



Geomaple Geotechnics Inc.

**FUNCTIONAL SERVICING AND
STORMWATER MANAGEMENT BRIEF
PROPOSED INTERIOR REDEVELOPMENT
150 ALBERT STREET,
MIDLAND, ONTARIO,
L4R 5E3**

Prepared for: Mr. Paul Simone
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1 INTRODUCTION

1.1 SCOPE

Geomaple Geotechnics Inc. has been retained by Mr. Paul Simone to prepare a Functional Servicing and Stormwater Management Brief in support of the proposed redevelopment of the property located at 150 Albert Street, Town of Midland, Ontario.

Under the pre-development conditions, the subject site accommodates an existing industrial building and associated services. The proposed change of use will convert part of the existing building to an indoor recreational facility (pickleball pavilion), while the remaining part will continue as industrial use. The purpose of this FS Brief is to demonstrate that the existing municipal sanitary and water systems can accommodate the post-development sanitary flow and domestic water demand generated by the combined industrial and recreational uses.

This FS Brief has been prepared in accordance with:

- Town of Midland Engineering Development Design Standards (2024),
- MECP Design Guidelines for Sewage Works (2008) and Water Distribution Systems (2008), and
- Ontario Provincial Standards (OPSS and OPSD).

Also, the scope of this FS Brief is limited to:

- Calculation of sanitary flow rates generated at pre- & post-development conditions.
- Calculation of domestic water demand generated at pre- & post-development conditions.

1.2 SITE LOCATION

The subject property, 150 Albert Street, is located on the north side of Albert Street, approximately 160 m east of the intersection with William Street in the Town of Midland, Simcoe County, Ontario.

The site is situated within an established industrial area approximately 1.5 km north of Highway 12, as a regional route connecting to larger provincial highways, and 1.0 km west of King Street, which serves as the Town's main commercial corridor. The property has convenient access to major local and regional roads including Yonge Street (County Road 93), as the principal local route connecting Midland to the broader Simcoe County Road network.

Figure 1 shows the location of the subject property, while the satellite image of the existing conditions at the subject site is presented in Figure 2.

