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April 4, 2018

Servicing Brief

Quinn's Pointe Stage 2

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Value through **service** and **commitment**

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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 Stage 2 located in the Barrhaven South Urban Expansion Area (BSUEA), in the City of Ottawa. The legal description of the subject property is 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 Stage 2 in accordance with the March 2018 BSUEA Master Servicing Study (MSS) and the City of Ottawa Servicing Study Guidelines for Development Applications.

1.2 Site Description

The proposed Quinn's Pointe Stage 2 development is situated on a ±64.5 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 - Location Plan. 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 Stage 2 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.

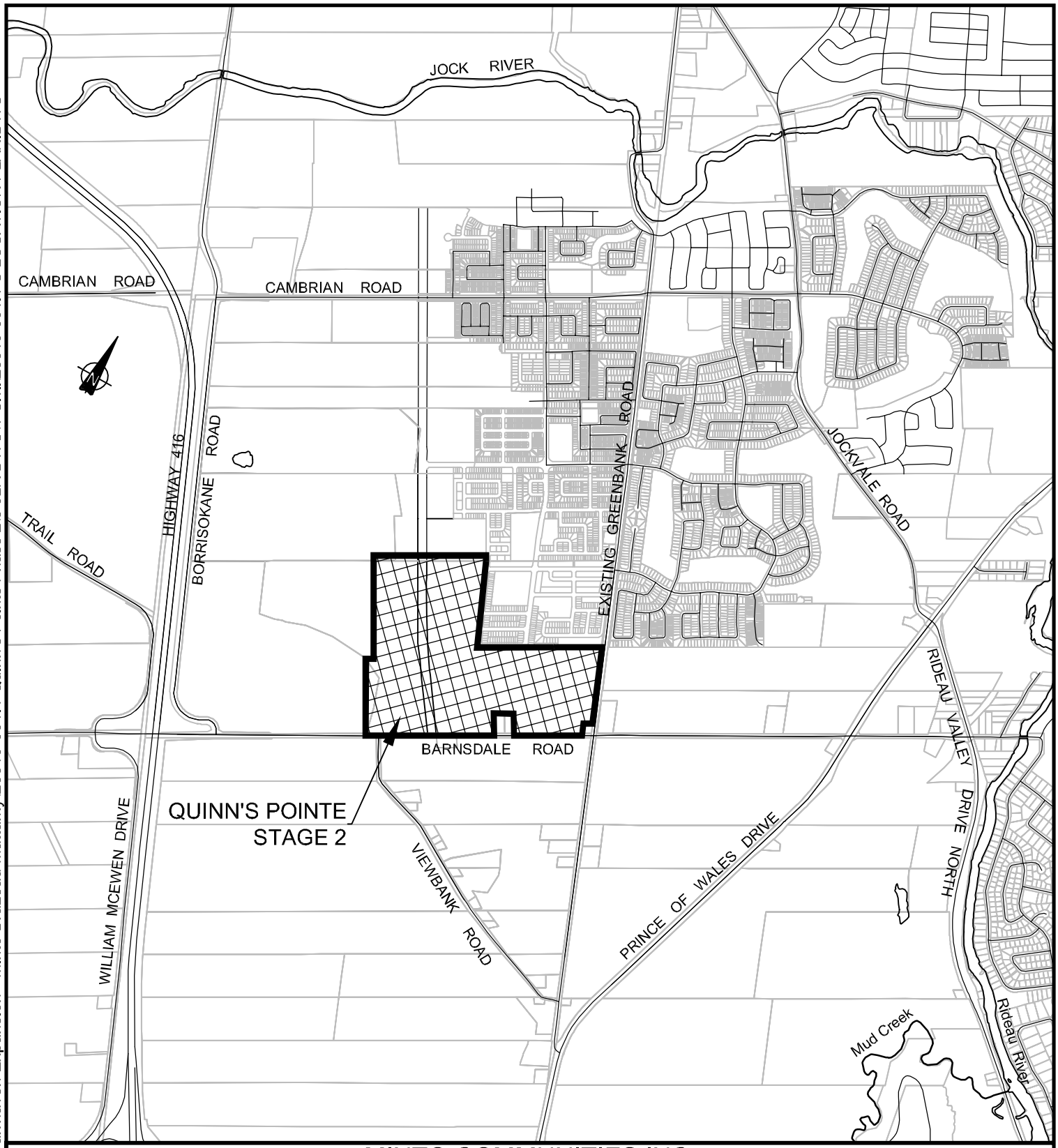
1.3 Proposed Development

Minto's proposed Quinn's Pointe Stage 2 development consists of 548 single family dwellings, townhouse blocks, back-to-back townhouse blocks, and a future condo block. Two blocks have been provided for future schools (2.36 ha and 2.55 ha) and three blocks have been provided 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, also bisects the property extending from the northern to the southern property limits.

2.0 WATER SERVICING

2.1 Existing Watermains

Connections to existing feedermains (i.e,, ≥300 mm diameter watermains) will be made to provide potable water to Quinn's Pointe Stage 2. These connections include:



PROJECT:

MINTO COMMUNITIES INC.
QUINN'S POINTE STAGE 2
BARRHAVEN SOUTH URBAN EXPANSION AREA

DRAWING:

LOCATION PLAN

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www.jlrichards.ca

DESIGN: HM	JLR NO: 26610–001.1
DRAWN: TB	DRAWING NO.: FIGURE 1
CHECKED: HM	

File Location: R:\26000\26610 - Barrhaven Expansion - Minto Brazeau Mattamy\26610-001.1 Quinn's Pointe Phase 2\3-JLR DWG\1-Civil\26610-001.1 C LOCATION PLAN.DWG

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

The connections will be made in accordance with the 2018 BSUEA MSS, as shown on the Master Watermain Plan (Drawing MWM) in Appendix 'B'.

2.2 Proposed Watermain Servicing

The BSUEA MSS presents the water servicing details associated with providing potable water to the Stage 2 development. Water servicing will be provided by the following feedermains, as per Drawing MWM in Appendix 'B', and as shown on the Conceptual Site Servicing Plan (Drawing CS1) at the back of this Brief.

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

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 watermains 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 evaluated for Quinn's Pointe Stage 2 as part of the BSUEA MSS. The potable water assessment presented below was extracted from Section 7.0 Water Distribution of the March 2018 BSUEA MSS since the population and therefore demand calculated for Stage 2 as part of the MSS is approximately equal to that estimated per the Draft Plan of Subdivision provided in Appendix 'A' (within 1%, from ± 3299 people in MSS to ± 3317 people). The HNA is to be refined at the detailed design stage with confirmation of the number of residential units and estimated population.

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

The above system level demands were applied throughout the BSUEA, including future residential development lands owned by Mattamy and the two (2) aggregate extraction areas (Brazeau and Drummond) which were simulated as future residential developments. Based on this exercise, overall water demands of 21.05 L/s and 31.45 L/s were calculated for the overall BSUEA for the basic day (BSDY) and maximum day (MXDY), respectively, as summarized in Table 2-2 below. It should be noted that MXDY of 31.45 L/s includes an outside water usage of 10.4 L/s.

Table 2-2: Estimated Water Demands for BSUEA (per 2018 BSUEA MSS)

Land Use	Area (ha)	Units	Pop.	ADD SFH[1]	ADD MLT[2]	ADD APT[3]	ADD COM[4]	ADD INS[5]	Total BSDY	OWD[6]	Total MXDY
Minto (Quinn's Pointe Stage 2) and Mattamy Lands											
Schools	4.6							2.63	2.63		2.63
Commercial	2.1						1.23		1.23		1.23
Single Family Res.	18.6	528	1795	3.74					3.74	6.41	10.15
Townhouse Res.	11.6	561	1515		3.47				3.47		3.47
Back to Back Res.	2.7	244	659		1.51				1.51		1.51
Condo	0.9	115	207			0.52			0.52		0.52
Total	**40.5**	**1,448**	**4,176**	**3.74**	**4.98**	**0.52**	**1.23**	**2.63**	**13.10**	**6.41**	**19.51**
Brazeau Aggregate Extraction Area											
Total	**12.75**	**481**	**1,391**	**1.26**	**1.64**	**0.17**	**0.39**	**0.84**	**4.30**	**2.16**	**6.46**
Drummond Aggregate Extraction Area											
Total	**10.8**	**408**	**1,179**	**1.07**	**1.40**	**0.14**	**0.33**	**0.71**	**3.65**	**1.83**	**5.48**
Barrhaven South Urban Expansion Area Totals											
Total	**64.05**	**2,337**	**6,746**	**6.07**	**8.02**	**0.83**	**1.95**	**4.18**	**21.05**	**10.4**	**31.45**

The water demands summarized in Table 2-2 were distributed in the model over a number of nodes and demand scenarios were evaluated as per those listed in Section 2.3.

2.5 Simulation of Fire Flows

Various 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 in the City of Ottawa. In addition, fire flow requirements within the City must be calculated in accordance with Technical Bulletin TB-2014-02. Based on these documents, a fire flow requirement of 167 L/s (10,000 L/min) should be targeted for the subject site. Section 7.0 of the BSUEA MSS evaluated the proposed watermains with a system level fire flow requirement of 217 L/s (13,000 L/min).

