

June 20, 2025
Our File No.: 32874-000.1

VIA: E-MAIL

Stephen Ashton
Director of Engineering and Development Services
City of Belleville
169 Front Street
Belleville, ON K8N 2Y8

Dear Mr. Ashton:

Re: Belleville Black Bear Ridge Development Servicing Study

J.L. Richards & Associates Limited completed the analysis for the proposed Black Bear Ridge (BBR) Development Servicing Study documented in the Phase 2 Servicing Study Report. This analysis was completed to determine the high-level impacts to the City's infrastructure and order of magnitude costs. Following this detailed analysis further comments / inquiries from Black Bear Ridge development team were received that, if incorporated would require an update to the detailed analysis (modelling etc.).

The intent of this letter is to document the key variations in information, discuss the overall impacts to the analysis and provide high-level impacts to forecasted servicing costs.

In addition, prior to proceeding with municipal water and wastewater projects, there is a requirement to undertake a Municipal Class Environmental Assessment (MCEA) to refine these upgrades and costs. The MCEA requirements for the various projects were also identified in the Phase 2 Servicing Study Report.

GROWTH PROJECTIONS:

Comments:

- The assignment of BBR's residential development density could be refined from the previously discussed values (Phase 1 report) to match the density used to project the City's growth. Instead of 3 persons per unit (PPU) that was originally planned by BBR, the density should be updated 2.77 PPU for low density, 2.12 PPU for medium density, and 1.57 PPU for high density.
- The existing residential population of 156 in BBR servicing area is not the responsibility of BBR development. The cost associated with servicing these existing customers should be removed from the cost borne by BBR.
- The commercial development and residential phasing plan within BBR needs to be better refined from the previously reviewed values (Phase 1 report) based on the MZO maximum caps for specific commercial uses. BBR provided updated information on the commercial and residential phasing plan (appended).

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Impacts:

The following table summarizes the effects from the reduction of residential development density and phasing changes, as per BBR's email on March 28, 2025. For reference, the original Zone 3 Black Bear serviced population was included in Phase 2 Report, Table 3.

Table 1: Updated Servicing Population Projections Scenario 2 City + BBR

	Existing Serviced Population 2023	Short-Term City + BBR 2023-2033	Mid-Term City +BBR 2033-2043	Long-Term City Growth +BBR 2043-2051
Zone 3 Black Bear Ridge (Original)	0	1,833	5,568	9,303
Zone 3 Black Bear Ridge (Revised)	0	1,374	4,045	6,716

The following table summarizes the anticipated commercial development changes, based on BBR's email on March 28, 2025. For reference, the original ICI growth was included in Phase 1 Report, Table 7.

Table 2: Updated Institutional, Commercial and Industrial Growth

Development Type	Black Bear Ridge (Original)	Black Bear Ridge (Revised)
Harmony School [Student]	900 (Short-Term)	900 (Short-Term)
Commercial [Ha]	18 ha (Short-Term)	200 m ² Fairground (Short-Term) 160 seats Club House (Short-Term) 5,000 m ² Pro Shop Building (Short-Term) 2,500 m ² Spa (Short-Term) 15,000 m ² Commercial (Long-Term)
Hotel [Bed Space]	500 (Short-Term)	100 (Short-Term) 200 (Mid-Term) 200 (Long-Term)

The following table summarizes the effects on average day wastewater flows based on the residential and commercial changes above. The BBR water demand presented in this table excludes Harmony School and the existing 156 residents living in the BBR area. JLR anticipates similar changes to the water demand.

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Table 3: Updated Average Day Wastewater Flows from BBR

	Short-Term City +BBR 2023-2033	Mid-Term City +BBR 2033-2043	Long-Term City +BBR 2043-2051
Total ADF m ³ /d (original)	34,579	55,895	59,407
Total ADF m ³ /d (revised)	34,728	55,292	58,679
BBR ADF m ³ /d (original)	1,339	2,646	3,953
BBR ADF m ³ /d (revised)	505	1,490	2,550

These updated growth numbers were used to pro-rate the infrastructure upgrades in the short term to illustrate the impacts to the costs. Refer to appended table.

TREATED WATER STORAGE

Comment:

- BBR's consultant has inquired regarding the methodology used to determine the treated water storage for each of the pressure zones. The question is specific to Phase 2 Report, Table 10, the 25% max day demand additional storage requirements for upper zones, in addition to the A+B+C calculation

Impacts:

This section is intended to outline the MECP design guideline requirements for treated water storage and discuss the design considerations for future work.

MECP Design Guidelines for Drinking Water Systems, Chapter 8: Treated Water Storage indicates the following design considerations:

- Section 8.1 General:
 - "Treated water storage facilities should be designed to allow maintenance of adequate flows and pressures in the distribution system during peak hour water demand, and to meet critical water demands during fire flow and emergency conditions."
 - "The designer should keep in mind that the purpose of water storage is to ensure continuity of supply and maintain system pressure."
- Section 8.3 Pressure Considerations:
 - "The minimum required water level and the location for a distribution system storage facility should provide acceptable service pressures throughout the distribution system..."
 - "System water demands in excess of maximum day requirements are normally met from storage."
- Section 8.4.2 Sizing Treated Water Storage for Systems Providing Fire Protection
 - "Total Treated Water Storage Requirement = A + B + C Where: A = Fire Storage; B = Equalization Storage (25% of maximum day demand); and C = Emergency Storage (25% of A + B)."
 - "Where existing data is available, the required storage should be calculated on the basis of the demand characteristics within the system"

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- For situations where the water supply system can supply more, the storage requirements can be reduced accordingly.