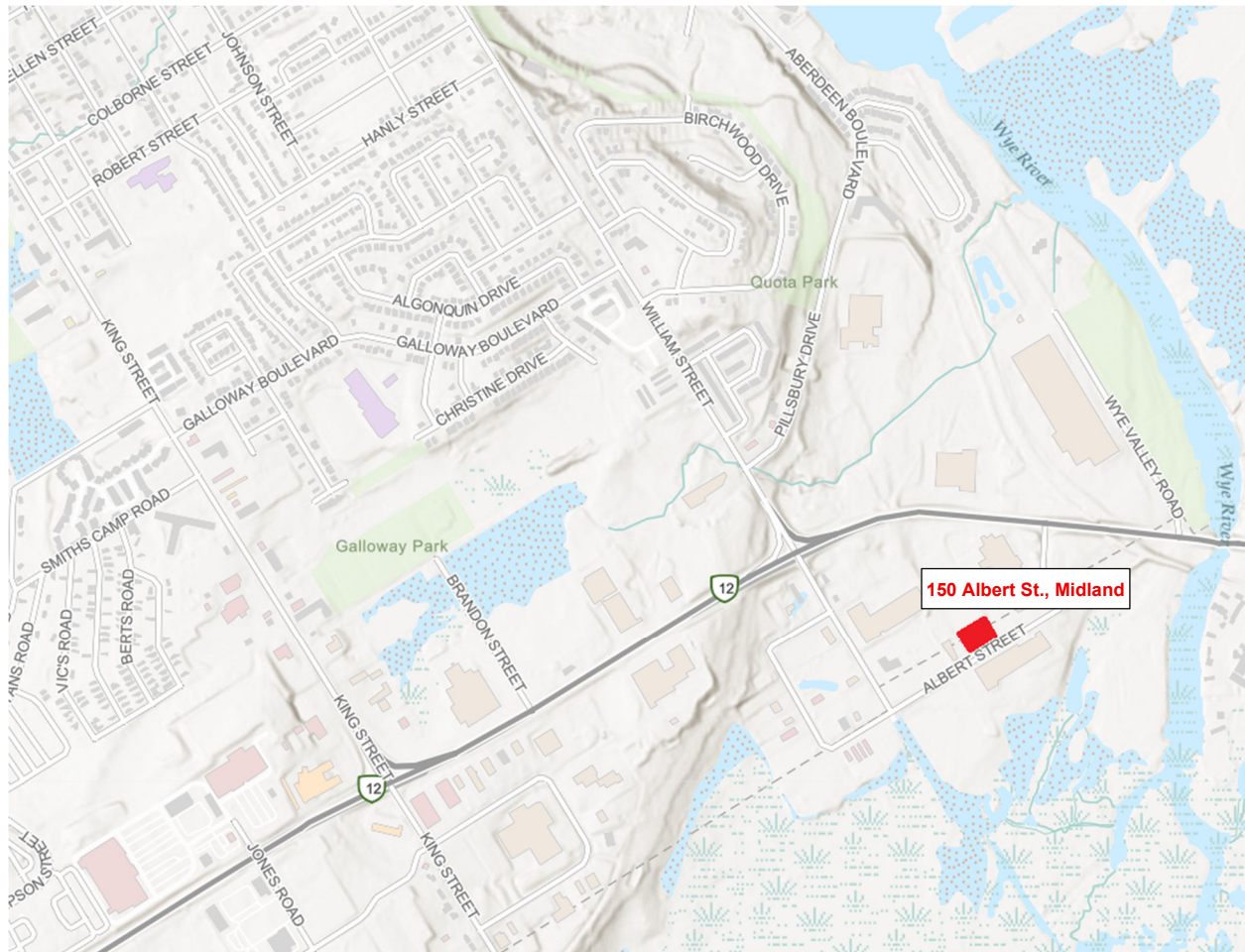


Figure 1. Location of 150 Albert Street, Town of Midland



Figure 2. Satellite Image of Existing Conditions at 150 Albert Street, Town of Midland

1.3 SITE INFORMATION

The subject property has a total area of 12,111.7 m² with approximately 82.3 m of frontage along Albert Street.

Under the pre-development conditions, this property consists of a one-storey industrial building with a gross floor area of 3,155 m², associated parking and loading areas. Under the post-development conditions, however, a recreational facility (pickleball pavilion) with 909 m² gross floor area has been proposed to be integrated into the existing structure, resulting in the remaining industrial gross floor area of 2,246 m² under the post-development conditions.

The site is fully serviced by municipal sanitary and water systems located along Albert Street. No external modifications to the servicing connections or on-site grading are proposed.

2 EXISTING SERVICING CONDITIONS

2.1 SANITARY SYSTEM

The existing building is serviced by a gravity sanitary connection to the municipal sanitary sewer on Albert Street. The service is a 150 mm PVC line, discharging into the Town's municipal network. Based on Town of Midland standards, the system is designed to achieve a minimum flow velocity of 0.6 m/s and a minimum slope of 2% for building laterals.

2.2 WATER SUPPLY SYSTEM

The property is currently serviced by a municipal watermain (150 mm PVC) along Albert Street. The building's connection is a 50 mm water service line (to be confirmed during detailed design). The water system is pressurized and meets the Town's required pressure range between 275 kPa (minimum) and 550 kPa (maximum) under normal operating conditions.

3 DESIGN CRITERIA AND METHODOLOGY

Design criteria, presented in the following Table 1, are based on the Town of Midland Engineering Development Design Standards (2024) and MECP Design Guidelines.

Table 1. Design Criteria for Redevelopment at 150 Albert Street, Town of Midland

Parameter	Design Value / Requirement	Reference
Average Sanitary Flow	450 L/person/day	MECP
Peaking Factor	2.5 (minimum)	Town Standard
Infiltration Allowance	0.28 L/s/ha	Town Standard
Average Water Demand	450 L/person/day	MECP
Maximum Day Factor	× 2.5	Town Standard
Peak Hour Factor	× 4.0	Town Standard
Minimum Pressure (Water)	275 kPa	Town Standard
Maximum Pressure (Water)	550 kPa	Town Standard

4 POPULATION ASSUMPTIONS

Estimating sanitary and domestic water demand requires a reasonable estimate of building occupancy.

The occupancy categories and densities used are as follows:

- Industrial area (all existing and part of proposed areas): typical staff density for light industrial/warehouse: 1 person per 40 m² (conservative for planning-level FSB).
- Recreational area (part of proposed areas): indoor sport/recreation spaces typically have higher transient occupancy. For the pickleball pavilion a population of 1 person per 15 m² was used, which represents a combined average of court players, spectators (limited), and staff (reception/change rooms). This aligns the recreational portion closer to low-intensity institutional/recreation assignment rather than heavy-duty commercial.

Area / Population calculations (based on architectural drawings):

Total existing building area: 3,155 m², and proposed conversion to recreational area: 909 m² → remaining industrial area: 2,246 m².

