



Site Serviceability Report

Land Rezoning Application
5254 Bank Street
Ottawa, Ontario

Prepared for:

Mrs. Donna Livingston
c/o Holzman Consultants Inc
311 Richmond Rd, Suite 203
Ottawa, Ontario K1Z 6X3

Attention: Jonah Bonn c/o Holzman Consultants Inc

LRL File No.: 190271

December 18th, 2019



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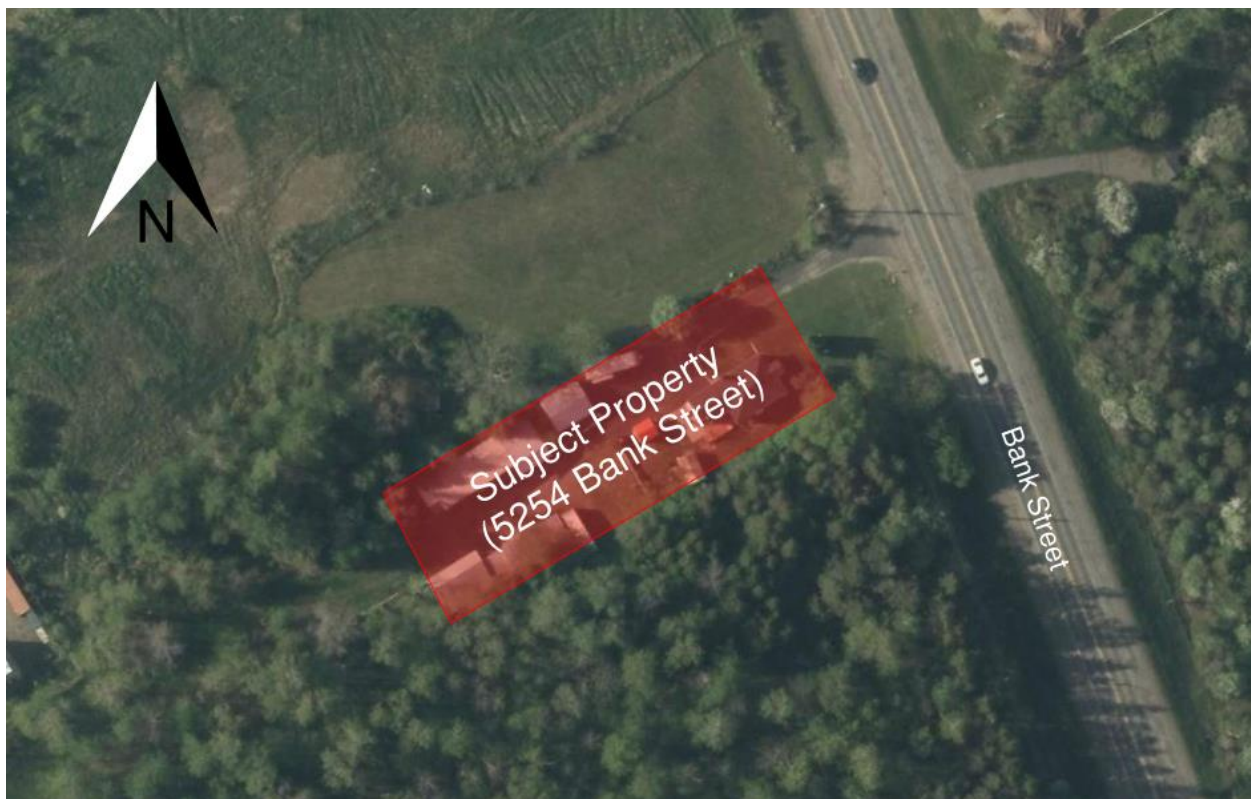
1 INTRODUCTION AND SITE DESCRIPTION

The 0.174ha lot located at 5254 Bank Street between Rideau Road and Mitch Owens Road in the City of Ottawa is currently occupied with an existing residential dwelling. It is proposed to rezone the property to a Rural General Industrial Zone to support an automotive dealership and body shop.

The existing property at the subject site is currently occupied with a single-family dwelling with an asphalt driveway accessed from Bank Street, multiple garages & sheds with gravel entrances, and surrounding front, side and rear yard landscaping in the form of grassed lawn and trees.

Figure 1 below highlights the current proposed boundary.

Figure 1: Aerial View of Existing Lot (5254 Bank) to be rezoned



The purpose of this document is to review the water, sanitary and storm servicing requirements for the lot and provide an analysis on the existing infrastructure surrounding the site to ensure there is adequate capacity or recommend potential infrastructure updates.

