00	0.18					74.56	27.45	105.00	102.55	102.35	2.45	105.52	102.05	101.85	3.47	0.00	1.00	
Alex Polowin Ave.	14 (ex.)	90 (ex.)	7				0.65	0.65	36	68	1.19	3.63	0.80		0.00	0.00		0.00	0.00	0.39					112.06	31.98	105.00	102.00	101.80	3.00	103.96	101.95	101.75	2.01	0.00	1.00	
Russet Terrace	90 (ex.)	5 (ex.)	6				0.54	0.54	30	98	1.73	3.60	1.14		0.00	0.00		0.00	0.57	1.71					108.16	18.53	103.93	100.95	100.75	2.98	103.80	100.57	100.37	3.23	0.00	1.00	
River Mist Rd. (Street 11)	5 (ex.)	564					0.47	0.47	30	128	2.20	3.57	1.48		0.00	0.00		0.00	0.00	0.73					74.88	18.04	103.90	100.30	100.10	3.60	103.80	100.04	99.84	3.76	0.00	1.00	
River Mist Rd.	564	556					0.62	0.62	40	300	4.89	3.46	3.37		0.00	0.00		0.00	0.00	1.61					94.59	15.26	103.65	100.04	99.84	3.61	103.55	99.71	99.51	3.84	0.00	1.00	
East-West Collector	556	557							0	1645	29.43	3.12	16.63		0.00	0.00	2.12	2.12	0.69	10.41					44.25	45.31	103.55	99.71	99.46	3.84	102.78	99.09	98.84	3.69	0.07	1.00	
East-West Collector	557	558					0.68	0.68	43	1688	30.11	3.11	17.03		0.00	0.00	3.12	5.24	1.70	11.67					158.35	38.65	102.78	99.09	98.84	3.69	99.90	96.89	96.64	3.01	0.15	1.00	
Street 12	560	558					2.73	2.73	175	175	2.73	3.53	2.00		0.00	0.00		0.00	0.00	0.90					142.27	17.34	98.80	95.32	95.12	3.48	99.90	94.82	94.62	5.08	0.00	1.00	
East-West Collector	558	119				5.43	0.31	5.74	20	1883	38.58	3.08	18.82		0.00	0.00		5.24	1.70	14.46					150.71	38.52	99.90	93.71	93.32	6.20	99.55	93.43	93.05	6.12	0.12	1.00	
Street 22	521	522					2.17	2.17	139	139	2.17	3.56	1.60		0.00	0.00		0.00	0.00	0.72					37.09	39.59	105.18	102.18	101.98	3.00	104.50	101.62	101.42	2.88	0.00	1.00	
522	523								139	139	2.17	3.56	1.60		0.00	0.00		0.00	0.00	0.72					73.27	28.28	104.50	101.62	101.42	2.88	105.11	101.04	100.83	4.07	0.00	1.00	
523	524						1.95	1.95	125	264	4.12	3.48	2.98		0.00	0.00		0.00	0.00	1.36					164.00	15.90	105.11	101.04	100.83	4.07	103.50	100.46	100.26	3.04	0.00	1.00	
Street 19	520	524					2.06	2.06	132	132	2.06	3.57	1.53		0.00	0.00		0.00	0.00	0.68					146.25	42.91	102.80	98.40	98.10	4.40	103.50	98.11	97.80	5.39	0.00	1.00	
Street 18	524	578							0	396	6.18	3.42	4.39		0.00	0.00		0.00	0.00	2.04					126.92	38.69	103.50	98.11	97.80	5.39	104.92	97.85	97.55	7.07	0.00	1.00	
Adjacent to Barnsdale Rd	578	532				1.06	2.57	3.63	164	560	9.81	3.36	6.10		0.00	0.00		0.00	0.00	3.24					173.72	35.78	104.92	97.85	97.55	7.07	103.80	97.51	97.20	6.29	0.00	1.00	
Adjacent to Barnsdale Rd	532	534					3.29	3.29	210	770	13.10	3.30	8.23		0.00	0.00		0.00	0.00	4.32					127.45	32.57	103.80	97.51	97.20	6.29	103.00	97.25	96.95	5.75	0.00	1.00	
Adjacent to Barnsdale Rd	534	536					2.95	2.95	189	959	16.05	3.25	10.10		0.00	0.00																					



QUINN'S POINTE
3872 GREENBANK ROAD
CITY OF OTTAWA
MINTO COMMUNITIES INC.

AS-CONSTRUCTED SANITARY SEWER DESIGN SHEET

Designed by: H.M./J.W.

Checked by: L.D.

Date : June 2015

As-constructed info added: September 2016

Single Family	3.4	pers/unit	q =	280	L/cap/day
Semi-Detached/Townhouse (row)	2.7	pers/unit	I =	0.330	L/s/ha
Manning's Coeff. N =	0.013		Inst =	28000	L/ha/day

	Denotes Phase 1 (November 2015) As-Constructed Info
	Denotes (February 2016) As-Constructed Info
	Denotes Phase 2 (June 2016) As-Constructed Info
	Denotes Phase 3 (September 2016) As-constructed Info

STREET	M.H. #		RESIDENTIAL							INSTITUTIONAL			PEAK EXTR. FLOW l/s	PLUG FLOW l/s	PEAK DES. FLOW l/s	Actual DIA mm	SEWER DATA					RESIDUAL CAP. l/s	UPSTREAM				DOWNSTREAM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			NUMBER OF UNITS			CUMULATIVE		PEAKING FACTOR	POPUL. FLOW l/s	AREA ha	CUMM. AREA ha	INST. FLOW l/s					DIA mm	SLOPE %	CAPAC. l/s	VEL. m/s	LENGTH m		Center Line	Obvert	Invert	Cover	Center Line	Obvert	Invert	Cover																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	SING.	MULT.	AREA ha	POPUL. peop.	AREA ha	DIA mm	DIA mm															SLOPE %									CAPAC. l/s	VEL. m/s	LENGTH m	Center Line	Obvert	Invert	Cover	Center Line	Obvert	Invert	Cover																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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QUINN'S POINTE
3872 GREENBANK ROAD
CITY OF OTTAWA
MINTO COMMUNITIES INC.

