



FUNCTIONAL SERVICING REPORT

**PROPOSED RESIDENTIAL HIGH-RISE
& TOWNHOUSE DEVELOPMENT**

**6719 GLEN ERIN DRIVE
STARWOOD GROUP INC.**

**CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL**

FILE NO. 220-M22

AUGUST 18, 2020



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TABLE OF CONTENTS

		Page No.
1.0	Introduction	3
2.0	Site Area Information	4
3.0	Site Access	5
4.0	Storm Drainage System	6
5.0	Sanitary Drainage System	9
6.0	Watermain Distribution System	11
7.0	Conclusion	13

LIST OF FIGURES

Figure No.

1	-	Key Plan
220-M22-1	-	Concept Site Servicing Plan
220-M22-2	-	Concept Site Grading Plan
220-M22-3	-	Removal Plan

1.0 INTRODUCTION

Skira & Associates was retained by Starwood Group Inc. to prepare a Functional Servicing Report (FSR) in support of an Official Plan Amendment and Zoning Bylaw Amendment for a proposed 12-storey high-rise condominium consisting of 184 condominium units and 33 urban townhomes at 6719 Glen Erin Drive, in the City of Mississauga, Regional Municipality of Peel.

The purpose of this report is to define the existing municipal services to the subject parcel of land the proposed servicing details in support of the proposed development.

It is intended that this FSR will result in an ‘approval in principle’ of the design proposed by the City of Mississauga, Regional Municipality of Peel and other relevant authorities. Detailed design will be provided during the Site Plan Application process.

2.0 SITE AREA INFORMATION

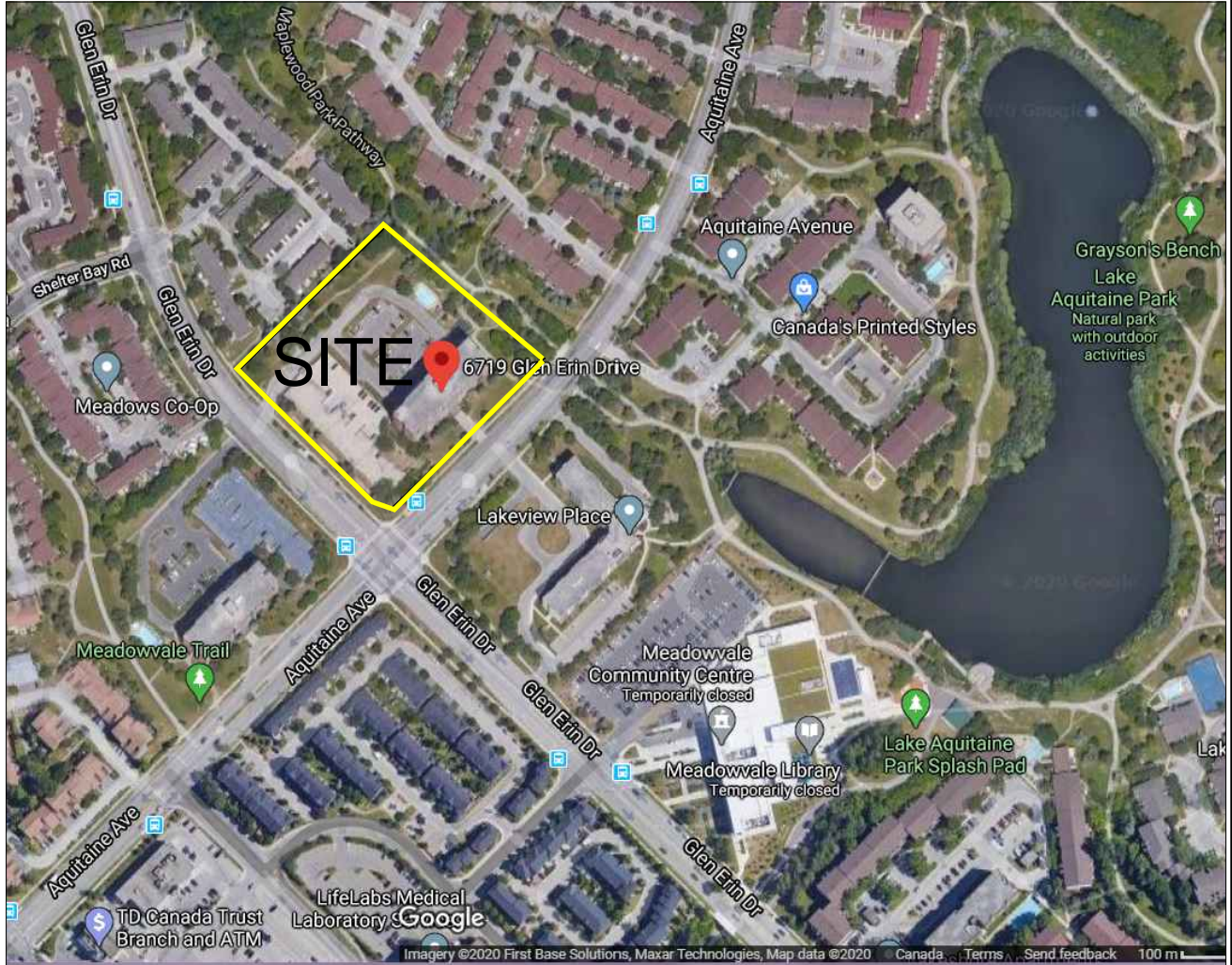
The subject property is located on 6719 Glen Erin Drive and covers an area of approx. 1.80 Ha. It is legally known as Lot 208, Registered Plan 43M-21 in the City of Mississauga, Regional Municipality of Peel.