2.6 Simulation Results

The results of the high level HNA completed as part of the 2018 BSUEA MSS are presented below. It should be noted that a detailed HNA will be completed as part of detailed design of Quinn's Pointe Stage 2.

[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] Outside Water Demand, L/s, calculated as 1,049 L per SFH unit per day

2.6.1 Hydraulic Boundary Conditions

The water demand scenarios that were evaluated were based on the BSUEA demands which were combined with the 2016 supply characteristics of the water distribution system. Supply was simulated via two (2) static reservoirs; one located at the Longfields Drive/Jockvale Road intersection while the second is located near the Jockvale Road/Greenbank Road intersection. The supply characteristics are summarized in Table 2-3.

Table 2-3: 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

The simulated model included the backbone watermains as depicted on Drawing MWM (Appendix 'B') and Figure 2-1 below, along with the calculated demands (refer to Table 2-2) distributed along various nodes within the study area.

Figure 2-1: Water Model Schematic per BSUEA MSS

The performance of the system was evaluated under the following domestic demand conditions.

2.6.2 Basic Day Demand

The performance of the distribution system was evaluated under a basic day demand. Simulation results indicated the following:

- The simulated hydraulic grade line (HGL) elevations within the Stage 2 lands were found to be constant at 146.7 m; and

- The simulated pressures (refer to Figure 2-2) within the Stage 2 lands were found to range between 50.7 psi (350 kPa) to 69.2 psi (477 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.

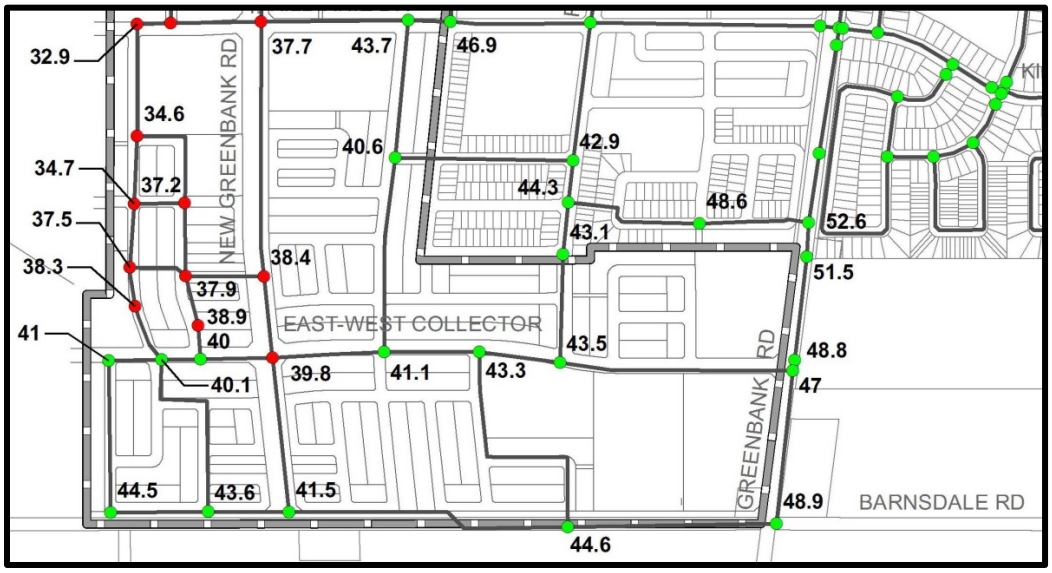
Figure 2- 2: Basic Day Simulation Results per BSUEA MSS

2.6.3 Peak Hour Demand

The performance of the distribution system was evaluated under a peak hour demand. Simulation results indicated the following:

- The minimum HGL elevations encountered during this 72-hour simulation were found to range between 134.1 m and 134.2 m; and
- The minimum pressures encountered during this 72-hour simulation (refer to Figure 2-3) were found to range between 32.9 psi (227 kPa) and 51.5 psi (355 kPa). In general, a number of nodes located west of New Greenbank Road will exhibit pressures below the minimum pressure criterion of 40 psi (276 kPa).

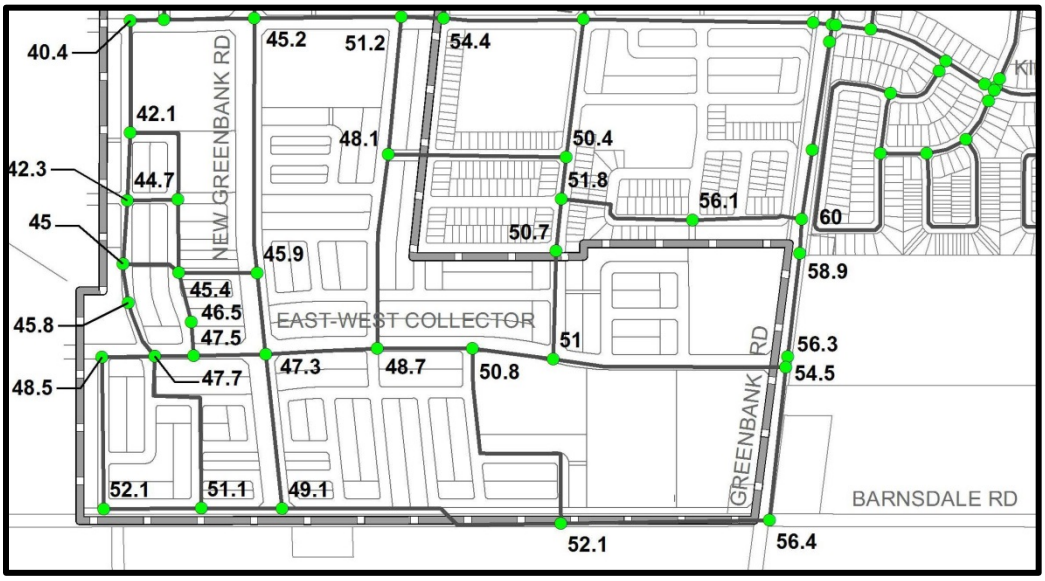
Figure 2-3: Peak Hour (Minimum Hour HGL) Simulation Results per BSUEA MSS



Given that the above simulation results represent the lowest pressure encountered during this 72-hour peak hour simulation, the average pressures were reviewed during the same simulation period. Simulation results indicated the following:

- The average HGL elevations during this 72-hour simulation were found to range between 139.4 m and 139.5 m; and
- The average pressures during this 72-hour simulation (refer to Figure 2-4) were found to range between 40.4 psi (279 kPa) and 58.9 psi (406 kPa), thereby satisfying the minimum pressure constraint of 40 psi (276 kPa).

Figure 2-4: Peak Hour (Average HGL) Simulation Results per BSUEA MSS



Although the minimum pressure constraint of 40 psi (276 kPa) is not met during the minimum hour of the 72-hour Peak Hour (PKHR) simulation (Figure 2-3), it is met everywhere within Minto's Quinn's Pointe Stage 2 lands for the average pressure encountered during the 72-hour Peak Hour simulation (Figure 2-4). Hence, the BSUEA MSS recommended that this deviation to the Guidelines be accepted. However, to minimize the inconvenience of low pressures during the occurrence of a peak hour demand (i.e., a few hours per year), mitigation measures such as oversized service laterals (25 mm) and oversized internal plumbing are recommended. The extent of these measures will be identified with the completion of a detailed HNA at the detailed design stage of the Stage 2 lands.

2.6.4 Maximum Day plus Fire Flow Conditions

To ensure adequate fire protection, a maximum day demand was simultaneously simulated with a fire flow along the proposed watermains within Quinn's Pointe Stage 2 lands. As per Section 2.5, a minimum fire flow of 10,000 L/min (167 L/s) was used in this analysis with the static elevations reported in Table 2-3.

The watermain layout as depicted on Drawing MWM was found to be capable of delivering fire flows in excess of 10,000 L/min (167 L/s) within Quinn's Pointe Stage 2 lands. Simulated fire flows were found to range between 249.9 L/s (southern perimeter of Park & Ride) to 477.8 L/s (Greenbank Road) within the Stage 2 lands, as shown on Figure 2-5.

Figure 2-5: Maximum Day plus Fire Flow Simulation Results per BSUEA MSS

2.7 Summary and Conclusions

Based on the simulation results of the high level HNA completed as part of the 2018 BSUEA MSS, the water distribution system shown on the Conceptual Site Servicing Plan (Drawing CS1) at the back of this Brief, was found to fulfill the demands and pressure criteria under both domestic and fire flow conditions. 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 Stage 2 development can deliver the water demands during the peak hourly and maximum day plus fire flow conditions while meeting the pressure requirements prescribed in Design Guidelines.