AS-CONSTRUCTED SANITARY SEWER DESIGN SHEET

Designed by: H.M./J.W.

Checked by: L.D.

Date : June 2015

As-constructed info added: September 2016

Single Family	3.4	pers/unit	q =	280	L/cap/day
Semi-Detached/Townhouse (row)	2.7	pers/unit	I =	0.330	L/s/ha
Manning's Coeff. N =	0.013		Inst. =	28000	L/ha/day

	Denotes Phase 1 (November 2015) As-Constructed Info
	Denotes (February 2016) As-Constructed Info
	Denotes Phase 2 (June 2016) As-Constructed Info
	Denotes Phase 3 (September 2016) As-constructed Info

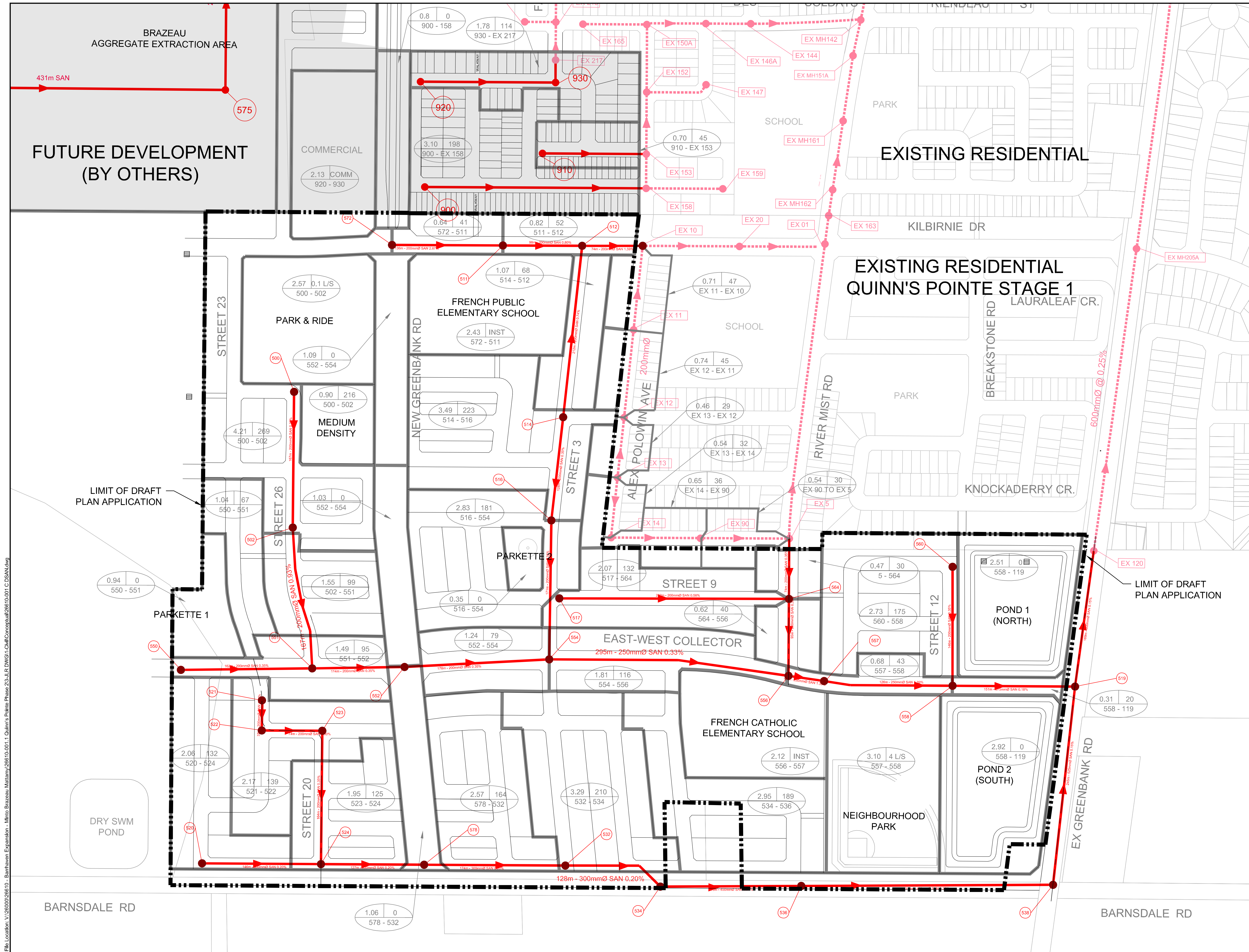
STREET	M.H. #		RESIDENTIAL							INSTITUTIONAL			PEAK EXTR. FLOW l/s	PLUG FLOW l/s	PEAK DES. FLOW l/s	Actual DIA mm	SEWER DATA					RESIDUAL CAP. l/s	UPSTREAM				DOWNSTREAM			
			NUMBER OF UNITS			CUMULATIVE		PEAKING FACTOR	POPUL. FLOW l/s	AREA ha	CUMM. AREA ha	INST. FLOW l/s					DIA mm	SLOPE %	CAPAC. l/s	VEL. m/s	LENGTH m		Center Line	Obvert	Invert	Cover	Center Line	Obvert	Invert	Cover
	SING.	MULT.	AREA ha	POPUL. peop.	AREA ha	AREA ha	AREA ha																							
Knockaderry Crescent	81	60	6	0	0.29	20	0.29	4.00	0.26	0.00	0.00	0.00	0.10		0.36	203	200	0.98	33.9	1.05	62.89	33.59	98.67	95.914	95.711	2.76	98.85	95.295	95.092	3.55
Red Rock Lane	60	61	12	0	0.61	243	3.59	4.00	3.16	0.00	1.57	0.76	1.70		10.62	203	200	0.32	19.4	0.60	119.87	8.82	98.85	95.234	95.031	3.62	98.50	94.847	94.644	3.65
Guinness Crescent	74	73	1	0	0.08	3	0.08	4.00	0.04	0.00	0.00	0.00	0.03		0.07	203	200	0.92	32.8	1.01	11.07	32.77	102.03	99.153	98.950	2.88	102.11	99.051	98.848	3.06
Guinness Crescent	73	72	7	0	0.47	27	0.55	4.00	0.35	0.00	0.00	0.00	0.18		0.57	203	200	1.18	37.1	1.14	58.47	36.58	102.11	99.021	98.818	3.09	101.93	98.333	98.130	3.60
Guinness Crescent	72	71	0	0	0.00	27	0.55	4.00	0.35	0.00	0.00	0.00	0.18		0.53	203	200	1.26	38.5	1.19	13.46	37.92	101.93	98.313	98.110	3.62	101.77	98.143	97.940	3.63
Guinness Crescent	71	70	10	0	0.54	61	1.09	4.00	0.79	0.00	0.00	0.00	0.36		1.15	203	200	3.04	59.6	1.84	57.62	58.48	101.77	98.093	97.890	3.68	99.64	96.343	96.140	3.30
Guinness Crescent	70	53	5	0	0.46	78	1.55	4.00	1.01	0.00	0.00	0.00	0.51		1.53	203	200	0.99	34.0	1.05	67.11	32.46	99.64	96.083	95.880	3.56	98.40	95.421	95.218	2.98
Knockaderry Crescent	53	61	5	0	0.46	95	2.01	4.00	1.23	0.00	0.00	0.00	0.66		1.90	203	200	0.84	31.4	0.97	69.69	29.48	98.40	95.383	95.180	3.02	98.50	94.797	94.594	3.70
Knockaderry Crescent	61	83	5	0	0.51	356	6.11	4.00	4.61	0.00	1.57	0.76	2.53		12.91	203	200	0.37	20.8	0.64	73.67	7.92	98.50	94.647	94.444	3.85	98.52	94.374	94.171	4.15
Knockaderry Crescent	81	80	2	0	0.09	7	0.09	4.00	0.09	0.00	0.00	0.00	0.03		0.12	203	200	0.64	27.4	0.85	13.06	27.32	98.67	95.517	95.314	3.15	98.72	95.433	95.230	3.29
Knockaderry Crescent	80	83	6	0	0.35	27	0.44	4.00	0.35	0.00	0.00	0.00	0.15		0.50	203	200	0.67	28.0	0.86	109.17	27.46	98.72	95.405	95.202	3.31	98.52	94.676	94.473	3.84
Easement	83	121	0	0	0.00	383	6.55	4.00	4.96	0.00	1.57	0.76	2.68		13.41	305	300	0.20	44.7	0.61	20.40	31.27	98.52	94.475	94.170	4.05	98.12	94.435	94.130	3.69