The site is bounded by Glen Erin Drive on the west, Aquitaine Avenue on the south, and existing residential on the north and east. *Refer to Figure 1 – Key Plan.*

Currently, the entire property is developed with a building garage parking structure; the remainder of the property is developed and consists of landscaped and parking areas.

Developer proposes to retain existing condominium building and demolish existing garage structure, construct 33 townhouses along north and east property limits and 1-storey underground storage structure to provide parking for existing building (Phase 1).

Construction of 12-storey high-rise building including 2 levels of underground garage for additional parking under (Phase 2). Due to the construction of the underground parking structure, existing connection to #6719 will require relocation.



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KEY PLAN

PROJECT No.	220-M22
DATE -	JUNE 2020
SCALE -	N.T.S.
DRAWN BY -	E.W.

**FIGURE
No. 1**

3.0 SITE ACCESS

The subject site is located on the northeast corner of Glen Erin Drive and Aquitaine Avenue, west of Erin Mills Parkway. Currently, there is an existing access for the existing building from Glen Erin Drive.

Existing driveway will be modified to suit new proposed development.

A 7.0m wide private road will be provided to extend the existing Glen Erin entrance. An 8.0m roadway will be constructed, with full curb and gutter, to accommodate fire emergency and garbage truck accessibility in addition to residential traffic.

The existing road network will provide access to arterial roads, being Winston Churchill Boulevard and Derry Road, and to nearby major highways, Highways 403, 301, and Queen Elizabeth Way.

The existing road pattern will provide good access to nearby commercial districts, employment districts, school, municipal offices, community centres, and parks.

4.0 **STORM DRAINAGE SYSTEM**

According to available records, there is an existing 1050mm dia. storm sewer sunning north on Glen Erin Drive and a 2m x 3m trunk storm sewer running east on Aquitaine Avenue connecting to the existing Aquitaine stormwater management pond.

The subject property is within the Credit Valley sub-watershed; however, the site will contribute directly to Lake Aquitaine Pond. Accordingly, on-site stormwater management will not be required for the site.

4.1 **Existing Drainage Conditions**

Currently, the land is developed with an existing building, parking surface area, and landscaped area. The site has an existing 450mm dia. storm connection at the west part of the property, connecting to the existing 1050mm dia. storm sewer on Glen Erin Drive. This connection will remain and will be utilised.

The entire site runoff is captured into internal storm sewer and conveyed to existing connection.

The pre-development site statistics and associated runoff coefficients are summarised as follows:

Area Description	Area	Runoff Coefficient
Paved	3,426	0.90
Building Garage	3,540	0.95
Landscape	11,034	0.25
Total Development/Site:	18,000	0.52

Refer to 220-M22-1 – Concept Site Servicing Plan & 220-M22-3 – Removal Plan.

The pre-development flow for a 10-yr storm event is as follows:

$$Q = 0.0028 CIA$$

Where, A = area in hectares
C = runoff coefficient
T_C = 15.00 min
I_{10-yr} = 99.18 mm/hr

$$Q_{10\text{-yr}} = 0.257\text{m}^3/\text{s}$$

The proposed development construction requires phasing of development including sewer construction. Construction of the underground garage structure and the 12-storey high-rise condominium, conflicts with the existing sewer, watermain and utility locations – most will require relocations.

It is our proposal that all sewer and utility relocations will be completed under Phase 1 of construction.

Based on architectural layout, the site is subdivided into three (3) phases of development. These phases will form background of the proposed subdrainage boundaries.

Phase 1 – Existing Building (0.55 Ha)

Existing building, driveway and landscape surfaces fronting Aquitaine Avenue ROW will remain unchanged.