3.0 WASTEWATER SERVICING

3.1 Background

Wastewater servicing in Quinn's Pointe Stage 2 was conceptually designed as part of the 2018 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 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 Stage 2 were designed as part of the BSUEA MSS in accordance with the following criteria:

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

It is noted that the average flow rates indicated in Table 3-1 deviate from the City of Ottawa Sewer Design Guidelines (2012). However, it is understood that these revised flow rates will be included in a forthcoming Technical Bulletin expected to be issued by the City in 2018. Hence, the City had requested that sanitary sewers in the BSUEA be designed based on these revised criteria (refer to e mail correspondence in Appendix 'C').

3.3 Proposed Sanitary Servicing and Calculations

Theoretical residential wastewater peak flows generated in the Quinn's Pointe Stage 2 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 BSEUA Demonstration Plan and the number of units per net hectare for each unit type was approximated by reviewing the unit densities of other recent Minto subdivisions. A total residential population of 3299 people was accounted for the Quinn's Pointe Stage 2 development in the MSS.

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 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.

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	548	3.4 person/unit	280 L/cap/day	31.4 L/s	17.3 L/s	48.7 L/s
Towns		342	2.7 person/unit	280 L/cap/day			
Back-to-Back Towns		120	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	-	-	-	-	1.4 L/s	1.4 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**						**55.2 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 55.2 L/s was calculated for Quinn's Pointe Stage 2. This is based on a total population of 3317 people based on the draft plan provided in Appendix 'A'. It is noted that this amounts to approximately 18 people more than were allocated as part of the BSUEA MSS. Based on the aforementioned wastewater design criteria and a peaking factor of 2.93, this amounts to an additional peak flow of 0.17 L/s. Based on the design sheets for the BSUEA and existing Barrhaven South Community, the existing downstream sanitary sewers can accommodate this additional peak flow. Populations based on unit counts will be verified at detailed design and the peak flow may be refined.

3.4 Proposed Wastewater Servicing

A trunk sanitary sewer system for Quinn's Pointe Stage 2 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 Stage 2 development (i.e., ±58.3 ha) will to outlet to the existing 600 mm diameter Greenbank Road trunk sanitary sewer (± 420 m north of Barnsdale Road). Wastewater generated from Quinn's Pointe Stage 2 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 Stage 2 lands situated to the north of Street No. 2 will outlet to the Street No. 2 trunk while Stage 2 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. A 525 mm diameter trunk will convey wastewater along Greenbank Road from Barnsdale Road to the Street No. 2 (MH 538-119) and a 600 mm diameter trunk sewer will convey wastewater from Street No. 2 to the existing sewer at MH EX120.

Some of the existing wastewater generated from the existing Quinn's Pointe Stage 1 development (±1.73 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 633) 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.

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 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 Stage 2 was conceptually designed as part of the BSUEA MSS to convey stormwater runoff via minor and major systems to the existing 1800 mm diameter trunk storm sewer on existing Greenbank Road (± 420m north of Barnsdale Road). The existing Greenbank Road trunk storm sewer ultimately discharges to the Jock River via existing the 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 Stage 2 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 for both minor and major systems are described below.

4.2.1 Minor System

Design Capture and Level of Service

- Minimum 1:2 year and 1:5 year capture for local and collector roads, respectively;
- 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 (Tc) 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, 1:5 year for 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 for a 1:100 year peak flow.

Major System Flow Outlets
Major system flow to outlet to a watercourse or a SWMF since both existing Greenbank Road and new Greenbank Road are designed as arterials, and therefore, major system flow cannot cross these streets, 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.

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 Stage 2 prior to discharging to the existing Greenbank Road trunk storm sewer, as shown on the Conceptual Site Servicing Plan (Drawing CS1) at the back of this Brief. 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 Stage 2 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, 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 m^3/s
- 1:100 year Qp (24 hour SCS) = 3.580 m^3/s

Most of the above allowable peak flow is already utilised 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 Stage 2 lands. Flows in excess of the capacity of the Stage 1 minor and major systems will cascade to the proposed Stage 2 northern dry pond at Block 639.

- 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 3.5m^3/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.

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.

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 Stage 2, as shown on the Conceptual Site Servicing Plan (Drawing CS1).

5.0 CONCLUSIONS

Servicing of Minto's Quinn's Pointe Stage 2 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 feedermains 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.

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.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Alexandre Tourigny, EIT

Reviewed by:

Hilary MacKay, P.Eng

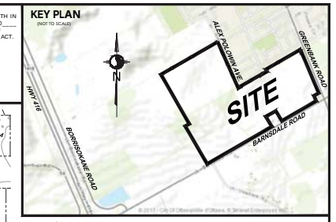
Appendix A

Draft Plan of Subdivision

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED _____ 20__
THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT.
THIS_____DAY OF_____,2017.

ADAM BROWN
MANAGER, DEVELOPMENT REVIEW- RURAL
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

KEY PLAN
NOT TO SCALE



DRAFT PLAN OF SUBDIVISION

PART OF LOTS 6 AND 7
CONCESSION 3 (RIDEAU FRONT)
(GEOGRAPHIC TOWNSHIP OF NEPEAN)
CITY OF OTTAWA

Scale 1:1250
20 0 20 40 60 80 METRES

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 1 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. WEBSTER
ONTARIO LAND SURVEYOR

Stantec Geomatics Ltd.
CANADA LAND SURVEYORS
CHARTERED LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL: 613.722.4420 FAX: 613.722.2799
STANTEC.COM

DRAWN: CEC | CHECKED: | PM: TP | FIELD: * | PROJECT No.: 161613796-331

Appendix B

Background Water Servicing Documents

CAMBRIAN RD
TO CLARK POND
TODD POND
CAMBRIAN RD
400mmØ
400mmØ
400mmØ
400mmØ
300mmØ
BORRISOKANE RD
FUTURE COLLECTOR RD
300mmØ
300mmØ
EX GREENBANK RD
RIVER MIST RD
300mmØ
300mmØ
300mmØ
DRUMMOND SWM POND
DRUMMOND AGGREGATE EXTRACTION AREA
SCHOOL
PARK
SCHOOL
DUNDONALD DR
DUNDONALD DR
HIGHWAY 416
SWM DRY POND
BRAZEAU SWM POND
PARK
FAMEFLOWER ST
200mmØ
DES SOLDATS
RIENDEAU ST
BRAZEAU AGGREGATE EXTRACTION AREA
COMMERCIAL
300mmØ
200mmØ
200mmØ
SCHOOL
PARK
300mmØ
300mmØ
300mmØ
KILBIRNIE DR
KILBIRNIE DR
BORRISOKANE RD
STREET 2
200mmØ
PARK & RIDE
FRENCH PUBLIC ELEMENTARY SCHOOL
200mmØ
NEW GREENBANK RD
200mmØ
SCHOOL
300mmØ
LAURALEAF CR.
BREAKSTONE RD
ALEX POLOVIN AVE
STREET 1
RIVER MIST RD
PARK
MEDIUM DENSITY
STREET 3
200mmØ
PARKETTE 2
KNOCKADERRY CR.
300mmØ
STREET 4
TRAIL RD
PARKETTE 1
EAST-WEST COLLECTOR
300mmØ
STREET 5
POND 1 (NORTH)
300mmØ
300mmØ
300mmØ
300mmØ
FRENCH CATHOLIC ELEMENTARY SCHOOL
300mmØ
STREET 6
200mmØ
300mmØ
POND 2 (SOUTH)
200mmØ
NEIGHBOURHOOD PARK
DRY SWM POND
400mmØ EX GREENBANK RD
200mmØ
200mmØ
200mmØ
BARNSDALE RD
BARNSDALE RD

LEGEND

- PROPOSED WATERMAIN
- FUTURE WATERMAIN
- EXISTING WATERMAIN
- LIMIT OF STUDY AREA FOR BSUEA

No.	ISSUE / REVISION	DD/MM/YY
3	ADDRESS COMMENTS, RE-ISSUE BSUEA MSS 2ND SUBMISSION	26/02/18
2	ISSUED AS PART OF DRAFT MSS	20/09/17
1	ISSUED FOR PRE-TAC WORKING MEETING	31/08/17

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:4000

CLIENT:

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

LICENSED PROFESSIONAL ENGINEER M. N. L. DALRYMPLE Feb 27/18 PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:

BARRHAVEN SOUTH URBAN EXPANSION AREA (BSUEA)

-

DRAWING:

MASTER WATERMAIN

DESIGN: JW	
DRAWN: CJM	DRAWING #:
CHECKED: LD	MWM
JLR #: 26610	

PLOT DATE: February 27, 2018 12:07:52 PM

File Location: R:\26000\26610 - barrhaven expansion - minto brazeau mattamy\JLR DWG\Civil\26610 C MWM.dwg

Appendix C

Background Wastewater
Servicing Documents

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

BARRHAVEN SOUTH URBAN EXPANSION (BSUEA)

CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 26610

BSUEA SANITARY SEWER DESIGN SHEET

Designed by: A.T
Checked by: H.M
Date : February 2018

DESIGN PARAMETERS				
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
Apt Units	1.8	pers/unit	Inst. =	28000 L/ha/day
Manning's Coeff. N =	0.013		ICI Peaking Factor* =	1.0/1.5