Population estimates (rounded to whole persons for practical use):

- Pre-development (all industrial): $3,155 \div 40 = 78.875 \rightarrow 79$ persons.
- Post-development:
 - Industrial portion: $2,246 \div 40 = 56.15 \rightarrow 56$ persons, and
 - Recreational portion: $909 \div 15 = 60.6 \rightarrow 61$ persons.
 - Total post-development population = $56 + 61 = 117$ persons.

These above-calculated population values are used directly in the sanitary and water calculations below.

5 SANITARY FLOW RATE CALCULATIONS

5.1 METHOD

To calculate the sanitary flow rates at both the pre- and post-development conditions, it is first needed to compute Average Daily Flow (ADF = population × 450 L/person/day). Then, the ADF should be divided by 86,400 to be converted from L/day to L/s. Next, the sanitary Peaking Factor (2.5) should be applied to ADF (L/s) to obtain peak people-generated flow. Finally, the infiltration allowance (0.28 L/s/ha × site area) should also be added to obtain total peak sanitary design flow.

5.2 PRE-DEVELOPMENT SANITARY FLOW

The total peak sanitary flow rate at the pre-development conditions is calculated as below:

$$\text{ADF (L/day)} = 79 \times 450 = 35,550 \text{ L/day}$$

$$\text{ADF (L/s)} = 35,550 \div 86,400 = 0.4115 \text{ L/s}$$

$$\text{Peak people flow} = 0.4115 \times 2.5 = 1.0286 \text{ L/s}$$

$$\text{Site area} = 1.21117 \text{ ha} \rightarrow \text{infiltration} = 1.21117 \times 0.28 = 0.3391 \text{ L/s}$$

$$\text{Pre-development total peak sanitary flow} = 1.0286 + 0.3391 = 1.3678 \text{ L/s} \approx 1.37 \text{ L/s}$$

5.3 POST-DEVELOPMENT SANITARY FLOW

The total peak sanitary flow rate at the post-development conditions is calculated as below:

$$\text{ADF (L/day)} = 117 \times 450 = 52,650 \text{ L/day}$$

$$\text{ADF (L/s)} = 52,650 \div 86,400 = 0.6094 \text{ L/s}$$

$$\text{Peak people flow} = 0.6094 \times 2.5 = 1.5234 \text{ L/s}$$

$$\text{Post-development total peak sanitary flow} = 0.5234 + 0.3391 = 1.8625 \text{ L/s} \approx 1.86 \text{ L/s}$$

5.4 SANITARY FLOW COMPARISON SUMMARY

The calculated post-development peak sanitary flow of 1.86 L/s represents a small increase (0.49 L/s) compared to pre-development. A typical 150 mm sanitary building lateral and municipal main (installed at reasonable slope e.g., 2%) has a capacity on the order of tens of L/s (commonly 20–30 L/s depending on slope and Manning's n-value).

Therefore, from a capacity standpoint, the existing building lateral and local municipal sanitary main are more than adequate to convey the projected post-development sanitary flow.

Confirmation of lateral size, slope, and the condition of downstream mains should be performed during detailed design if the Town requests verification.

6 DOMESTIC WATER DEMAND CALCULATIONS

6.1 METHOD

To calculate the domestic water demand at both the pre- and post-development conditions, it is first needed to compute Average Day Demand (ADD = population × 450 L/person/day). Then, the ADD should be divided by 86,400 to be converted from L/day to L/s. Next, the Maximum Day Factor (2.5) should be applied to ADD (L/s) to obtain Maximum Day Demand (MDD). Finally, the Peak Hour Factor (4) should also be applied to ADD (L/s) to obtain Peak Hour Demand (PHD). Since the PHD typically exceeds the MDD, it has been adopted as the governing condition for comparison purposes.

6.2 PRE-DEVELOPMENT WATER DEMAND

The total domestic water demand at the pre-development conditions is calculated as below:

$$\text{ADD (L/day)} = 79 \times 450 = 35,550 \text{ L/day}$$

$$\text{ADD (L/s)} = 35,550 \div 86,400 = 0.4115 \text{ L/s}$$

$$\text{Maximum Day Demand (MDD)} = 0.4115 \times 2.5 = 1.0286 \text{ L/s}$$

$$\text{Peak Hour Demand (PHD)} = 0.4115 \times 4.0 = 1.646 \text{ L/s} \approx 1.65 \text{ L/s}$$