For calculation purposes, it is assumed that a 150 m² office building & 250 m² body shop will be developed on the property, both of which will require servicing.



2 WATER SERVICE

There is an existing 406mm diameter ductile iron municipal watermain on the East side of Bank Street, adjacent to the property, and it is assumed that the existing dwelling is being serviced off this municipal main.

The size, condition and location of the existing water service is not known. However, at this time, it is assumed that the service required for the future development(s) will have to be upgraded to meet the current City of Ottawa requirements. The existing service will have to be blanked and abandoned at the property line.

Based on a "Light Industrial" consumption rate, with an average day demand of 35,000 L/gross ha/day, it was found that the average increase in total water demand for the future property would be 0.059 L/s. This would result in an increase to a maximum daily demand of 0.088 L/s (assuming a peaking factor of 1.5) and a maximum increase of peak hourly demand of 0.159 L/s (assuming a peaking factor of 1.8)

Appendix A summarizes the Water Demand Calculations for Light Industrial Demand.

The required fire flow for the assumed office and commercial space was calculated using the Fire Underwriter's survey method and is based on the assumptions of the office having a square footage of approximately 1615 ft², and the industrial space having a square footage of approximately 2690 ft². The fire area considered includes both the office and industrial spaces.

Appendix B summarizes the FUS Fire Flow Calculations.

To determine the required size of water service for the developments, the boundary conditions would have to be obtained from the City of Ottawa. The city will only proceed with the calculations once a site plan has been released. The boundary conditions are crucial in the pipe design, as they are used to determine the pipe pressure losses. The losses will yield a minimum required diameter for the proposed service.

Please refer to Appendix C for correspondence with the City regarding their requirements to proceed with the boundary conditions.

3 SANITARY SERVICE

Currently there is no municipal sanitary sewer, adjacent to the proposed property, on Bank Street and it is assumed that the existing dwelling is serviced by the septic system. The age and current condition of the existing septic system are unknown, further investigation would be required to access its current condition and functionality.

However, due to the increased water demand, it is likely the existing system will not be sufficient for the new developments. The septic system required for the new development would have to be sized to meet "light industrial" flows. This would entail a detailed septic design. This design would be based on the information found in the architectural site plan(s) and building layout drawing(s), information such as the total square-footage and number of fixtures in the new proposed developments.



4 STORMWATER & SERVICE

Currently there is no municipal storm sewer adjacent to the subject lot. In pre-development conditions, the stormwater accumulated on the property would flow overland to the South property line, and South-West corner of the property, and ultimately into the surrounding forested area. The overland water would flow uncontrolled off the property. The topography of the site was reviewed (City of Ottawa's Topographical Map) in pre-development conditions to determine the direction of the flow.

Refer to Appendix D for the City of Ottawa Topography Map for 5254 Bank Street.

The lot is to be rezoned as "light industrial". Once rezoned, the lot will be developed with an office building and auto body shop. As this property will no longer be a small residential lot, quantity and quality control measures will be required, as per the City of Ottawa stormwater management design guidelines.

Best management practices and low impact development principles are to be implemented to ensure the proposed development will meet the City's stormwater quantity and quality requirements.

For quantity control measures, collection & overland flow should mimic pre-development conditions to ensure there is no additional run-off from the site to neighbouring properties. The site is currently mostly occupied by impervious surfaces (rooftops, asphalt & gravel), while the balance is landscaped area (grass). Based on our calculations, this would provide a pre-development Runoff Coefficient of 0.67.

Please refer to Table 1 below for the Pre-development Watershed Area Breakdown and Runoff Coefficient calculation.

Table 1: Pre-development Lot Breakdown & Runoff Coefficient Calculation

Watershed	Grass Area (ha) C = 0.20	Gravel Area (ha) C = 0.80	Asphalt / Roof Area (ha) C = 0.90	Total Area (ha)	Combined C
EWS-01	0.052	0.031	0.092	0.174	0.67

Based on our assumptions, the proposed development would contain a similar, if not greater, area of imperviousness. However, as per City requirements, all storm events up to and including the 100-year storm must be controlled to the 5-year pre-development level, and the allowable release rate must be calculated with a runoff coefficient maximum of $C = 0.5$. All factors considered, this would likely lead to the requirement of the implementation of a stormwater quantity control system to satisfy the requirements. The system would serve to control the allowable release rate & runoff. A detailed stormwater management design would be required (based on the proposed site plan) to propose a sufficient quantity control system.

