



## Functional Serviceability Report

Official Plan Amendment and Zoning By-law Amendment  
Proposed Industrial Development  
5368 Boundary Road and 6150 Thunder Road, Ottawa ON

Prepared for:

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## 1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Avenue 31 to prepare a functional serviceability report to support the Official Plan Amendment and Zoning By-law amendment application for the property located at the south west corner of the intersection of Boundary Road and Thunder Road in Ottawa ON. The subject land encompasses three (3) separate properties as shown in Figure 1 below. The civic address' for the parcels are 6150 Thunder Road, 5368A Boundary Road and 5368B Boundary Road.



*Figure 1: Aerial View of Subject Lands*

The serviceability review summarized in this document has been completed to further investigate servicing options for potential future development on the subject lands for uses such as light industrial, logistics and/or a distribution warehouse.

One potential concept for future development includes three (3) separate industrial buildings, asphalt parking lots and travel ways to enhance vehicular maneuverability, as well as landscaped area. For the purposes of this investigation, although ultimate buildout options are unknown at the time of this review, a conceptual site plan has been included in Appendix A for reference.

The specifics of the proposed buildings outlined in the conceptual site plan are summarized in table 1 below.

*Table 2: Conceptual Design, Building Details*

	Industrial Building 1	Industrial Building 2	Industrial Building 3	Total
<b>Building Size</b>	55 799 m <sup>2</sup>	3 850 m <sup>2</sup>	2 972 m <sup>2</sup>	62 621 m <sup>2</sup>
<b>Approximate Allocated Office Space</b>	1 832 m <sup>2</sup>	255m <sup>2</sup>	304m <sup>2</sup>	2391m <sup>2</sup>
<b>Number of Auto Parking Spaces</b>	426	57	52	535
<b>Number of Loading Docks</b>	74	19	0	93
<b>Number of Trailer Parking Spaces</b>	98	0	0	98

## 2 EXISTING SITE AND AVAILABLE SERVICES

The subject site measures approximately 17.75 ha with most of the land vacant with ground cover consisting primarily of long grasses, shallow vegetation and trees surrounding the boundary of the property. Two dwellings exist on the lands; however, for future development intentions would be to remove these.

The property is bordered to the east by Boundary Road, North by Thunder road, and is intersected on the north west corner by an unnamed drain. This drain naturally divides the overall site into two parcels.

Existing topography of the land is relatively flat, with elevations ranging from approximately 76.0 m to 77.5 m. The general elevation interior to the site boundary is slightly lower than those of the surrounding roads. Appendix B includes an overall site boundary with contours demonstrating the existing topography.

The site does not have access to municipal storm, sanitary or traditional water service as the infrastructure does not exist on Boundary Road or Thunder Road; however, the site is within the service boundary of the Carlsbad Springs trickle-feed water system. At the present time, the subject site has been allocated three (3) equivalent service connections to the Carlsbad Springs trickle-feed water system. This may result in alternate building uses and overall site plan to ensure that the water demands of the site can be met. Further discussion relating to the servicing options are summarized in the following sections.

## 3 WATER SERVICE

### 3.1 Carlsbad Springs Trickle-Feed Water Supply System

The proposed development site boundary falls within the Carlsbad Springs trickle-feed Water System. The Carlsbad Springs trickle-feed Water System is intended to provide sufficient water for indoor (domestic) use only through a network of small diameter mainline piping. During the design and planning stages of this system, no allowances were made for outdoor water use fire

protection, therefore fire suppression requirements will have to be addressed with a designed site-specific fire reservoir.

A 102mm diameter pipe exists along Boundary Road and a 75mm pipe exists along Thunder Road which would be utilized for domestic supply.

The subject site has been allocated a pre-set constant flow rate, referred to as equivalent units (2,700L/d per unit) – however; the assigned three (3) equivalent units for the subject property does not necessarily represent the amount of water expected to be consumed within the development. In fact, given the magnitude of the site, and potential development opportunities, to ensure that the domestic demands of the development could be fulfilled by the trickle-feed system, it is expected that a flow rate greater than the 3 assigned equivalent units (8 100 L/d) would ultimately be required.