6.3 POST-DEVELOPMENT WATER DEMAND

The total domestic water demand at the post-development conditions is calculated as below:

$$\text{ADD (L/day)} = 117 \times 450 = 52,650 \text{ L/day}$$

$$\text{ADD (L/s)} = 52,650 \div 86,400 = 0.6094 \text{ L/s}$$

$$\text{Maximum Day Demand (MDD)} = 0.6094 \times 2.5 = 1.5234 \text{ L/s}$$

$$\text{Peak Hour Demand (PHD)} = 0.6094 \times 4.0 = 2.4375 \text{ L/s} \approx 2.44 \text{ L/s}$$

6.4 WATER DEMAND COMPARISON SUMMARY

The calculated post-development peak hour domestic water demand of 2.44 L/s represents a small increase (0.79 L/s) compared to pre-development. A typical 50 mm domestic service can often supply in the range of 4–5 L/s at adequate residual pressure (actual capacity depends on available static pressure at the main and service piping characteristics).

Based on demand alone, the existing 50 mm service is likely adequate to meet the post-development PHD. For final confirmation the Town's recorded static pressures and service

configuration should be reviewed and, if required, a hydrant or service pressure test performed during detailed design.

7 STORMWATER MANAGEMENT

The purpose of this section is to summarize the existing and proposed drainage conditions, evaluate potential impacts on stormwater quantity and quality, and confirm that no stormwater management modifications are required as part of the proposed works.

7.1 EXISTING CONDITIONS

The subject property is currently developed and includes an existing building with associated paved and landscaped areas. Based on the topographic survey and available servicing information, the property is serviced by the existing municipal storm drainage system, and the overall site drainage pattern directs surface runoff towards the existing storm infrastructure.

No changes to the site grading, hard surface configuration, or drainage outlets are proposed. The site currently consists of a stable, fully developed surface, and there is no evidence of uncontrolled drainage, erosion, or flooding issues under existing conditions.

7.2 PROPOSED DEVELOPMENT

The proposed development consists of interior modifications within the existing building to accommodate new or revised internal uses. The building footprint, exterior walls, roof area, and overall site layout will remain unchanged. No expansion, new structures, or surface modifications are planned as part of this project.

As the proposed works are confined entirely within the existing structure, no alteration to the external drainage pattern, impervious area, or site grading will occur. The existing roof drainage system and storm connections will remain in use, and no additional stormwater inflows will be introduced to the system.

7.3 STORMWATER MANAGEMENT CONSIDERATIONS

Given that the pre-development and post-development site conditions are identical, there will be no change in the volume, rate, or quality of stormwater runoff generated from the property. The hydrologic characteristics of the site—including runoff coefficients, time of concentration, and flow direction, will remain constant. As such:

- There is no requirement for on-site stormwater quantity or quality controls.
- The existing storm servicing system is sufficient to continue supporting the property.
- The functional drainage performance of the site will remain unaffected by the proposed interior renovation.

8 SUMMARY & CONCLUSION

With respect to the proposed redevelopment at 150 Albert Street, Town of Midland, the proposed sanitary and water servicing system will address the requirements of the Town of Midland and the MECP, as follows:

- Using conservative, industry-standard assumptions (450 L/person/day; sanitary peaking factor 2.5; infiltration 0.28 L/s/ha), the post-development peak sanitary flow is ≈ 1.86 L/s (up from ≈ 1.37 L/s pre-development). The increase (0.49 L/s) is minor and well within the hydraulic conveyance capacity of the existing building lateral (150 mm) and local municipal sanitary main.
- The post-development peak hour domestic water demand is 2.44 L/s (up from 1.65 L/s pre-development). The increase (0.79 L/s) is small; based on typical hydraulic capacities of a 50 mm building service and available main sizes, the existing domestic water service is expected to be adequate from a volumetric standpoint.
- No sanitary or domestic water upgrades are anticipated solely as a result of the proposed change of use based on the conservative demand estimates used in this FSB.
- Recommended confirmations during detailed design (not within current scope but recommended best practice):
 - Verify as-built service sizes (building lateral diameter and slope, and water service diameter) from Town records or on-site verification.
 - Confirm Town static and residual pressures at the watermain (or perform hydrant/service pressure tests) to verify residual pressure under PHD.
 - Confirm the condition and capacity of the municipal sanitary main downstream of the service connection (Town records or CCTV if Town requests).
- The proposed development involves interior modifications only, with no changes to the exterior grading, building footprint, or impervious area; therefore, the pre- and post-development stormwater conditions remain identical, and no changes to the existing stormwater management system are required.

9 CLOSURE

We trust that this Functional Servicing and Stormwater Management Brief satisfies the requirements of the Town of Midland with respect to the subject redevelopment. Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Geomaple Geotechnics Inc.



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