Quality control would have to meet the City of Ottawa requirements, as per their design guidelines. The issuing authority for the area (South Nation Conservation Authority) would have to be contacted to determine the necessity for quality control measures.

5 CONCLUSION

Based on the foregoing;

The existing watermain running along Bank street has the capacity to service the proposed lot. Due to the increase in water demand, a new water service will be required connecting the watermain to the proposed development. The required size/diameter of service can only be determined on the site plans are released, and can be reviewed with the City.

The existing lot is assumed to be serviced by a septic system. Due to the increased water demand and considering the potential age / current condition of the existing septic, it is likely the existing will not be sufficient for meeting the new sanitary demands. A detailed septic design would be required, once the architectural plans are released, to determine an appropriate septic system.

Currently, stormwater flows uncontrolled off the South & West borders of the property. The property is mostly impervious area, with grass area covering the balance. In developing the lot into a "light industrial" lot, it is likely that the development will increase the impervious area of the property. The increase in impervious area, along with City of Ottawa design requirements, will likely require the site to implement a stormwater quantity management system. A proposed site plan is required to calculate the high-storm event run-offs, so the proper stormwater management system can be implemented.

Stormwater quality must be discussed with the RVCA to determine if quality control measures are required for the lot.

Prepared by:
LRL Associates Ltd.



Kyle Herold, E.I.T.
Civil Engineering Services



Virginia Johnson, P. Eng
Civil Engineering Services



APPENDIX A

Water Demand Calculations – Light Industrial



Water Supply Calculations

LRL File No. 190271
Date December 2nd, 2019
Prepared by Kyle Herold

Light Industrial Demand

Industrial Area	0.145	ha		
Average Daily Demand	35000	L/(gross ha/d)		
Maximum Daily Peak Factor	1.5			
Maximum Hourly Peak Factor	1.8			
Average Commercial Water Demand	5,075	L/d	0.059	L/s
Maximum Daily Commercial Water Demand	7,613	L/d	0.088	L/s
Maximum Hourly Commercial Water Demand	13,703	L/d	0.159	L/s

Total Water Demand

Average Total Water Demand	5,075	L/d	0.059	L/s
Maximum Daily Total Water Demand	7,613	L/d	0.088	L/s
Maximum Hourly Total Water Demand	13,703	L/d	0.159	L/s

APPENDIX B
FUS Fire Flow Calculations



Fire Flow Calculations

LRL File No. 190271 - 5254 Bank Street
 Date December 2, 2018
 Method Fire Underwriters Survey (FUS)
 Prepared by Kyle Herold

Step	Task	Term	Options	Multiplier	Choose:	Value	unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Wood Frame	1.5		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area								
2			Total area			400		
3	Obtain fire flow before reductions	Required fire flow	Fire Flow = $220 \times C \times \text{Area}^{0.5}$				L/min	6,600
							L/s	110.0
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Combustible	0%		
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%			L/min	6,600
			Rapid burning	25%			L/s	110.0
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	False	0%		
			Water supply is standard for both the system and fire department hose lines	-10%	False	0	L/min	6,600
			Fully supervised system	-10%	False	0	L/s	110.0
6	Choose separation	Exposure distance between units	North side	Over 45m	0%			
			East side	30.1 to 45m	5%			
			South side	Over 45m	0%		L/min	6,930
			West side	Over 45m	0%	5%	L/s	1.0
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 100)					L/min	6,900
		Minimum required fire flow rate					L/s	115.0
		Required duration of fire flow					hr	1.5

APPENDIX C

Pipe Pressure Loss Calculations

Kyle Herold

From: Whittaker, Damien <Damien.Whittaker@ottawa.ca>
Sent: Thursday, December 5, 2019 9:04 AM
To: Kyle Herold
Cc: Virginia Johnson
Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Hello Kyle,

Without a plan to compare against the numbers provided will only be taken by the City as an option- and not final. The request of the applicant, that the City has reluctantly accepted, is to move forward with the minimum of information. The intention of the City at this juncture is to be satisfied with components to move to the next juncture.

Even if the Owner's proposed development plan is only a 'possible sketch' it is needed to confirm the boundary condition request parameters; failing that the separation of the buildings on the plan does not concur with the numbers provided in the fireflow and an alternative should be provided.