Based on the available City of Ottawa documentation prepared during the extension of the Carlsbad Springs trickle-feed system, it is understood that monitoring does take place to assess the performance and consumption of properties relying on the water network. As outlined in the report titled “Feasibility Study - Extension of Carlsbad Springs Trickle Feed Water System – Area East of Carlsbad Springs (Russell Road, Carlsbad Lane, Sabourin Road & Boundary Road Industrial Park” Prepared by Stantec in 2014, the City’s available monitoring data will provide a further understanding of the actual peak demands in the overall system, which may conclude that additional equivalent units are available for the subject property.

This report mentioned above concludes that the existing trickle feed system has sufficient capacity to accommodate the potential 112 severance opportunities identified that exist along the network which were not accounted for in the original design, with additional capacity for potential extension. Given that this assessment of available capacity was completed in 2014, shall the site plan be finalized and determined water demands exceed the equivalent units allocated to the subject property, further investigation on the land severances which have taken place since 2014 could be completed. This would provide a more informed and updated understanding of remaining severance potential fronting the system to identify potential parcels which will not move forward with severance, in theory allowing additional demand from parcels such as the subject property.

Furthermore, based on available mapping data for the network, it appears that a blow-off point for flushing the system exists along Thunder Road, slightly north of the subject point. The increased demand conditions for this site could impact the requirement for flushing, ultimately decreasing the peak demand caused by the regular flushing at this location and transferring this as equivalent units to the subject property.

### **3.2 Buildout Scenario Domestic Demands**

The domestic demands of the site would be intended to be met using the flow provided by the trickle-feed water system in conjunction with buildings specific water tanks or cisterns to meet peak instantaneous demands. The sizing of such cisterns would be determined during the detailed design phase.

Recognizing that the domestic flow provided by the trickle-feed system may impact the end user and building design, further review of reasonable demands has been completed. The demands summarized in table 2 on the following page provides a magnitude of the average water demands which may be required to meet the domestic flow requirements of a fully built out site with specifics as outlined in the concept plan included in Appendix A.



**Table 3: Conceptual Domestic Demands based on Building Use**

Use	Average Day Demands	Value	Total
Office Space	75 L/9.2m <sup>2</sup>	2 391 m <sup>2</sup> of Office Space	19 491 L/day (Building 1= 14 934 L/day) (Building 2=2 079 L/day) (Building 3= 2 478.26 L/day)
Loading Bay	150L/Loading Bay	93 Loading Bays	13 950 L/day (Building 1= 11 100 L/day) (Building 2=2 850L/day) (Building 3= 0 L/day)
Misc. Additional Use (Dependant on Tennant)	-	-	2 000 L/day
<b>Total Consumption</b>			35 441 L/day (Building 1= 27 034 L/day) (Building 2=5 429L/day) (Building 3= 2 978 L/day)
<b>Number of Equivalent Residential Units (2 700 L/day ea.)</b>			13.1 (Building 1=10) (Building 2=2) (Building 3=1.1)

The above scenario is a sample of what average water demands may be expected from this property. This will vary greatly based on the final building design and site plan.

As concluded in the table above, if this site were to proceed with a partial buildout for buildings equivalent to building 2 and 3 in the proposed concept plan, is it expected that the domestic demands would be met by the 3 assigned equivalent residential units.

### 3.3 Fire Protection

In order to provide adequate fire protection and fulfill the fire suppression demands for the subject site, above grade (or equivalent) storage tanks will be required. Detailed design and selection of the most appropriate tanks will be completed and required during the permitting stage of future development on this site.

## 4 SANITARY SERVICE

Currently there is no municipal sanitary sewer adjacent to the proposed property, on Boundary Road or Thunder Road as it does not fall within the City of Ottawa's sanitary service area.

An on-site sewage collection and treatment facility would be required to meet the treatment demands of the subject development. The detailed sewage treatment options would have to be sized to treat the wastewater generated by the ultimate end user for the proposed developments. To ensure that the wastewater generated can meet the effluent requirements, detailed designs during site plan approval and building permit will be required.



Given the site topography and space constraints, outlet options for the highly treated effluent would be to the unnamed drainage ditch which intersects the north portion of the property. Given the outlet will be to the unnamed ditch, during the detailed design, the effluent rate will be considered during stormwater management design to ensure the overall release rate to the unnamed ditch is not greater than pre-development conditions. Additionally, during the detailed design phase considerations will be given to ensure the downstream quality and thermal regime is not negatively impacted from any offsite drainage.