Greenbank Road	120	121	0	0	0.22	0	0.22	4.00	0.00	0.00	0.00	0.00	0.07		0.07	610	600	0.16	259.0	0.89	58.09	258.97	98.30	91.775	91.165	6.53	98.12	91.680	91.070	6.44
Greenbank Road	121	122	0	0	0.28	383	7.05	4.00	4.96	0.00	1.57	0.76	2.84		13.57	610	600	0.33	369.2	1.27	75.27	355.65	98.12	91.680	91.070	6.44	97.80	91.430	90.820	6.37
Greenbank Road	122	123	0	0	0.45	383	7.50	4.00	4.96	0.00	1.57	0.76	2.99		13.72	610	600	0.21	291.1	1.00	121.02	277.38	97.80	91.430	90.820	6.37	97.84	91.180	90.570	6.66
Belleek Lane	21	30	0	5	0.20	14	0.20	4.00	0.18	0.00	0.00	0.00	0.07		0.24	203	200	0.63	27.1	0.84	38.29	26.90	100.00	97.189	96.986	2.81	99.75	96.948	96.745	2.80
Belleek Lane	30	31	0	2	0.13	19	0.33	4.00	0.25	0.00	0.00	0.00	0.11		0.35	203	200	0.63	27.1	0.83	14.40	26.70	99.75	96.918	96.715	2.83	99.82	96.828	96.625	2.99
Belleek Lane	31	32	0	26	0.65	89	0.98	4.00	1.16	0.00	0.00	0.00	0.32		1.48	203	200	0.65	27.6	0.85	99.73	26.12	99.82	96.798	96.595	3.02	99.70	96.149	95.946	3.55
Lauraleaf Crescent	32	48	0	18	0.45	138	1.43	4.00	1.79	0.00	0.00	0.00	0.47		2.26	203	200	1.02	34.6	1.07	76.25	32.31	99.11	95.921	95.718	3.19	99.11	95.143	94.940	3.97
Lauraleaf Crescent	48	47	0	18	0.39	186	1.82	4.00	2.42	0.00	0.00	0.00	0.60		3.02	203	200	0.48	23.6	0.73	80.01	20.63	99.11	95.143	94.940	3.97	98.81	94.761	94.558	4.05
Lauraleaf Crescent	47	46	0	2	0.06	192	1.88	4.00	2.49	0.00	0.00	0.00	0.62		3.11	203	200	0.85	31.5	0.97	11.77	28.43	98.81	94.703	94.500	4.11	98.65	94.603	94.400	4.05
Lauraleaf Crescent	46	44	0	7	0.24	211	2.12	4.00	2.73	0.00	0.00	0.00	0.70		3.43	203	200	0.47	23.5	0.72	63.76	20.04	98.65	94.543	94.340	4.11	98.73	94.243	94.040	4.49
Lauraleaf Crescent	43	44	0	18	0.50	49	0.50	4.00	0.63	0.00	0.00	0.00	0.17		0.80	203	200	1.56	42.8	1.32	78.72	41.98	99.02	96.093	95.890	2.93	98.73	94.863	94.660	3.87
Easement	44	123	0	0	0.00	259	2.62	4.00	3.36	0.00	0.00	0.00	0.86		4.22	305	300	0.35	59.9	0.82	19.00	55.68	98.73	94.295	93.990	4.44	99.40	94.228	93.923	5.17
Greenbank Road	123	EX. 205A	0	0	0.43	642	10.55	3.92	8.15	0.00	1.57	0.76	4.00		17.91	610	600	0.25	319.2	1.09	120.80	301.31	97.84	91.180	90.570	6.66	97.90	90.880	90.270	7.02
Kilbirnie Drive	1	21	0	9	0.33	24	0.33	4.00	0.32	0.00	0.00	0.00	0.11		0.42	203	200	1.02	34.6	1.07	75.76	34.18	100.42	97.323	97.120	3.10	100.00	96.548	96.345	3.45
Kilbirnie Drive	21	22	0	27	0.69	97	1.02	4.00	1.26	0.00	0.00	0.00	0.34		1.60	203	200	0.63	27.2	0.84	109.93	25.65	100.00	96.543	96.340	3.46	100.00	95.846	95.643	4.15
Kilbirnie Drive	22	23	0	18	0.44	146	1.46	4.00	1.89	0.00	0.00	0.00	0.48		2.37	203	200	0.32	19.5	0.60	68.37	17.08	99.40	95.850	95.647	3.55	100.00	95.629	95.426	4.37
Kilbirnie Drive	23	24	0	26	0.58	216	2.04	4.00	2.80	0.00	0.00	0.00	0.67		3.47	203	200	1.06	35.2	1.08	94.06	31.70	99.40	95.628	95.425	3.77	98.20	94.634	94.431	3.57
Kilbirnie Drive	24	EX. 205A	0	3	0.11	224	2.15	4.00	2.91	0.00	0.00	0.00	0.71		3.61	203	200	0.71	28.8	0.89	28.70	25.23	98.20	94.533	94.330	3.67	97.90	94.329	94.126	3.57
Greenbank Road	EX. 205A	EX. 98A	0	0	0.00	866	12.70	3.84	10.78	0.00	1.57	0.76	4.71		21.25	610	600	0.25	320.3	1.10	126.00	299.03	97.90	90.830	90.220	7.07		90.515	89.905	