Regards,

Damien Whittaker, P.Eng
Senior Engineer - Infrastructure Applications ▪ Ingénieur principal - applications d'infrastructure
Development Review, Rural Services Unit ▪ Examen des projets d'aménagement, Unité des services ruraux
Planning, Infrastructure and Economic Development Department | Services de la planification, de
l'infrastructure et du développement économique
City of Ottawa | ville d'Ottawa ▪ ☎ 613-580-2424 x16968 ▪ ✉ damien.whittaker@ottawa.ca ▪ 📅 01-14

From: Kyle Herold <kherold@lrl.ca>
Sent: December 04, 2019 9:00 AM
To: Whittaker, Damien <Damien.Whittaker@ottawa.ca>
Cc: Virginia Johnson <vjohanson@lrl.ca>
Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

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Good morning Damien,

We do not have a site plan / layout at this point.

In lieu of the site plan, I have provided a PDF of the aerial view of the proposed lot, within proximity of the neighboring lots. Will this be sufficient?

I have reviewed the area, and I can confirm that the City records are correct, the area of the subject lot is 0.174 ha. I have revised the Water Supply Calcs accordingly.

I have also revised the FUS Fire Flow calcs to match my current findings; the exposure distance from the East side is greater than 45m.

Please use the following revised data to provide the require boundary conditions:

Average Total Daily Demand = 0.070 L/s

Maximum Daily Demand = 0.106 L/s

Maximum Hourly Demand = 0.190 L/s

Required Fire Flow = 110.0 L/s

Any questions or concerns, please do not hesitate to reach out.

Thank you,



Kyle Herold

Civil EIT / Field Technician

LRL Associates Ltd.

5430 Canotek Road
Ottawa, Ontario K1J 9G2

T (613) 842-3434 or (877) 632-5664 ext 261

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From: Whittaker, Damien <Damien.Whittaker@ottawa.ca>
Sent: Tuesday, December 3, 2019 12:53 PM
To: Kyle Herold <kherold@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

Hello Kyle,

And can you please review the area of the site? City of Ottawa records the site as 0.43 acres that is suggested to convert to 0.174 hectares.

Thank you,

Damien Whittaker, P.Eng

Senior Engineer - Infrastructure Applications ▪ Ingénieur principal - applications d'infrastructure
Development Review, Rural Services Unit ▪ Examen des projets d'aménagement, Unité des services ruraux
Planning, Infrastructure and Economic Development Department | Services de la planification, de
l'infrastructure et du développement économique

City of Ottawa | **ville d'Ottawa** ▪ ☎ 613-580-2424 x16968 ▪ ✉ damien.whittaker@ottawa.ca ▪ 📅 01-14

From: Whittaker, Damien
Sent: December 03, 2019 12:50 PM

To: Kyle Herold <kherold@lrl.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

Hello Kyle,

Can you please provide a sketch of the site to confirm the exposure values chosen for the fire demand calculations?

Thank you,

Damien Whittaker, P.Eng
Senior Engineer - Infrastructure Applications ▪ Ingénieur principal - applications d'infrastructure
Development Review, Rural Services Unit ▪ Examen des projets d'aménagement, Unité des services ruraux
Planning, Infrastructure and Economic Development Department | Services de la planification, de
l'infrastructure et du développement économique
City of Ottawa | ville d'Ottawa ▪ ☎ 613-580-2424 x16968 ▪ 📧 damien.whittaker@ottawa.ca ▪ 📠 01-14

From: Kyle Herold <kherold@lrl.ca>
Sent: December 03, 2019 9:15 AM
To: Oram, Cody <Cody.Oram@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

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Good morning Cody,

Hoping you may be able to help me out.

We are currently working on a serviceability report for 5254 Bank street, and require the boundary conditions at the site to proceed.

Please use the following data to provide the require boundary conditions:

Average Total Daily Demand = 0.059 L/s
Maximum Daily Demand = 0.088 L/s
Maximum Hourly Demand = 0.159 L/s
Required Fire Flow = 115.0 L/s

For your reference, I have included copies of the Water Supply Calculations & FUS Fire Flow Calculations along with this email.

Any questions or concerns, please do not hesitate to reach out.

Thank you,

Kyle Herold
Civil EIT / Field Technician



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From: Wu, John <John.Wu@ottawa.ca>

Sent: Tuesday, December 3, 2019 9:13 AM

To: Kyle Herold <kherold@lrl.ca>

Cc: Virginia Johnson <vjohnson@lrl.ca>; Oram, Cody <Cody.Oram@ottawa.ca>

Subject: RE: 190271 - 5254 Bank Street - Boundary Conditions

Not my area, please contact right project manager.