As discussed in Section 1, the conceptual ultimate buildout conditions contain three (3) separate buildings. Options exist to have a private sewage system allocated to the two smaller buildings as well, or discharge from these buildings may be connected to the main treatment facility central to the site pending detailed design.

Manufactured products such as a Modified Sequencing Batch Reactor packaged plant or a Membrane Bioreactor (MBR) package plant would be further investigated during the detailed design phase to complete the design, supply and commissioning for an appropriately designed solution for the development. During the design of such units, design parameters such as average daily flow, maximum daily flow, ambient temperatures, and expected influent wastewater characteristics would be provided. These design considerations will be carefully analyzed to ensure the effluent discharge of the selected system meets all regulatory requirements for the treatment and discharge of the wastewater.

## **5 STORMWATER MANAGEMENT**

Currently there is no municipal storm sewer adjacent to the subject lot. In pre-development conditions, the stormwater accumulated on the property would be retained from various depressions in the topography, sheet drain in the north direction to the unnamed drain or towards the undeveloped lands bordering the parcel to the south and west, ultimately reaching the surrounding pervious area.

Refer to Appendix B for high level existing contours for the subject lands which are used to determine predevelopment flow directions.

It is assumed that the site will be developed with parking area, asphalt roadways as well as landscaped portions and various building footprints. With the assumption that the parcel will become developed with a similar concept as detailed in Appendix A, additional impervious surfaces will be introduced, which will require appropriately designed quantity and quality control measures as per the City of Ottawa Stormwater Management Design Guidelines.

A combination of an on-site sewer network, detention areas, quality treatment units, 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. Consideration would be given to the site features such as soil characteristics as well as the end user to determine the viability of implementing low impact development to address both quality and quantity. Given the large scale of the site, options such as rainwater harvesting can be considered to also alleviate minor shortfalls in available water supply.

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 or downstream watersheds. In regard to quantity, the overall flow leaving the site must also accommodate for any effluent expected from the on site septic treatment.

Given the large size of the site, available space for retention areas must be allocated on the detailed site plan. To fulfill future site plan control applications for this site, a detailed stormwater





management design would be required to propose a sufficient quantity and quality control system to ensure the following requirements are met:

- Enhanced Level of protection for Water Quality (80% TSS Removal)
- Quantity control storage to limit post development peak flows to predevelopment levels.

## 6 CONCLUSIONS AND SERVICEABILITY CONSIDERATIONS

This evaluation is limited to assessing the technical feasibility of servicing the site described within this document to support an Official Plan Amendment and Zoning By-law Amendment.

Based on the forgoing the conclusions in relation to the serviceability of the site are as follows:

- Water:
  - Domestic demands will be required to be supplied by the Carlsbad Springs trickle-feed supply system. However, based on an assumed buildout scenario, demands are higher than previously allocated equivalent water units. Opportunity exists for partial buildout or an alternate concept to service the buildings with allocated three equivalent units.
  - Considering potential buildout concepts, approximate average daily demands are expected to be in the range of 27 000 – 37 000 L/day.
  - Since the trickle-feed water supply system was installed in 1997, the City has monitored water use patterns and confirmed that actual concurrent use is lower than originally planned. As a result, there is a potential for more connections which may prove to accommodate the domestic demands of the subject site.
  - A storage tank and pressure system to provide the water required for fire suppression is required to meet the fire demands of development on the subject property.
- Sanitary Sewage
  - Onsite sewage treatment and collection facility will be designed in detail to release treated effluent to the unnamed drain running through the property. This effluent will be considered during the stormwater management design as well to ensure post development flow rates do not exceed predevelopment conditions.
- Stormwater
  - Currently stormwater runoff flows uncontrolled to the South & West borders of the property.
  - The property is mostly pervious area in existing conditions. In developing the lot into a “light industrial” lot, the development will increase the impervious area of the property. The increase in impervious area, along with City of Ottawa design requirements, will require the site to implement a stormwater quantity and quality management system.

## 7 CLOSURE

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# **APPENDIX A**

## **Concept Site Plan**





## **APPENDIX B**

### **Existing Topography**