Residual Capacity Table from 2018 MSS

Table 6-4: Residual Capacity Comparison in the BSC Trunk Sanitary Sewers

Existing Trunk Sanitary Sewer	Limiting Pipe reach	Current Minimum Residual Capacity	Proposed BSUEA Tributary Lands	Proposed BSUEA Tributary Area	Revised Minimum Residual Capacity with inclusion of BSUEA Peak Flow
Cambrian Road	MH 13A to MH15A	51.4 L/s	Drummond, Brazeau, Mattamy West (Residential only)	48 ha	52.9 L/s
River Mist Road	MH 102A to MH 17A	14.4 L/s	Mattamy East, Mattamy West (Commercial only), Northwest corner of Minto	12 ha	30.5 L/s
River Mist Road	MH 1 to MH 163	5.58 L/s	Minto	5 ha	4.63 L/s
Greenbank Road	MH 45 to MH 435A	295.4 L/s	Minto	60 ha	283.2 L/s

File Location: V:\26610\26610 - Barnhaven Expansion - Minto Brazeau Mallany\26610-001.1 Quinn's Pointe Phase 2\JLR DWG\1-Civil\Conceptual\26610-001 C.DSAN.dwg



LEGEND

- PROPOSED SANITARY, PER 2018 BSUEA MSS
- FUTURE SANITARY, PER 2014 BS MSS
- EXISTING SANITARY
- DRAINAGE BOUNDARY
- LIMIT OF STUDY AREA FOR BSUEA
- AREA IN HECTARES
- POPULATION
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE
- COMM
- INST
- VARIES

KEY PLAN

QUINN'S POINTE STAGES 2, 3 & 4

No.	ISSUE / REVISION	DATE
2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION	12/09/18
1	ISSUED WITH SERVICING BRIEF - 1st SUBMISSION	07/08/18

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SCALE: 1:2000

CLIENT:

CONSULTANT: **J.L. Richards** ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT: MINTO COMMUNITIES INC. QUINN'S POINTE STAGES 2, 3 & 4

DRAWING:

BSUEA
SANITARY DRAINAGE AREA

DESIGN:	AT	DRAWING #:
DRAWN:	CJM	CSAN
CHECKED:	LD	
JLR #:	26610-001.1	

PLOT DATE: September 13, 2018 9:24:21 AM

Appendix D
Background Stormwater
Servicing Documents

STREET/STAGE	Maintenance Hole Number		BSUEA AREA RUNOFF COEFFICIENTS								Total Area			Total	Cum.	Inlet Time (min.)	In Pipe Flow	5 YR PEAK FLOW			10 YR PEAK FLOW			100 YR PEAK FLOW			ICD FLOW	TOTAL	SEWER DATA						Residual	UPSTREAM					DOWNSTREAM							
			0.20 0.40 0.66 0.75 0.80 0.85											Area	Area			Cum.	Peak	Cum.	Peak	Cum.	Peak		Peak	Flow	Dia	Actual	Slope	Q full	V full	Length	Capacity	Center	Drop	Obvert	Invert	Cover	Center	Drop	Obvert	Invert	Cover					
			5Yr	100Yr	5Yr	5 Yr	5 Yr	10Yr	5Yr		5 Yr	10 Yr	100 Yr																																			
FROM	TO												(ha)	(ha)	Time (min.)	Time (min.)	(mm/hr)	(L/s)	(mm/hr)	(L/s)	(mm/hr)	(L/s)	(L/s)	(L/s)	(mm)	(mm)	(%)	(L/s)	(m/s)	(m)	(L/s)	Line						Line										
CORRIGAN POND BSUEA AND QUINN'S POINTE CATCHMENT AREAS																																																

[illegible][illegible][illegible][illegible][illegible]



BARRHAVEN SOUTH URBAN EXPANSION AREA (BSUEA)

CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26610

STORM SEWER DESIGN SHEET

ETOBICOKE EXFILTRATION SYSTEM (EES)

Designed by: A.T.