Based on the MECP guidelines there are some variations in assumptions, variables and interpretation that can be employed to determine the required storage. The level of redundancy and / or reduction in treated water storage will need to be refined during the next stages of projects. The storage redundancy shall be evaluated and confirmed through a Class EA for treated water storage and detailed design. The control logic between booster pumping and treated water storage shall also form an important part of the Class EA.

Additionally, a suggestion to the possibility of feeding pressure Zone 2 (Cannifton) from Zone 3 (BBR) was indicated; this option has some technical merit; however, this will need to be reviewed in detail during the EA to determine the City's preferences on redundancy and risk.

For the purpose of comparison, the 25% max day demand for additional storage requirement has been removed from the updated costs.

UPDATED COSTS

The Opinion of Probable Costs for the short-term projects have been updated to reflect the above changes including updates to the revised service population and correlated project costs split. Refer to the appended table.

As can be seen in the appended table, while these changes do impact the overall servicing costs, the order of magnitude for servicing does not drastically change (i.e. \$42M to \$35M) nor does the project cost split.

Best Regards,

J.L. RICHARDS & ASSOCIATES LIMITED



Susan Jingmiao Shi, P.Eng., M.Eng.
Senior Environmental Engineer

Matthew Morkem, P.Eng.
Director of Environmental Infrastructure

SJS

Attachment: Emails on BBR Residential and Commercial Development on March 28, 2025

		March 2025 Original OPC				April 2025 Revised OPC			
Project #	Short-Term	Project Description	OPC (+/-50%)	City and Other's Share	BBR's Share	Key Changes	OPC (+/-50%)	City and Other's Share	BBR's Share
1	Storage (Zone 1)	New floating storage in Zone 1 (4.2ML), including EA, engineering and construction	\$11,000,000	\$8,640,000	\$2,360,000	Removed 25% max day storage requirements in Zone 1 – project eliminated	\$ -	\$ -	\$ -
2	Storage (Zone 2)	New floating storage in Zone 2 (4ML), including EA, engineering and construction	\$10,000,000	\$8,860,000	\$1,140,000	Removed 25% max day storage requirements in Zone 2 – reduced storage volume to 3.6 ML	\$ 9,500,000.00	\$ 9,500,000.00	\$ -
3	Storage (Zone 3)	New floating storage in Zone 3 (4.5ML), including EA, engineering and construction	\$ 12,000,000	\$280,000	\$11,720,000	Reduced storage volume to 3.4 ML due to revised water demand	\$ 10,000,000.00	\$ 400,000.00	\$ 9,600,000.00
4	Booster Pumping (Zone 2)	Adam St. Booster Pump Station Pump Modification, including engineering and construction	\$2,500,000	\$1,970,000	\$530,000	No change to proposed project; split updated	\$ 2,500,000.00	\$ 2,040,000.00	\$ 460,000.00
5	Booster Pumping (Zone 3)	Zone 3 Booster Station, including EA, engineering and construction	\$2,400,000	\$50,000	\$2,350,000	Reduced pumping requirements due to refined water demand	\$ 2,000,000.00	\$ 80,000.00	\$ 1,920,000.00
6	Sanitary Collection	New gravity sewer along Routing Option 4 connecting BBR to Corbyville (2.8 km of 600mm diameter sewer)	\$12,600,000	\$300,000	\$12,300,000	No change to proposed project; split updated	\$ 12,600,000.00	\$ 500,000.00	\$ 12,100,000.00
7	Sewage Pump Station	New sewage pump station in Corbyville (150 L/s) and new forcemain (200 mm) connecting Corbyville to northern trunk sewer along Cannifton Rd.N	\$10,050,000	\$1,770,000	\$8,280,000	No change to proposed project; split updated	\$ 10,050,000.00	\$ 2,370,000.00	\$ 7,680,000.00
8	Water Distribution	New watermain along Routing Option 4 connecting BBR and Cannifton Rd N. (3.8 km of 400mm dia watermain) *Assumed in common trench as sanitary and is a price adder	\$4,560,000	\$800,000	\$3,760,000	No change to proposed project; split updated	\$ 4,560,000.00	\$ 1,080,000.00	\$ 3,480,000.00
		TOTAL (SHORT-TERM)	\$ 65,110,000	\$22,670,000 (35%)	\$42,440,000 (65%)		\$51,210,000	\$15,970,000 (31%)	\$ 35,240,000 (69%)

Susan Jingmiao Shi

From: Bryon Keene <bryon@jewelleng.ca>
Sent: Friday, March 28, 2025 5:30 PM
To: Mike Pettigrew; Glenn McGlashon
Cc: Jianopoulos, Nathan; Pinchin, Greg; Matthew Morkem; Susan Jingmiao Shi; Regine Climaco; Laura Lebel-Pantazopoulos
Subject: RE: JLR Information

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Hi Mike and Glenn,

I think the number of residential in each stage should be made clear. Currently BBR is proposing, 559 units in stage 1 and the remaining are assumed to be split in the mid and long terms. The Stages 2 and 3 split is just estimated.