Existing 300 dia. storm sewer will be redirected around the west side of the building to Aquitaine Avenue storm, as shown on our *Site Servicing Plan*.

Phase 2 – Underground Parking & Townhouses (0.876 Ha)

An area along north and east property boundaries will be developed for 33 townhouse units, including underground parking garage structure and surface 7.0m wide access road.

Existing 450mm connection access will be cut-off during underground structure construction. A new 450mm storm sewer connection will be constructed to a storm sewer on Glen Erin Drive.

Expected flow from the townhouse (Phase 2) portion is as follows:

$$\begin{aligned} Q &= 0.876 \times 0.75 \times 99.18 / 360 \\ &= 0.156\text{m}^3/\text{s} \end{aligned}$$

Most of existing internal storm sewer will be utilised to convey runoff from this portion of the site to the outlet on Glen Erin Drive.

The underground parking foundation drains will require sump pumps to be pumped to the stormwater connection. According to the Hydrogeological Investigation Report, dated April 17, 2020, and prepared by Sirati & Partners Consultants Limited, the ground water elevation is approx. 112m above mean sea level and the long-term sub-drain discharge is estimated to be approx. 73,398 L/day (0.00085m³/s).

Phase 3

The new proposed high-rise building will replace the existing garage structure. Existing 2,266m² above grade garage will be demolished and new 12-storey, 2,200m², condominium will be constructed in approximately the same location.

Existing 450mm connection located mid-point if the site to Glen Erin Drive will be utilised as building connection for Phase 3 of the site.

The above grade garage drainage system is presently connected directly to the existing connection. The proposed building replacing existing structure will produce identical runoff to the system.

As such, no additional measures are required for the site.

4.2 Stormwater Runoff Volume Reduction

The City of Mississauga requires stormwater runoff volume reduction, where the first 5mm of runoff shall be retained on-site and managed by way of infiltration, evapotranspiration, or reuse.

Runoff reduction is to be applied to an impervious area within the new development.

As such, the required volume to be retained on-site is:

$$\begin{aligned} V_{5\text{mm}} &= 6,300\text{m}^2 (3,500 \text{ proposed building} + 2,800 \text{ asphalt}) \times 0.005\text{m} \\ &= \mathbf{31.5\text{m}^3} \text{ per rainfall} \end{aligned}$$

As majority of the site area is occupied by the proposed high-rise condominium and underground parking, infiltration is only possible along the north and east portions of boundary limits.

Detail design of the bioswale infiltration trenches will be provided at Site Plan stage of the application.

4.3 Quality Control

The City of Mississauga requires a minimum treatment of 80% total suspended solids (TSS) removal for the protection of waterways. On-site best management practice (BMP) is required to ensure the overall water quality from the proposed meets this minimum.

The site is directly discharging to Lake Aquitaine stormwater management pond, providing quality control protection for the area. Therefore, no additional controls will be required for the site.

5.0 SANITARY DRAINAGE SYSTEM

According to available records, there is an existing 250mm dia. sanitary sewer running north on Glen Erin Drive, and an existing 450mm dia. sanitary sewer running east on Aquitaine Avenue.

Currently, the site has a single sanitary connection, which will be utilised for Phases 2 and 3 of the project.

As previously described, the construction of the underground structure for the townhouse and high-rise condominium will conflict with the location of existing sanitary sewer connection. New sanitary 250mm connection will be relocated around the existing building on the west side. A new 250mm connection is proposed to the sanitary sewer on Aquitaine Avenue as shown on our *Site Servicing Drawing*.

The proposed high-rise condominium and townhouse will be serviced to the existing 250mm dia. sanitary sewer on Glen Erin Drive. Proposed sanitary manhole and 250mm dia. sanitary connection will be provided to service the development to the existing sanitary sewer/

The existing 250mm dia. sanitary sewer has sufficient depth to accept the sanitary flows from the high-rise condominium building. The sanitary invert at property line is 193.06. The proposed lowest finished main floor is approx. 197.30. Therefore, the building main floor and above floors will have gravity sewage flows. The basement and underground parking drains will require sanitary ejection pumps.