Checked by: L.D

Date: February 2018

Manning's Coefficient n =	0.013
Legend	<p>Proposed storm sewers within BSUEA</p> <p>Existing Storm Sewer Information Taken From Quinn's Pointe As-Constructed Storm Sewer design sheet (J.L.Richards, September 2015)</p> <p>Existing Storm Sewer Information Taken From Half Moon Bay South Subdivision (Stantec, September 2014)</p>

[illegible][illegible]

BORRISOKANE DITCH

[illegible][illegible]

BORRISOKANE DITCH

[illegible]

CLARKE POND ~ MATTAMY LANDS WEST OUTLET TO NEW GREENBANK RD.

[illegible]



Manning's Coefficient n =	0.013
Legend	Proposed storm sewers within BSUEA
	Existing Storm Sewer Information Taken From Quinn's Pointe As-Constructed Storm Sewer design sheet (J.L.Richards, September 2015)
	Existing Storm Sewer Information Taken FromHalf Moon Bay South Subdivision (Stantec, September 2014)

BARRHAVEN SOUTH URBAN EXPANSION AREA (BSUEA)

CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26610

STORM SEWER DESIGN SHEET
ETOBICOKE EXFILTRATION SYSTEM (EES)

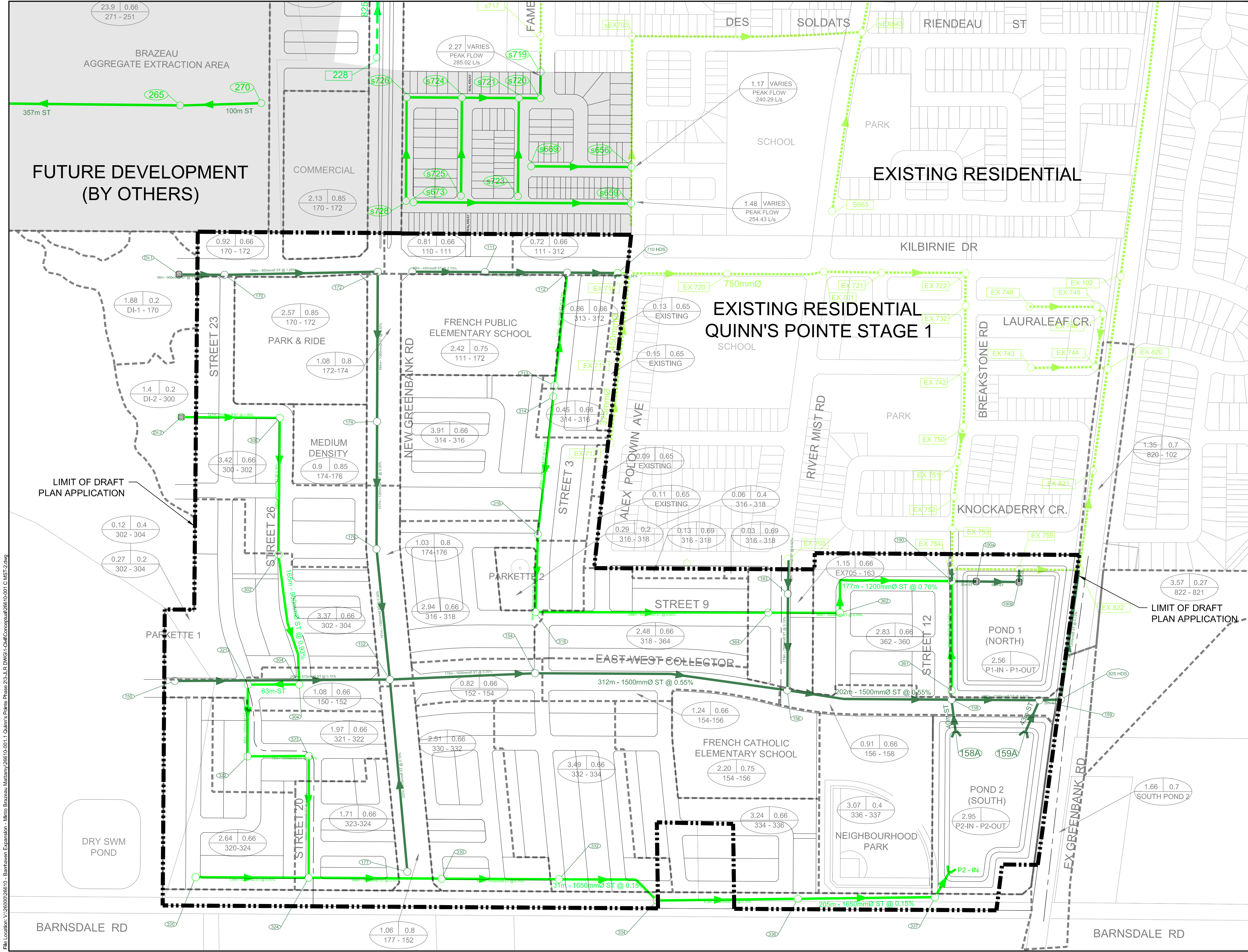
Designed by: A.T.