John

From: Kyle Herold <kherold@lrl.ca>

Sent: December 3, 2019 8:51 AM

To: Wu, John <John.Wu@ottawa.ca>

Cc: Virginia Johnson <vjohnson@lrl.ca>

Subject: 190271 - 5254 Bank Street - Boundary Conditions

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Good morning John,

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Please use the following data to provide the require boundary conditions:

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Required Fire Flow = 115.0 L/s

For your reference, I have included copies of the Water Supply Calculations & FUS Fire Flow Calculations along with this email.

Any questions or concerns, please do not hesitate to reach out.

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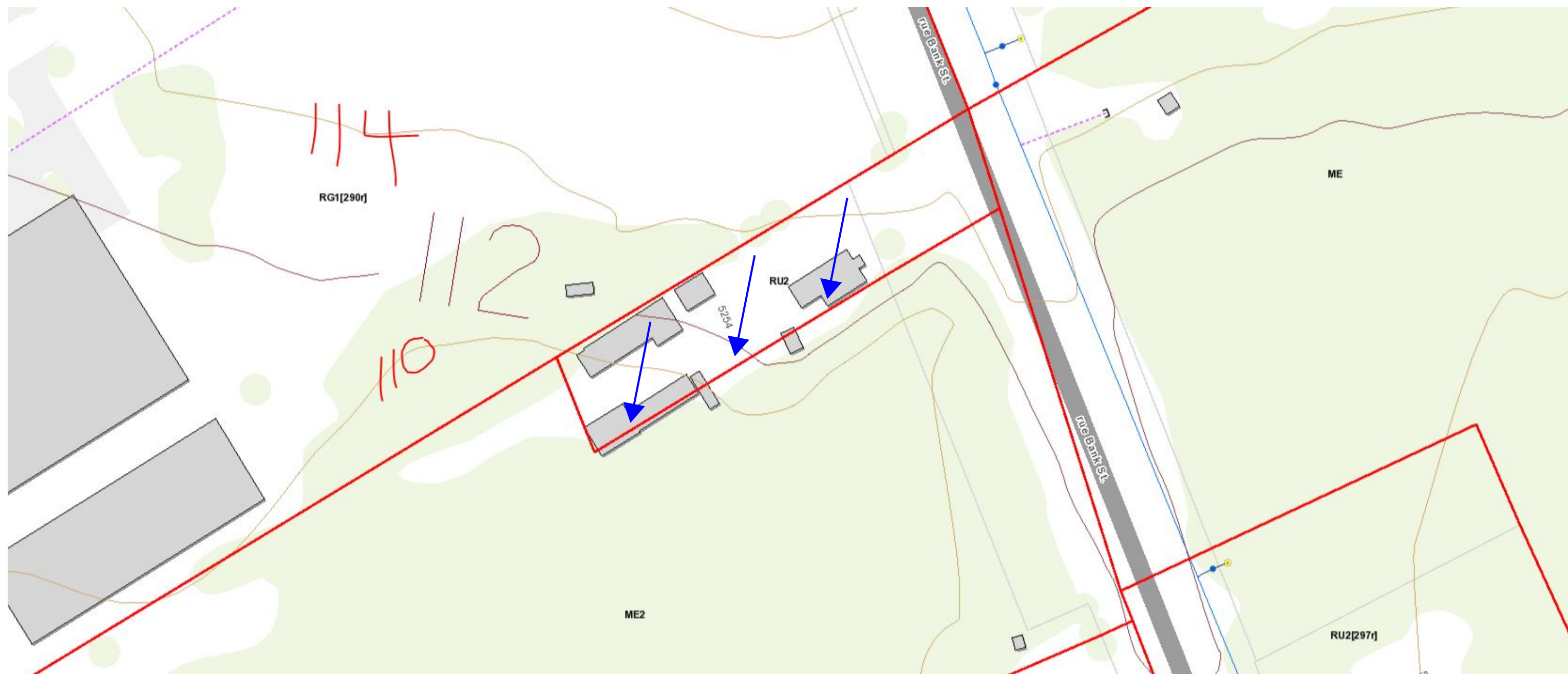
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APPENDIX D

City of Ottawa Topography Map – 5254 Bank Street



APPENDIX C

CITY OF OTTAWA TOPOGRAPHY MAP - 5254 BANK STREET

190271 - LAND REZONING APPLICATION