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

STREET	M.H. #		RESIDENTIAL								COMMERCIAL			INSTITUTIONAL			(Infiltration)			SEWER DATA					RESIDUAL	UPSTREAM				DOWNSTREAM				ICI Peaking Factor	
			NUMBER OF UNITS			CUMULATIVE		PEAKING	POPUL.									PEAK EXTR.	PLUG	PEAK DES.																
	FROM	TO	SING.	MULT.	APT.	AREA ha	POPUL. peop.	POPUL. peop.	AREA ha	FACTOR	FLOW l/s	AREA ha	CUMM. AREA ha	INST. FLOW l/s	AREA ha	CUMM. AREA ha	INST. FLOW l/s	FLOW l/s	FLOW l/s	FLOW l/s	DIA. mm	SLOPE %	CAPAC. l/s	VEL. m/s	LENGTH m	CAP. l/s	Center Line	Obvert	Invert	Cover	Center Line	Obvert	Invert	Cover	IC/ TOTAL	P.F
MINTO LANDS WITHIN BSUEA (OUTLETS TO RIVER MIST.)																																		
Kilbirnie Dr.	572	511		10		0.64	27	27	0.64	3.69	0.32		0.00	0.00	2.43	2.43	1.18	1.01		2.52	200	2.87	57.9	1.79	136.50	55.40	107.40	102.79	102.59	4.61	103.50	98.88	98.68	4.62	0.79	1.50
Kilbirnie Dr.	511	512		27		0.82	73	100	1.46	3.59	1.16	0.00	0.00	0.00	0.00	2.43	0.79	1.28		3.24	200	0.80	30.6	0.94	97.52	27.37	103.50	98.88	98.68	4.62	103.40	98.10	97.90	5.30	0.00	1.00
Street 1	514	512	21			1.07	71	71	1.07	3.62	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.35		1.19	200	0.74	29.4	0.91	212.06	28.24	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	171	2.53	3.54	1.96	0.00	0.00	0.00	0.00	2.43	0.79	1.64		4.39	200	1.60	43.3	1.33	74.41	38.89	103.40	98.10	97.90	5.30	101.18	96.91	96.71	4.27	0.00	1.00
MINTO LANDS WITHIN BSUEA (OUTLETS TO EXISTING GREENBANK)																																		
Street 1	514	516	14	104		3.49	328	328	3.49	3.45	3.67		0.00	0.00		0.00	0.00	1.15		4.82	200	0.35	20.2	0.62	127.86	15.42	105.60	102.70	102.50	2.90	105.40	102.25	102.05	3.15	0.00	1.00
Street 1	516	554	20	54		3.18	214	542	6.67	3.36	5.91		0.00	0.00		0.00	0.00	2.20		8.11	200	0.35	20.2	0.62	170.90	12.13	105.40	102.25	102.05	3.15	105.20	101.65	101.45	3.55	0.00	1.00
Street 3	500	502	25	70	115	7.16	481	481	7.16	3.39	5.28		0.00	0.00		0.00	0.00	2.36	0.10	7.74	200	0.35	20.2	0.62	174.02	12.50	108.10	105.03	104.827	3.07	107.90	104.42	104.218	3.48	0.00	1.00
Street 3	502	551	8	44		1.55	146	627	8.71	3.34	6.78		0.00	0.00		0.00	0.00	2.87		9.76	200	0.89	32.3	1.00	168.60	22.52	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	20			1.98	68	68	1.98	3.63	0.80		0.00	0.00		0.00	0.00	0.65		1.45	200	0.35	20.2	0.62	161.54	18.79	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	22			1.49	75	770	12.18	3.30	8.23		0.00	0.00		0.00	0.00	4.02		12.34	200	0.35	20.2	0.62	113.56	7.90	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	12	20		3.36	95	865	15.54	3.27	9.17		0.00	0.00		0.00	0.00	5.13		14.40	200	0.35	20.2	0.62	178.26	5.84	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	11	34		1.81	129	1536	24.02	3.14	15.62		0.00	0.00		0.00	0.00	7.93		23.65	250	0.33	35.6	0.70	295.67	11.99	105.20	101.61	101.36	3.59	103.55	100.64	100.38	2.91	0.00	1.00
Street 4	517	564	20	35		2.07	163	163	2.07	3.54	1.87		0.00	0.00		0.00	0.00	0.68		2.55	200	0.58	26.2	0.81	282.43	23.60	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.)	12			0.54	41	41	0.54	3.67	0.49		0.00	0.00		0.00	0.00	0.18		0.67	200	0.67	28.0	0.86	74.56	27.34	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.)	13			0.65	44	85	1.19	3.61	0.99		0.00	0.00		0.00	0.00	0.39		1.39	200	0.94	33.2	1.02	112.06	31.79	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	20	105	1.73	3.59	1.22		0.00	0.00		0.00	0.00	0.57		1.79	200	0.35	20.2	0.62	108.16	18.45	103.93	100.95	100.75	2.98	103.80	100.57	100.37	3.23	0.00	1.00
River Mist Rd.	5 (ex.)	564	8			0.47	27	132	2.20	3.57	1.53		0.00	0.00		0.00	0.00	0.73		2.25	200	0.35	20.2	0.62	74.22	17.99	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	7	9		0.64	48	343	4.91	3.44	3.83		0.00	0.00		0.00	0.00	1.62		5.55	200	0.35	20.2	0.62	94.59	14.70	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	1879	28.93	3.09	18.79		0.00	0.00	2.20	2.20	0.71	10.27		29.87	250	1.39	73.1	1.44	44.25	43.27	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	6			1.12	20	1899	30.05	3.08	18.97		0.00	0.00	2.86	5.06	1.64	11.59	4.00	36.30	250	1.39	73.1	1.44	158.35	36.85	102.78	99.09	98.84	3.69	99.90	96.89	96.64	3.01	0.09	1.00
Street 5	560	558	50			3.09	170	170	3.09	3.54	1.95		0.00	0.00		0.00	0.00	1.02		2.97	200	0.35	20.2	0.62	142.27	17.27	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				5.74	0	2069	38.88	3.06	20.51		0.00	0.00		5.06	1.64	14.50		40.75	375	0.18	77.6	0.68	150.71	36.85	99.90	93.71	93.32	6.20	99.55	93.43	93.05	6.12	0.00	1.00
Street 6	521	522	24	33		2.17	171	171	2.17	3.54	1.96		0.00	0.00		0.00	0.00	0.72		2.68	200	1.50	41.9	1.29	37.09	39.23	105.18	102.18	101.98	3.00	104.50	101.62	101.42	2.88	0.00	1.00
	522	523					0	171	2.17	3.54	1.96		0.00	0.00		0.00	0.00	0.72		2.68	200	0.80	30.6	0.94	73.27	27.93	104.50	101.62	101.42	2.88	105.11	101.04	100.83	4.07	0.00	1.00
	523	524		71		1.95	192	363	4.12	3.43	4.04		0.00	0.00		0.00	0.00	1.36		5.40	200	0.35	20.2	0.62	164.00	14.84	105.11	101.04	100.83	4.07	103.50	100.46	100.26	3.04	0.00	1.00
Adjacent to Barnsdale Rd	520	524	41			2.06	139	139	2.06	3.56	1.60		0.00	0.00		0.00	0.00	0.68		2.28	300	0.20	45.1	0.62	146.25	42.83	102.80	98.40	98.10	4.40	103.50	98.11	97.80	5.39	0.00	1.00
Adjacent to Barnsdale Rd	524	578					0	502	6.18	3.38	5.50		0.00	0.00		0.00	0.00	2.04		7.54	300	0.20	45.1	0.62	126.92	37.58	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		87		3.63	235	737	9.81	3.31	7.89		0.00	0.00		0.00	0.00	3.24		11.13	300	0.20	45.1	0.62	173.72	33.98	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	50	26		3.29	240	977	13.10	3.25	10.27		0.00	0.00		0.00	0.00	4.32		14.60	300	0.20	45.1	0.62	127.45	30.52	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	55			2.96	187	1164	16.06	3.21	12.09		0.00	0.00		0.00	0.00	5.30		17.39	450	0.20	133.0	0.81	173.27	115.63	103.00	95.50	95.04	7.50	101.56	95.15	94.70	6.41	0.00	1.00
Easement (Barnsdale to E-W Collector)	536	538					0	1164	16.06	3.21	12.09		0.00	0.00		0.00	0.00	5.30		17.39	450	0.20	133.0	0.81	309.73	115.63	101.56	95.15	94.70	6.41	99.75	94.53	94.08	5.22	0.00	1.00
	538	119					0	1164	16.06	3.21	12.09		0.00	0.00		0.00	0.00	5.30		17.39	525	0.15	173.8	0.78	245.34	156.37	99.75	93.80	93.26	5.95	99.55	93.43	92.89	6.12	0.00	1.00
Ex. Greenbank Rd.	119	120 (ex.)					0	3233	54.94	2.93	30.72		0.00	0.00		5.06	1.64	19.80		56.26	600	0.15	248.1	0.85	168.66	191.83	99.55	93.43	92.82	6.12		93.17	92.57		0.00	1.00
																					600	0.25												
MATTAMY LANDS EAST OUTLETS TO DUNDONALD DR. & DES SOLDATS																																		
	900	158 (ex.)	31	51		3.10	243	243	3.10	3.49	2.75	0.00	0.00	0.00		0.00	0.00	1.02		3.77	200	0.35	20.2	0.62	280.00	16.47	106.62	97.23	97.02	9.39	101.03	97.13	97.13	3.90	0.00	1.00
	910	153 (ex.)		28		0.71	76	76	0.71	3.62	0.89	0.00	0.00	0.00		0.00	0.00	0.23		1.12	200	0.35	20.2	0.62	130.00	19.12	104.00	96.70	96.49	7.30	100.35	96.65	96.65	3.70	0.00	1.00
	920	930	36			1.81	122	122	1.81	3.57	1.42	2.13	2.13	1.04		0.00	0.00	1.30		3.75	200	0.35	20.2	0.62	165.00	16.49	106.07	97.42	97.21	8.65	101.70	97.36	97.16	4.34	0.54	1.50
	930	217 (ex.)						122	1.81	3.57	1.42	0.00	2.13	1.04		0.00	0.00	1.30		3.75	200	0.35	20.2	0.62	40.00	16.49	101.70	97.36	97.16	4.34	101.70	97.24	97.04	4.46	0.54	1.50
BRAZEAU AGGREGATE EXTRACTION AREA OUTLETS TO NEW GREENBANK ROAD*																																		
	585	575	178	236	37	21.77	1309	1309	21.77	3.18	13.48	0.68	0.68	0.22	1.45	1.45	0.47	7.89		22.06	250	0.24	30.4	0.60	431.00	8.34		98.56	98.30			97.52	97.27		0.09	1.00
	575	555					0	1309	21.77		0.00		0.68	0.22		1.45	0.47	7.89		8.58	250	0.24	30.4	0.60	228.00	21.82		97.52	97.27			96.98	96.72		0.03	1.00
	565	555					0	0	0.00		0.00		0.00	0.00		0.00	0.00	0.00		0.00	250	0.24	30.4	0.60	431.00	30.39		98.01	97.76			96.98	96.72		0.00	1.00
	555	545					0	1309	21.77		0.00		0.68	0.22		1.45	0.47	7.89		8.58	250	0.24	30.4	0.60	133.00	21.82		96.98	96.72			96.66	96.40		0.03	1.00
	545	900					0	1309	21.77		0.00		0.68	0.22		1.45	0.47	7.89		8.58	250	0.24	30.4	0.60	72.00	21.82	104.31	96.66	96.40	7.65	103.00	96.48	96.23	6.52	0.03	1.00
	900	MA 14																			250	0.24	30.4	0.60	160.00	30.39		96.48	96.23			96.10	95.85			
MATTAMY LANDS WEST OUTLETS TO NEW GREENBANK RD																																		
Realigned Greenbank Rd.	900	MA 14	8	102		3.89	303	1612	25.66	3.13	16.32	0.00	0.68	0.22	0.00	1.45	0.47	9.17		26.18	250	1.30	70.7	1.40	60.00	44.55	104.31	96.88	96.63	7.43	103.00	96.10	95.85	6.90	0.03	1.00
	MA 14	MA13				0.00	0	1612	25.66	3.13	16.32	0.00	0.68	0.22	0.00	1.45	0.47	9.17		26.18	250	1.30	70.7	1.40	295.00	44.50	103.00	96.10	95.85	6.90	95.20	92.27	92.02	2.93	0.03	1.00
	MA13	MH57A						1612	25.66	3.13	16.32		0.68	0.22		1.45	0.47	9.17		26.18	375	0.30	100.2	0.88	413.10	74.00	92.27	90.77	90.39	1.50	93.60	89.53	89.15	4.07	0.03	1.00
DRUMMOND AGGREGATE EXTRACTION AREA OUTLETS TO PROPOSED COLLECTOR RD.*																																		
	593	592																			200	0.35	20.2	0.62	300.00	20.24		99.19	98.99			98.14	97.94			1.00
	592	590																			200	0.35	20.2	0.62	220.00	20.24		98.14	97.94			97.37	97.17			1.00
	591	590																			200	0.35	20.2	0.62	300.00	20.24		98.42	98.22			97.37	97.17			1.00
	590	MA 11	151	226	31	18.48	1179	1179	18.48	3.20	12.24	0.58	0.58	0.19	0.40	0.40	0.13	6.42		18.98	300	0.35	59.7	0.82	80.00	40.70		97.37	97.07		100.00	97.09	96.79	2.91	0.05	1.00
	MA 11	MA 10					0	1179	18.48	3.20	12.24		0.58	0.19		0.40		6.42		18.85	300	0.75	87.4	1.20	482.10	68.52	100.00	95.00	94.69	5.00	93.50	91.38	91.08	2.12	0.03	1.00
	MA 10	MH57A					0	1179	18.48	3.20	12.24		0.58	0.19		0.40		6.42		18.85	375	0.41	117.3	1.03	449.70	98.47	93.50	91.38	91.00	2.12	93.60	89.53	89.15	4.07		1.00
							0																											