Checked by: L.D

Date:February 2018

TODD POND - MATTAMY LANDS EAST OUTLET TO ALEX POLOWIN AVE & FAMEFLOWER

STREET	Maintenance Hole Number		MATTAMY LANDS EAST AREA RUNOFF COEFFICIENTS																Weighted Average Runoff coeff.				Total Area			Total Area (ha)	Cum. Area (ha)	Inlet Time (min.)	In Pipe Flow Time (min.)	5 YR PEAK FLOW				TOTAL	SEWER DATA							Residual Capacity Q _{sup} - Q _d (L/s)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			0.55		0.57		0.62		0.68		0.69		0.70		0.71		0.77						5 Yr	10 Yr	100 Yr					Cum. 2.78AR	5 Yr Intensity (mm/hr)	Peak Flow (L/s)	Peak Flow (L/s)	PIPE Dia (mm)	Actual Dia. (mm)	Slope (%)	Q full (L/s)	V full (m/s)	Length (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr					5 Yr	10 Yr	5 Yr					10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr	10 Yr	5 Yr		10 Yr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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LEGEND

- PROPOSED STORM (EES SYSTEM), PER 2018 BSUEA MSS
- PROPOSED STORM (CONVENTIONAL), PER 2018 BSUEA MSS
- FUTURE STORM, PER 2014 BS MSS
- EXISTING STORM
- DRAINAGE BOUNDARY
- LIMIT OF STUDY AREA FOR BSUEA
- HYDRODYNAMIC SEPARATOR
- AREA IN HECTARES*
- RUNOFF COEFFICIENT*

KEY PLAN

QUINN'S POINTE STAGES 2, 3 & 4

NOTE:

ROADWAYS WITHIN A DRAINAGE AREA WHICH IS TRIBUTARY TO AN EES SEWER, ARE TO BE DESIGNED WITH EES SEWERS. CONVERSELY, ROADWAYS WITHIN A DRAINAGE AREA WHICH IS TRIBUTARY TO A CONVENTIONAL SEWER, ARE TO BE DESIGNED WITH CONVENTIONAL SEWERS.

2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION	12/09/18
1	ISSUED WITH SERVICING BRIEF - 1st SUBMISSION	07/08/18
No.	ISSUE / REVISION	DD/MM/YY

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CLIENT:

CONSULTANT:

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
QUINN'S POINTE STAGES 2, 3 & 4

DRAWING:

BSUEA
CONCEPTUAL STORM
DRAINAGE PLAN EES

DESIGN: AT

DRAWN: CJM

CHECKED: LD

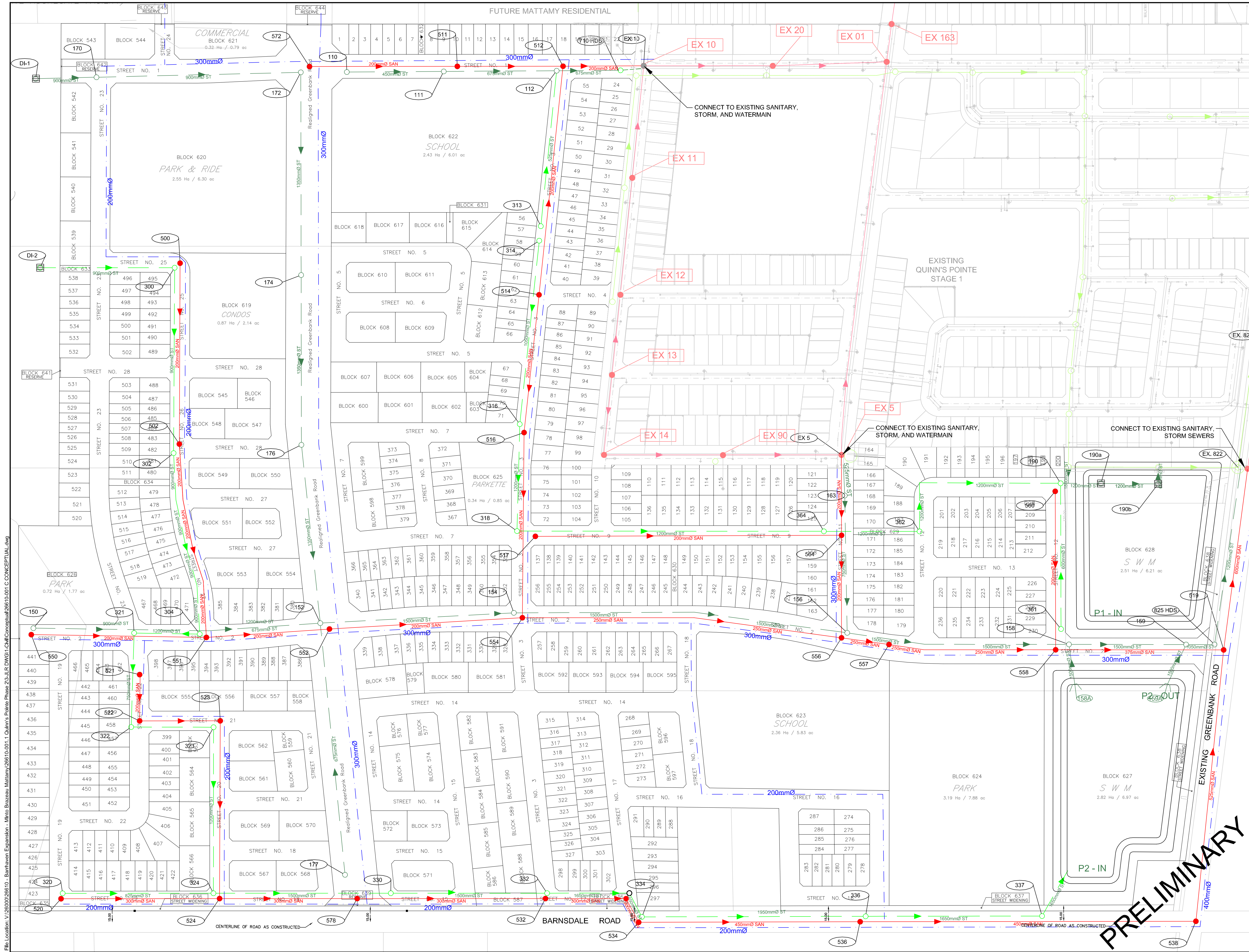
JLR #: 26610-001.1

DRAWING #:

CST

Appendix E

Conceptual Site Servicing
Drawing



LEGEND

- CONCEPTUAL STORM (ESS) SEWER & MAINTENANCE HOLE
- CONCEPTUAL STORM (CONVENTIONAL) SEWER & MAINTENANCE HOLE
- CONCEPTUAL SANITARY SEWER & MAINTENANCE HOLE
- CONCEPTUAL WATERMAIN
- EXISTING STORM SEWER & MAINTENANCE HOLE
- EXISTING SANITARY SEWER & MAINTENANCE HOLE
- EXISTING WATERMAIN

KEY PLAN

QUINN'S POINTE STAGES 2, 3 & 4

No.	ISSUE / REVISION	DATE
2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION	12/09/18
1	ISSUED FOR SERVICING BRIEF - 1st SUBMISSION	28/03/18

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CONSULTANT: J.L. Richards ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

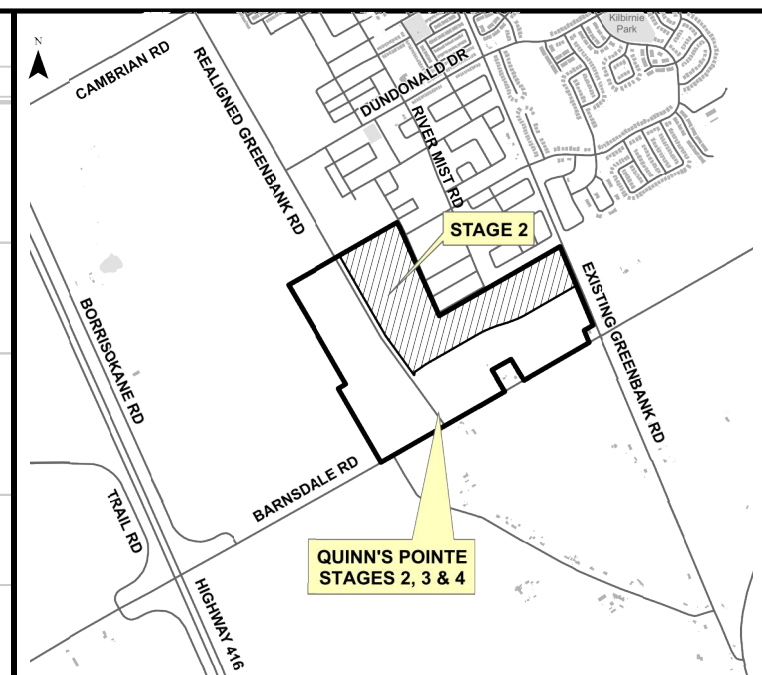
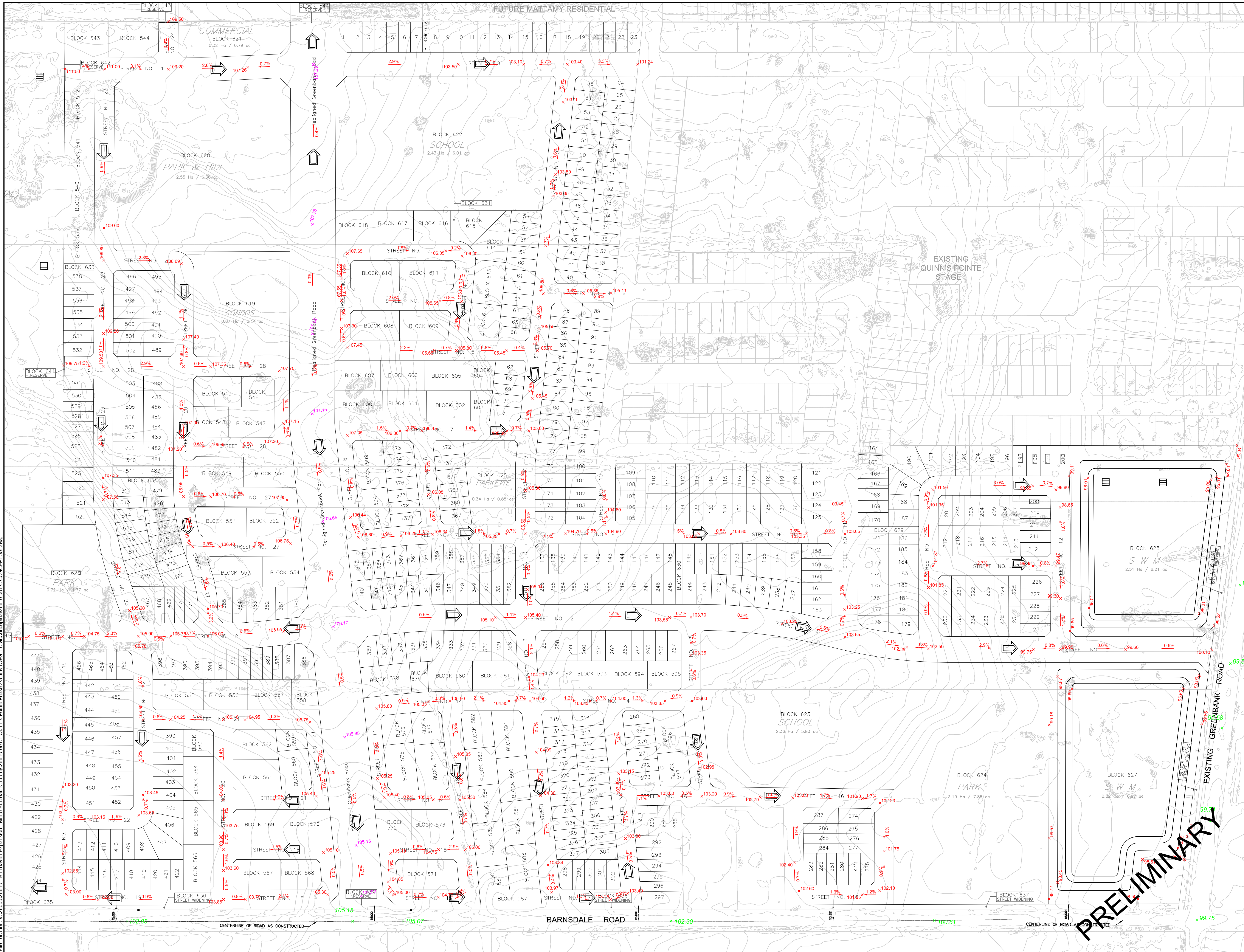
PROFESSIONAL STAMP: PROJECT NORTH