Stage 1 = 559 units

Stage 2 = 1,245

Stage 3 = 1,245

Total = 3,049

I appealed to the OBC for some help with other commercial demands and assumed:

Restaurants	5,000m ²	200 seating capacity @ 125L/seat =	25,000L
Shops	10,000m ²	@5L/m ² =	50,000L
Clubhouse (as a Bar & Cocktail lounge)	160 seats @ 125L/seat =		20,000L
Resort Spa	200 persons @ 40L =		8,000L (this could be very low depending on the Spa type)
Resort Accommodations	100 persons @ 250L/person		25,000L (again, could be higher) (Stage 1 – Short term)
Total = 128,000L.			

Round to 150,000L (not all will be constructed in stage 1)

Add Hotel usage @ 250L/room for the remaining 400 rooms (2008 MECP that uses 225L/bed space)

+ 200 rooms @ 250L/room = 50,000L (Mid)

+ 200 rooms @ 250L/room = 50,000L (Long)

Hotel / Resort = 100,000L

Total = 250,000L

Round all this up to:

Short Term 100,000L

Mid Term 100,000L

Long Term 100,000L

From: Mike Pettigrew <mpettigrew@thebiglierigroup.com>

Sent: Friday, March 28, 2025 4:22 PM

To: Glenn McGlashon <Gmcglashon@outlook.com>; Bryon Keene <bryon@jewelleng.ca>
Cc: Jianopoulos, Nathan <njianopoulos@belleville.ca>; Pinchin, Greg <gpinchin@belleville.ca>; Matthew Morkem <mmorkem@jlrichards.ca>; Susan Jingmiao Shi <sshi@jlrichards.ca>; Regine Climaco <rclimaco@jlrichards.ca>; Laura Lebel-Pantazopoulos <lauralp@thebiglierigroup.com>
Subject: Re: JLR Information

Hi Glenn,

Appreciate your time today. We'll check in next week with you.

Here's the information we spoke about. Bryon please add anything else you think is relevant.

Residential split (entire development):

- 762 Single Family Units (25%)
- 153 Semi-Detached Units (5%)
915 LOW DENSITY (30%) - 2.77 ppu (per Jewell's email)
- 610 Townhouse Units (20%)
- 610 Low Rise Units (20%)
1220 MEDIUM DENSITY (40%) - 2.12 ppu (per Jewell's email)
- 457 Stacked Townhouse (15%)
- 457 Apartment (15%)
914 HIGH DENSITY (30%) - 1.57 ppu (per Jewell's email)
- 7.1 ha / 500 Room Resort Accommodations
OTHER

MZO permissions for specific uses: (Note: these are all maximums per the Order)

- Fairgrounds = 200 sq.m (for buildings only; intended for outdoor event areas)
- Club House = 6,000 sq.m
- Golf Pro shop, maintenance, golf teaching academy = 5,000 sq.m
- Resort Uses (not commercial but could contain some retail and restaurants) = 25,000 sq.m of which 2,500 sq.m max for a spa/wellness centre, and 10,200 sq.m for resort accommodations
- Commercial = 15,000 sq.m [**professional offices, banks, retail, service shops, restaurants, convenience stores, food supermarket, workshop is the permitted list**]

Note: the 15,000 sq.m of commercial is most likely to be entirely in a mixed use format in two clusters (one in phase 1 and one in phase 2 or 3. In both cases, will be the last portion developed as the population and visitors increase to meet demand. There will be some other commercial uses in pockets of the neighbourhood perhaps, but less likely given the overall vision for the Secondary Plan.

Thank you and have a great weekend!

Upcoming Vacation Alert: I will be away from April 12th to April 21st.

Mike Pettigrew, B.U.R.P.I.

Partner - Manager of Design

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From: Glenn McGlashon

Sent: Friday, March 28, 2025 4:06 PM

To: Mike Pettigrew; bryon@jewelleng.ca

Cc: Jianopoulos, Nathan; Pinchin, Greg; Matthew Morkem; Susan Jingmiao Shi; Regine Climaco

Subject: JLR Information

Mike/Bryon:

Thanks for the good chat at this afternoon's meeting.

After the meeting, the City and JLR met and concluded that JLR will take a little time to review Jewell's memo, the speaking points, and consider the implications of work required. It is late on a Friday so it will be sometime next week before we know more.

In the meantime, I understand from the meeting we can expect some information of clarity from your side (ie. commercial land uses/allocations, other). For our information purposes, would you please provide a short list of the information you propose to provide and when we might expect this?

Much appreciated, and enjoy the weekend.

Best regards,

Glenn J. McGlashon, MCIP RPP

Principal Planner | Owner



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