*ONLY FLOW CONTRIBUTIONS FROM BSUEA ARE SHOWN, FOR SANITARY FLOWS FROM OTHER CONTRIBUTING AREAS TRIBUTARY TO CAMBRIAN ROAD, SEE OVERALL SANITARY SPREADSHEET

56.26 L/s (existing Greenbank Rd.)
- 1.79 L/s(Quinn's Point Stage 1)
54.47 L/s
+4.39 L/s Kilbirnie Dr.
+ 0.27 L/s (Commercial to Fameflower)
59.13 L/s

Alexandre Tourigny

From: Bougadis, John <John.Bougadis@ottawa.ca>
Sent: December 6, 2017 11:40 AM
To: Guy Forget
Cc: Hugo Lalonde; Lucie Dalrymple
Subject: RE: BSUEA - Comments
Attachments: Draft_WastewaterParameterReview_Feb14.pdf

Hi Guy

I have attached the PDF (my apologies). Let me know if you any questions on my questions.

In addition, a discussion on the Brazeau/Drummons lands may be required.

Thanks

John
x14990

From: Guy Forget [mailto:gforget@jlrichards.ca]
Sent: Wednesday, December 06, 2017 7:53 AM
To: Bougadis, John <John.Bougadis@ottawa.ca>
Cc: Hugo Lalonde <HLalonde@minto.com>; Lucie Dalrymple <ldalrymple@jlrichards.ca>
Subject: BSUEA - Comments

Hi John,

We got the comments last week from the City. As per Comment 19(upcoming revisions to the sanitary design criteria), we did not receive the PDF as noted in that comment. Any chance that you can forward this attachment.

On another note, we may want to meet and discuss a few of the comments received. We will go through Robin and discuss further.

Thanks

Guy

Guy Forget, P.Eng., LEED AP
Associate
Senior Water Resources Engineer

J.L. Richards & Associates Limited
864 Lady Ellen Place, Ottawa, ON K1Z 5M2
Tel: 613-728-3571 Fax: 613-728-6012

'

'

Table 1

Parameters	Current			Proposed		
	Design	**Annual**	**Rare**	**Design**	**Annual**	**Rare**
Res. Per Capita	350	300	300	280 [1]	200 [2]	200 [2]
Commercial	50000	17000	17000	28000	17000 [4]	17000 [4]
Institutional	50000	17000	17000	28000	17000 [4]	17000 [4]
Industrial	35000	10000	10000	35000 [4]	10000 [4]	10000 [4]
I/I dry	n/a	n/a	n/a	0.05	0.02*	0.02*
I/I wet	0.28	0.28*	0.5*	0.28	0.28*	0.53*
Total I/I	0.28	0.28*	0.5*	0.33	0.3	0.55 [3]
Harmon - Correction Factor	1	0.4-0.6	0.4-0.6	0.8	0.6	0.6
ICI Peak Factor	1.5	1	1	1.5/1 [5]	1	1

* or higher with the support of monitoring data

[1] 280 L/cap/day = 90th percentile based on statistical analysis of new development

[2] 200 L/cap/day = 70th percentile for new development, 60th percentile for old development

[3] 0.53 L/ha/day = interim value to be reviewed in 2017

[4] Values to be reviewed in 2017

[5] ICI Peak Factor = 1.5 if ICI in contributing area is >20%, 1.0 if ICI in contributing area is <20%