PROJECT: MINTO COMMUNITIES INC. QUINN'S POINTE STAGES 2, 3 & 4

DRAWING: CONCEPTUAL SITE SERVICING

DESIGN: AT	DRAWING #:
CHECKED: LD	CS1
JLR #: 26610-001.1	

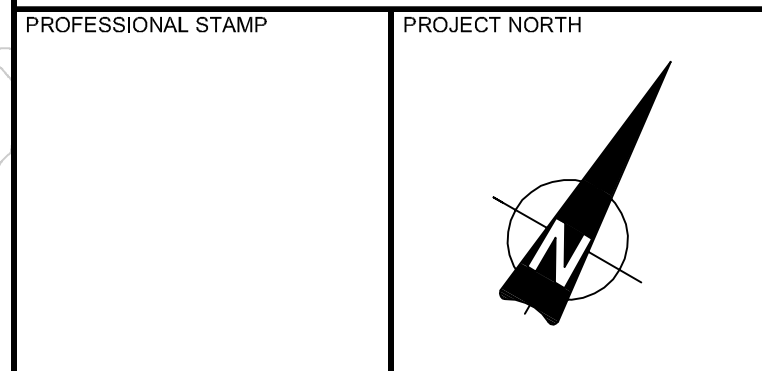
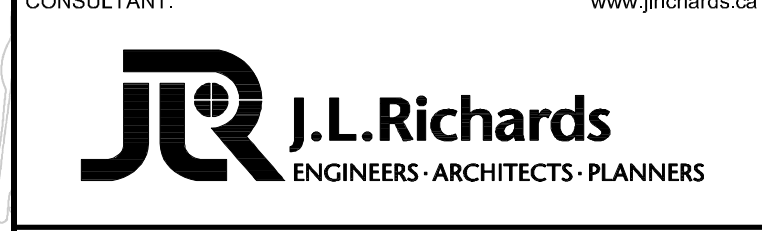
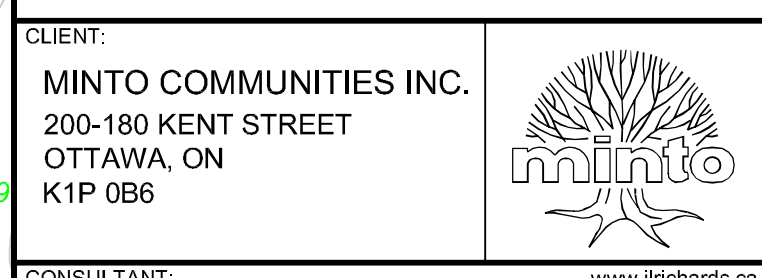
Appendix F
Conceptual Grading Plan



LEGEND	
100.95 +	GRADES TAKEN FROM: REALIGNED GREENBANK ROAD AND TRANSITWAY EXTENSION PLANNING AND ENVIRONMENT ASSESSMENT
102.85 +	MINTO LANDS WITHIN BSUEA
99.75 +	GRADES TAKEN FROM: STANTEC TOPOGRAPHIC SKETCH OCTOBER 2015
➡	MAJOR OVERLAND FLOW DIRECTION

KEY PLAN	
2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION
1	ISSUED FOR SERVICING BRIEF - 1st SUBMISSION
No.	ISSUE / REVISION
2	ISSUED FOR SERVICING BRIEF - 2nd SUBMISSION
1	ISSUED FOR SERVICING BRIEF - 1st SUBMISSION

CLIENT:	
MINTO COMMUNITIES INC. 200-180 KENT STREET OTTAWA, ON K1P 0B6	
CONSULTANT:	
J.L.Richards ENGINEERS - ARCHITECTS - PLANNERS	
CONSULTANT:	
J.L.Richards ENGINEERS - ARCHITECTS - PLANNERS	
PROFESSIONAL STAMP	
PROJECT NORTH	
PROJECT:	
MINTO COMMUNITIES INC. QUINN'S POINTE STAGES 2, 3 & 4	
DRAWING:	
CONCEPTUAL GRADING PLAN	
DESIGN:	
AT	
DRAWN:	
TB	
CHECKED:	
LD	
JLR #:	
26610-001.1	



PROJECT: MINTO COMMUNITIES INC.
QUINN'S POINTE STAGES 2, 3 & 4

DRAWING: CONCEPTUAL GRADING PLAN

DESIGN: AT	DRAWING #:
DRAWN: TB	CG1
CHECKED: LD	
JLR #: 26610-001.1	



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