Refer to 220-M22-1 – Concept Site Servicing Plan

Sanitary Flow Calculation

A. Existing Residential Condominium:

- One Bedroom – 76 units x 1.68 PPU = 127.68p
- Two Bedrooms or more – 103 units x 2.54 PPU = 261.62p

B. Proposed Residential Condominium:

- One Bedroom – 120 units x 1.68 PPU = 201.60p
- Two & Three Bedrooms – 64 units x 2.54 PPU = 162.56p

C. Proposed Townhouses:

- 33 units x 3.5 PPU = 115.5p

Total Population = 127.68 + 261.62 + 201.60 + 162.56 + 115.5
 = **868.96**

Peak Factor $= 1 + \frac{14}{4 + P^{0.5}}$ Where, P = population in thousands

$= 1 + \frac{14}{4 + 0.869^{0.5}}$

$= 1 + 2.84$

$= \mathbf{3.84}$

Expected Peak Flow Rate $= 302.8 \times 869 \times 3.84$

$= 1,010,431 \text{ L/day} = \mathbf{11.69 \text{ L/s}}$

6.0 WATERMAIN DISTRIBUTION SYSTEM

According to available records, there is an existing 300mm dia. watermain on Glen Erin Drive and an existing 300 dia. watermain on Aquitaine Avenue.

Currently the site has a single 20mm water service connection from Glen Erin Drive.

The proposed high-rise condominium will be serviced to the existing 200mm dia. watermain located on Glen Erin Drive. Proposed 200mm dia. watermain connection will be constructed for fire and 100mm dia. water service for domestic use for the proposed condominium. Townhouses will be also serviced from the domestic watermain. Each unit will be provided with 25mm water service.

The existing fire hydrants on Glen Erin Drive and Aquitaine Avenue will be utilised to provide external fire coverage for the building.

As previously described, the construction of the underground service for the townhouse and high-rise will conflict with existing watermain location. Proposed new 200mm watermain is to be relocated around the existing condominium to the west of the site. Connection to existing watermain on Glen Erin Drive will be constructed.

Refer to 220-M22-1 – Concept Site Servicing Plan.

Water Demand Calculations

A. Residential

Proposed Units:	396 (69 population, as per previous calculations)
Site Average Flow	= 280 Litres/capita/day = 280 x 869 = 343,320 L/day = 2.81 L/s
Total Expected Peak Flow Rate	= Site Average Flow x Peak Hour Factor = 243,320 x 3.0 = 729,960 L/day = 8.45 L/s
Total Expected Max. Daily Flow	= Site Average Flow x Max. Day Factor = 243,320 x 2.0 = 586,640 L/day = 5.62 L/s

Based on *Fire Underwriters Survey 1999*, the fire flow is calculated on the area of largest floor + 25% of 2 immediately adjoining floors using the following formula:

$$F = 220 C \sqrt{A} \quad \text{Where, } C = \text{coefficient for fire resistance construction} = 0.60$$
$$A = \text{area} = 5,400\text{m}^2$$
$$F = \text{fire flow in L/min}$$

$$F = 220 \times 0.60 \times \sqrt{5,400}$$
$$= 9,699 \text{ L/min} \approx 9,700 \text{ L/min}$$

A decrease can be applied for occupancy having a low contents fire hazard:

$$F = 9,700 \text{ L/min} - 25\%$$
$$= 7,275 \text{ L/min}$$

The building is sprinklered, therefore a 30% reduction can be applied:

$$F = 7,275 \text{ L/min} \times 30\%$$
$$= 5,092 \text{ L/min}$$

The exposure separation for the north and west exterior walls cumulates a surcharge of 15%:

$$F = 5,092 \text{ L/min} \times 15\%$$
$$= 5,856$$

Therefore, the fire flow demand is rounded to:

$$F = 5,856 \text{ L/min} \approx 6,000 \text{ L/min} = \mathbf{100.00 \text{ L/s}}$$

$$\mathbf{\text{Max. Peak Flow}} = 8.45 + 100.00 \text{ (fire)}$$
$$= \mathbf{108.45 \text{ L/s}}$$

$$\mathbf{\text{Max. Daily Flow}} = \mathbf{5.62 \text{ L/s (res.)}}$$

The fire flow was conducted on the existing watermain and confirms that the existing system can provide sufficient domestic and fire flows.


7.0 **CONCLUSION**

The findings and recommendations were prepared in accordance with accepted professional engineering principles and practices and reveal that the proposed high-rise condominium can be fully serviced to the available services on Glen Erin Drive and Aquitaine Avenue. The findings of this report are global and are related to the servicing functionality of this application. These findings by means are final and are not to replace the detail review of this application which shall take place upon submission of Site Plan or Servicing Agreement.

We respectively submit this report with intention of obtaining approval in principal the recommendation.

Yours truly,

SKIRA & ASSOCIATES LTD.


Michael Jozwik, P. Eng.
MJ:ak



NOTE: **Limitation of Report**

*This report was prepared by **Skira & Associates Ltd.** for **Starwood Group Inc.** for review and approval by government agencies only.*

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