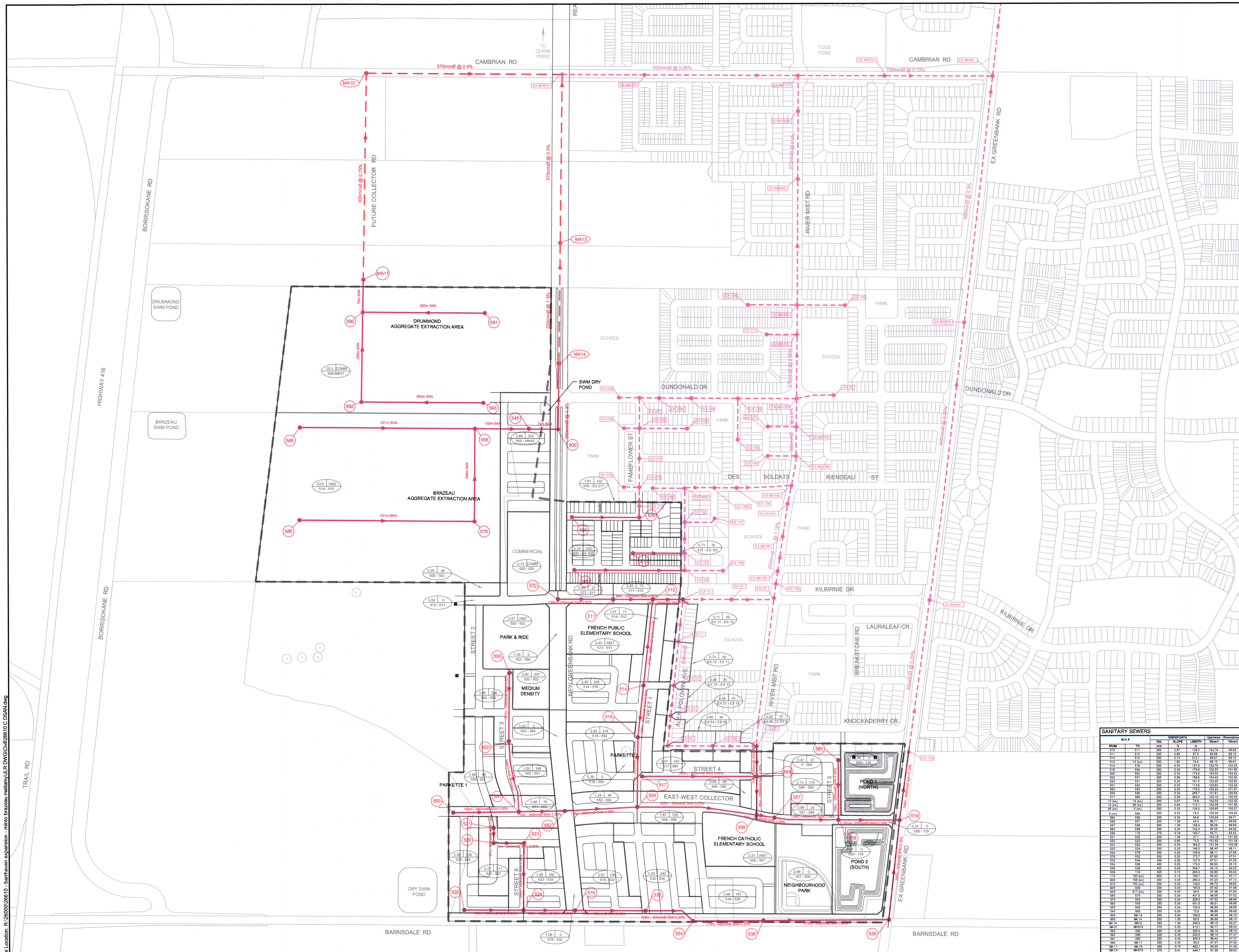
Notes:

1) Sewers in new subdivisions shall be designed to operate under free flow conditions during peak flow periods.

2) During a catastrophic failure at a wastewater pump station, the HGL in the sanitary sewer system shall be below the underside of footing for the "Annual Event" flow condition.

3) A minimum freeboard of 0.3 m is required under a "Rare Event" flow condition. For areas serviced by a pump station, assume the station is operating at its rated capacity (rated capacity to be confirmed by ESD staff).

4) Preferably, the elevation of the sanitary overflow conduit should be above the 100 yr stormwater elevation. The overflow elevation can be lowered to the 25 year storm event on a case-by-case basis.



SANITARY SEWERS

M.H. #		SEWER DATA			Upstream	Downstream
		DIA.	SLOPE	LENGTH	Obvert	Obvert
FROM	TO	mm	%	m		
572	511	200	2.87	136.5	102.79	98.88
511	512	200	0.80	97.5	98.88	98.10
514	512	200	0.74	212.1	99.67	98.10
512	10 (ex.)	200	1.60	74.4	98.10	96.91
514	516	200	0.35	127.9	102.70	102.25
516	554	200	0.35	170.9	102.25	101.65
500	502	200	0.35	174.0	105.03	104.42
502	551	200	0.89	168.6	104.42	102.92
550	551	200	0.35	161.5	103.20	102.63
551	552	200	0.35	113.6	102.63	102.24
552	554	200	0.35	178.3	102.24	101.61
554	556	250	0.33	295.7	101.61	100.64
517	564	200	0.58	282.4	102.10	100.45
13 (ex.)	14 (ex.)	200	0.67	74.6	102.55	102.05
14 (ex.)	90 (ex.)	200	0.94	112.1	102.00	101.95
90 (ex.)	5 (ex.)	200	0.35	108.2	100.95	100.57
5 (ex.)	564	200	0.35	74.2	100.30	100.04
564	556	200	0.35	94.6	100.04	99.71
556	557	250	1.39	44.3	99.71	99.09
557	558	250	1.39	158.4	99.09	96.89
560	558	200	0.35	142.3	95.32	94.82
558	119	375	0.18	150.7	93.71	93.43
521	522	200	1.50	37.1	102.18	101.62
522	523	200	0.80	73.3	101.62	101.04
523	524	200	0.35	164.0	101.04	100.46
520	524	300	0.20	146.3	98.40	98.11
524	578	300	0.20	126.9	98.11	97.85
578	532	300	0.20	173.7	97.85	97.51
532	534	300	0.20	127.5	97.51	97.25
534	536	450	0.20	173.3	95.50	95.15
536	538	450	0.20	309.7	95.15	94.53
538	119	525	0.15	245.3	93.80	93.43
119	120 (ex.)	600	0.15	168.7	93.43	93.17
900	158 (ex.)	200	0.35	280.0	97.23	97.13
910	153 (ex.)	200	0.35	130.0	96.70	96.65
920	930	200	0.35	165.0	97.42	97.36
930	217 (ex.)	200	0.35	40.0	97.36	97.24
585	575	250	0.24	431.0	98.56	97.52
575	555	250	0.24	228.0	97.52	96.98
565	555	250	0.24	431.0	98.01	96.98
555	545	250	0.24	133.0	96.98	96.66
545	900	250	0.24	72.0	96.66	96.48
900	MA 14	250	0.24	160.0	96.48	96.10
900	MA 14	250	1.30	60.0	96.88	96.10
MA 14	MA13	250	1.30	295.0	96.10	92.27
MA13	MH57A	375	0.30	413.1	90.77	89.53
593	592	200	0.35	300.0	99.19	98.14
592	590	200	0.35	220.0	98.14	97.37
591	590	200	0.35	300.0	98.42	97.37
590	MA 11	300	0.35	80.0	97.37	97.09
MA 11	MA 10	300	0.75	482.1	95.00	91.38
MA 10	MH57A	375	0.41	449.7	91.38	89.53

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 (0.23)
- POPULATION (5)
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE (41-32)
- COMM — COMMERCIAL
- INST — DRAINAGE BOUNDARY
- VARIES — SEE DESIGN SHEET FOR VARIOUS RUNOFF COEFFICIENTS

No.	ISSUE / REVISION	DD/MM/YY
3	ADDRESS COMMENTS, RE-ISSUE BSUEA MSS 2ND SUBMISSION	26/02/18
2	ISSUED AS PART OF DRAFT MSS	20/09/17
1	ISSUED FOR PRE-TAC WORKING MEETING	31/08/17

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:4000

CLIENT:

CONSULTANT: www.jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP: LICENSED PROFESSIONAL ENGINEER — M. H. L. DALRYMPLE — Feb 27/18 — PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:

BARRHAVEN SOUTH URBAN EXPANSION AREA (BSUEA)

DRAWING:

MASTER SANITARY DRAINAGE AREA

DESIGN: JW
DRAWN: CJM
CHECKED: LD
JLR #: 26610

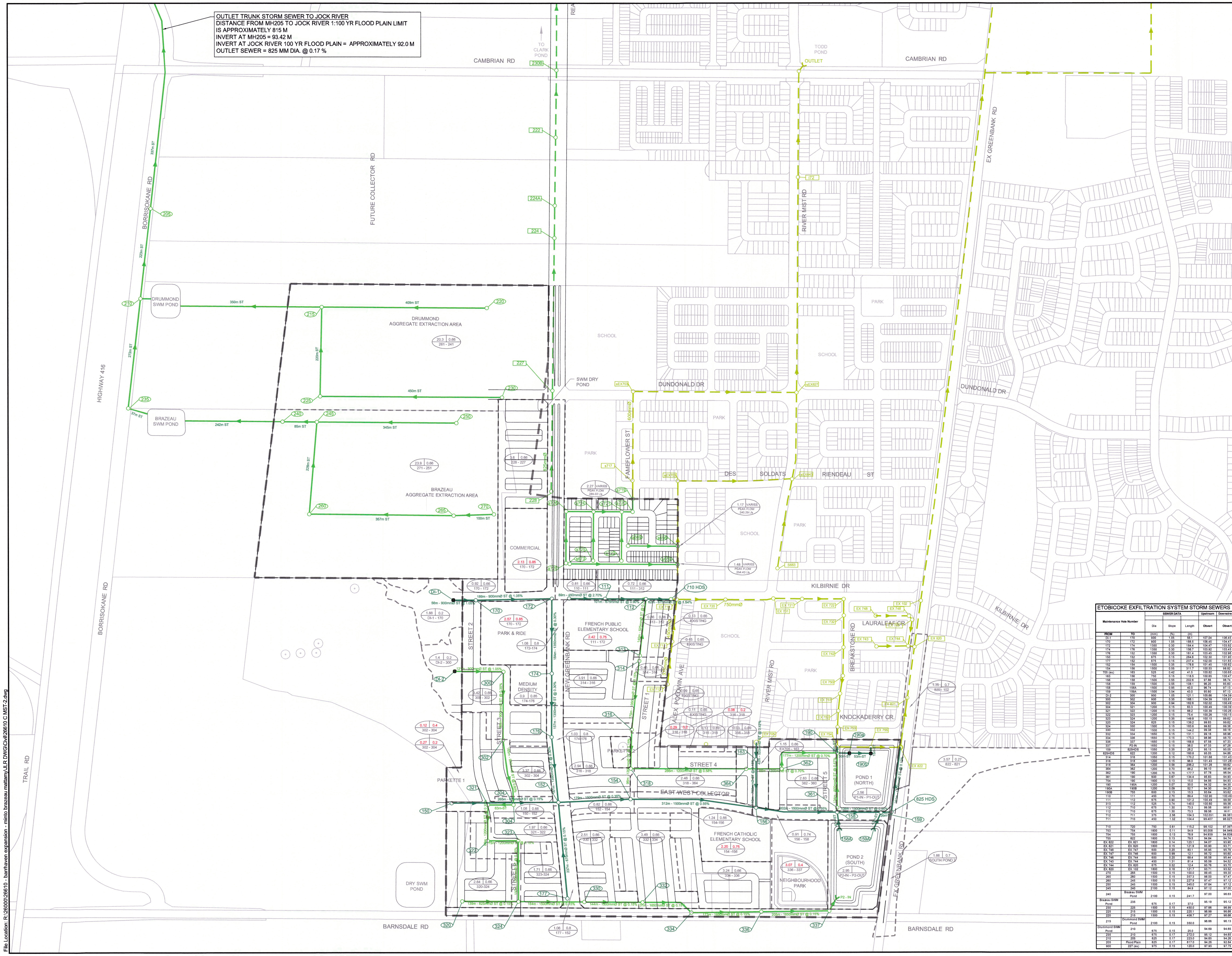
DRAWING #: MSAN

File Location: R:\26000\26610 - barrhaven expansion - minto brazeau mattamy\JLR DWG\Civil\26610 C DSAN.dwg

PLOT DATE: February 27, 2018 3:00:29 PM

Appendix D

Background Stormwater
Servicing Documents



ETOBICOKE EXFILTRATION SYSTEM STORM SEWERS

Maintenance Hole Number		SEWER DATA			Upstream	Downstream
		Dia	Slope	Length	Obvert	Obvert
FROM	TO	(mm)	(%)	(m)		
DI-1	170	900	1.05	56.1	107.04	106.45
170	172	900	1.05	188.5	106.45	104.47
172	174	1350	0.30	184.4	104.47	103.92
174	176	1350	0.30	156.7	103.92	103.45
176	152	1350	0.30	161.4	103.45	102.96
150	152	675	0.15	264.6	102.30	101.90
177	152	675	0.15	237.4	102.00	101.65
152	154	1500	0.35	178.8	101.45	100.82
154	156	1500	0.55	311.7	100.53	98.82
705 (ex)	163	525	0.42	41.5	100.82	100.65
163	156	750	0.15	118.5	100.65	100.47
156	158	1500	0.55	202.6	97.86	96.74
158	159	1500	0.55	108.1	96.20	95.60
158	158A	1500	0.95	40.0	96.74	97.13
159	159A	1500	3.54	43.0	95.60	97.13
DI-2	300	900	1.05	121.1	105.66	104.39
300	302	900	0.35	168.1	104.39	103.81
302	304	900	0.94	162.6	102.02	100.49
304	321	1200	0.15	63.3	100.49	100.39
321	322	1200	0.15	88.2	100.39	100.26
322	323	1200	0.15	75.4	100.26	100.15
323	324	1200	0.35	149.8	100.15	99.62
320	324	825	0.15	139.2	99.83	99.62
324	330	1500	0.15	163.6	99.62	99.38
330	332	1500	0.15	144.2	99.38	99.16
332	334	1650	0.15	131.1	99.16	98.96
334	336	1650	0.15	173.3	98.96	98.70
336	337	1650	0.15	168.8	97.58	97.33
337	P2-IN	1650	0.15	36.0	97.33	97.28
159	825HDS	1050	0.35	26.2	95.15	95.05
825HDS	822	1200	0.12	160.8	95.05	94.86
314	316	1050	0.15	170.2	101.68	101.43
316	318	1200	0.15	96.0	101.43	101.28
318	364	1200	0.58	286.2	101.28	99.62
364	362	1200	0.70	88.2	99.10	98.48
362	190	1200	0.70	177.7	97.78	96.54
361	190	600	0.67	134.4	95.83	94.93
754	190	1800	0.13	15.0	94.95	94.93
190	190A	1200	0.07	30.0	94.32	94.30
190A	190B	1200	0.09	52.7	94.30	94.25
190B	755	600	0.13	15.3	93.64	93.62
110	111	450	2.70	89.4	102.90	100.49
111	112	675	0.90	101.2	100.49	99.58
313	112	525	0.74	140.0	100.60	99.56
112	710	675	1.30	73.3	99.56	98.61
112	710	675	1.30	73.3	99.56	98.61
712	711	375	2.56	104.3	102.031	99.361
711	710	450	1.32	104.4	99.407	98.027
710	720	750	0.61	115.2	98.102	97.397
753	754	1800	0.11	54.9	95.008	94.949
754	755	1800	0.13	76.9	94.939	94.839
755	822	1800	0.13	79.5	94.84	94.74
EX. 822	EX. 821	1800	0.14	123.1	94.07	93.90
EX. 821	EX. 820	1800	0.15	121.9	93.90	93.71
EX. 748	EX. 747	600	0.20	83.1	95.95	95.79
EX. 747	EX. 746	600	0.99	12.1	95.72	95.60
EX. 746	EX. 744	600	0.20	69.4	95.58	95.44
EX. 743	EX. 744	450	1.31	81.4	95.59	94.52
EX. 744	EX. 820	675	0.52	12.4	93.76	93.70
EX. 820	EX. 102	1800	0.16	121.7	93.71	93.52
270	265	1500	0.15	100.0	99.45	99.30
265	260	1500	0.15	357.3	98.00	97.47
260	245	1500	0.15	227.9	97.47	97.12
250	245	1500	0.15	345.0	97.64	97.12
245	240	2100	0.15	84.9	97.12	97.00
240	Brazeau SWM Pond	2100	0.15	241.7	97.00	96.63
Brazeau SWM Pond	235	675	0.17	37.0	95.19	95.12
230	225	1500	0.15	450.0	97.66	96.99
225	215	1500	0.15	220.1	96.99	96.66
220	215	1500	0.15	408.7	97.27	96.66
215	Drummond SWM Pond	2100	0.15	350.0	96.66	96.13
Drummond SWM Pond	210	675	0.15	25.0	94.69	94.65
235	210	675	0.17	272.0	95.12	94.65
210	205	825	0.17	223.0	94.65	94.26
205	Flood Plain	825	0.17	817.0	94.26	92.84
900	227 (ex)	975	0.15	120.0	97.93	97.75

LEGEND

- PROPOSED STORM (EES SYSTEM), PER 2018 BSUEA MSS
- PROPOSED STORM (CONVENTIONAL), PER 2018 BSUEA MSS
- PROPOSED OPEN DITCH, PER 2018 BSUEA MSS
- FUTURE STORM, PER 2014 BS MSS
- EXISTING STORM
- EXISTING OPEN DITCH
- DRAINAGE BOUNDARY
- LIMIT OF STUDY AREA FOR BSUEA
- 710 HDS — HYDROLOGY DYNAMIC SEPARATOR
- AREA IN HECTARES*
- RUNOFF COEFFICIENT*
- PIPE REACH UPSTREAM MAINTENANCE HOLE TO DOWNSTREAM MAINTENANCE HOLE

* IF RED, AREAS DESIGNATED AS COMMERCIAL, SCHOOLS OR PARKS

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.

No.	ISSUE / REVISION	DD/MM/YY
3	ADDRESS COMMENTS, RE-ISSUE BSUEA MSS 2ND SUBMISSION	26/02/18
2	ISSUED AS PART OF DRAFT MSS	20/09/17
1	ISSUED FOR PRE-TAC WORKING MEETING	31/08/17

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:4000

CLIENT:

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP — LICENSED PROFESSIONAL ENGINEER, M. K. L. DALRYMPLE, PROVINCE OF ONTARIO, Feb 27/18

PROJECT NORTH

PROJECT:

BARRHAVEN SOUTH URBAN EXPANSION AREA (BSUEA)

DRAWING:

MASTER STORM DRAINAGE PLAN EES

DESIGN: JW

DRAWN: CJM

CHECKED: LD

JLR #: 26610

DRAWING #: MST-2

PLOT DATE: February 27, 2018 2:56:28 PM

File Location: R:\26000\26610 - barrhaven expansion - minto brazeau mattamy\JLR DWG\Civil\26610 C MST-2.dwg

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N1H 7Y6
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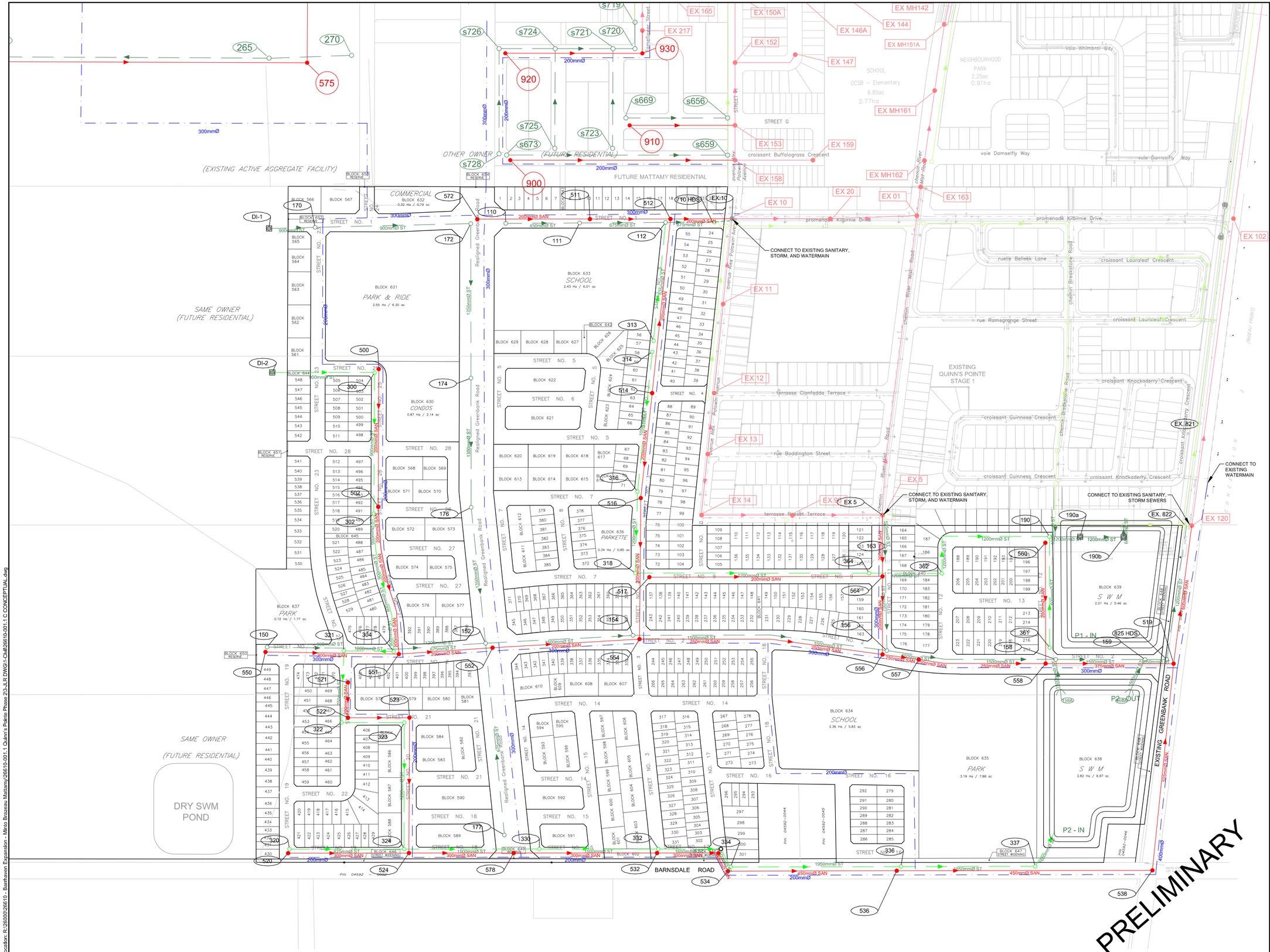
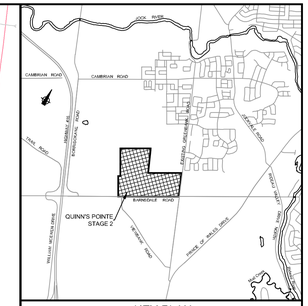




KEY PLAN

LEGEND

- CONCEPTUAL STORM (EES) 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

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED FOR SERVICING BRIEF	28/03/18

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:2,000

CLIENT:
MINTO COMMUNITIES INC.
200-180 KENT STREET
OTTAWA, ON
K1P 0B6

CONSULTANT: www.jlrichards.ca
J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
QUINN'S POINTE STAGE 2
BARRHAVEN SOUTH URBAN EXPANSION AREA

DRAWING:
CONCEPTUAL
SITE SERVICING

DESIGN: AT	
DRAWN: TB	DRAWING #:
CHECKED: HM	CS1
JLR #: 26610-001.1	

File Location: R:\26600\26610 - Barrhaven Expansion - Minto Brazeau Mattamy\26610-001.1 Quinn's Pointe Phase 2\3-JLR DWG\1-CIM\26610-001.1 C CONCEPTUAL.dwg

PLOT DATE: March 29, 2018 1:07:50 PM

FUTURE MATTAMY RESIDENTIAL

COMMERCIAL
BLOCK 632
0.32 Ha / 0.79 ac

BLOCK 631
PARK & RIDE
2.55 Ha / 6.30 ac

BLOCK 630
CONDOS
0.87 Ha / 2.14 ac

BLOCK 633
SCHOOL
2.43 Ha / 6.01 ac

BLOCK 634
SCHOOL
2.36 Ha / 5.83 ac

BLOCK 635
PARK
3.19 Ha / 7.88 ac

BLOCK 636
PARKETTE
0.34 Ha / 0.85 ac

BLOCK 637
PARK
0.72 Ha / 1.77 ac

BLOCK 638
S W M
2.82 Ha / 6.97 ac

BLOCK 639
S W M
2.21 Ha / 5.46 ac

EXISTING QUINN'S POINTE STAGE 1

Realigned Greenbank Road

EXISTING GREENBANK ROAD

BARNSDALE ROAD

promenade Kilbirnie Drive

ruelle Belleek Lane

croissant Lauraleaf Crescent

rue Ramsgrange Street

terrasse Clonfadda Terrace

croissant Guinness Crescent

croissant Knockaderry Crescent

rue Boddington Street

terrasse Russet Terrace

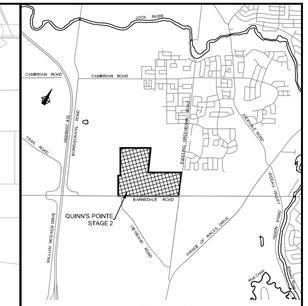
chemin Breakstone Road

chemin River Mist Road

avenue Alex Polowin Avenue

PRELIMINARY

KEY PLAN



LEGEND

100.95 *	GRADES TAKEN FROM: TODD POND AND CLARK POND MODEL KEEPER ANALYSIS (JFSA)
102.85 *	MINTO LANDS WITHIN BHSUEA
99.75 *	GRADES TAKEN FROM: STANTEC TOPOGRAPHIC SKETCH OCTOBER 2015
96.13 *	GRADES TAKEN FROM: REALIGNED GREENBANK ROAD AND TRANSITWAY EXTENSION PLANNING AND ENVIRONMENT ASSESSMENT
94.5 +	GRADES TAKEN FROM: BARRHAVEN SOUTH MASTER SERVICING STUDY ADDENDUM (STANTEC)
104.0 *	MINIMUM FILL ELEVATION REQUIREMENT WITHIN PITS
⇨	MAJOR OVERLAND FLOW DIRECTION

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CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:
MINTO COMMUNITIES INC.
QUINN'S POINTE PHASE 2
BARRHAVEN SOUTH

DRAWING:
CONCEPTUAL GRADING PLAN

DESIGN:	AT
DRAWN:	TB
CHECKED:	HM
JLR #:	26610-001.1

DRAWING #: CG1

PLOT DATE: March 29, 2018 1:15:11 PM

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