

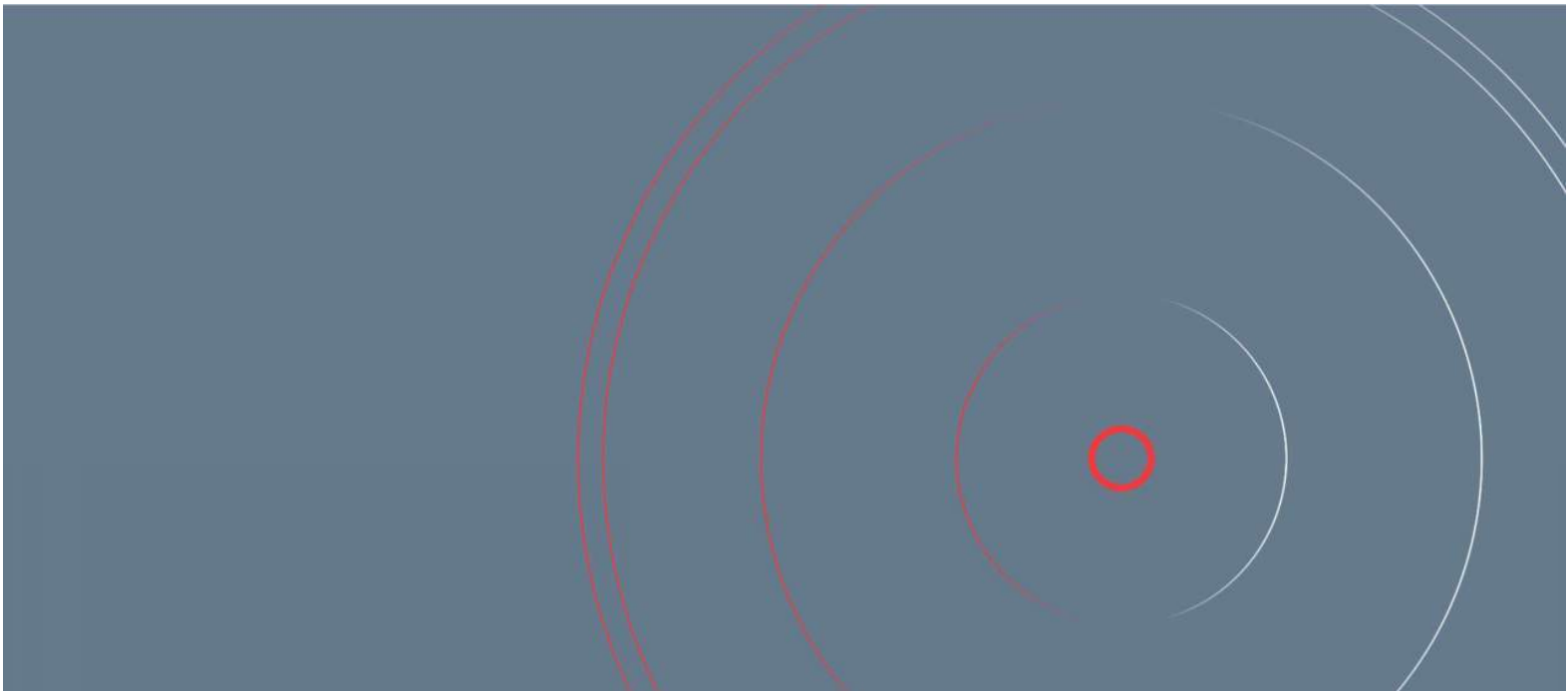
COUNTERPOINT
LAND DEVELOPMENT BY

DILLON
CONSULTING

LAND'S EDGE PROPERTIES LTD.
**FUNCTIONAL SERVICING AND STORMWATER
MANAGEMENT REPORT**

48 ISABELLA STREET
Official Plan Amendment and
Zoning Bylaw Amendment Applications

Version: 1st Submission
March 30th, 2025



EXECUTIVE SUMMARY

This Functional Servicing and Stormwater Management Report ('FSSR') has been prepared to support an Official Plan Amendment ('OPA') and Zoning Bylaw Amendment ('ZBA') application for the site municipally known as 48 Isabella Street, Toronto, Ontario, M4Y 1N2 (referred to as 'the site'). The report has been prepared on behalf of the applicant, Land's Edge Properties Ltd. (or 'client').

The proposed development proposal for the 0.167 ha site is to include the development of one 69-storey residential building. The re-development will provide for 730 new units and 84 rental replacement units with 1 level of underground parking.

The servicing strategy for the proposed development is summarized as follows:

Water Servicing:

The adjacent municipal roadways contain watermain that are of a typical size to service the proposed development. The domestic and fire flow water demands were calculated in accordance with City of Toronto criteria and FUS methodology (2020). The flow tests were completed on hydrants connected into the 150mm diameter watermain and in Isabella Street. The results of the hydrant flow test indicate that the municipal water distribution system can support the proposed development.

Sanitary Servicing:

A dye test confirmed that majority of the site currently drains to the 450mm diameter municipal combined sewer in Isabella Street. The development proposal will result in an increase in the equivalent population and peak flow to the City's sewer system, with a new connection into the existing combined sewer in Isabella Street.

By controlling stormwater release and redirecting stormwater to the existing 600mm diameter storm sewer system in the post-development condition, capacity is made available to offset the peak sanitary flow increase in accordance with the Onsite Discharge Investigation procedure in the City's Sewer Capacity Assessment Guidelines and meets MECP Procedure F-5-5.

Stormwater Servicing:

Isabella Street contains an existing 600mm diameter storm sewer and a 450mm diameter combined sewer. On-site stormwater management ('SWM') infrastructure has been proposed to meet the City's quantity, quality, and water balance criteria, as outlined in the Wet Weather Flow Management Guidelines ('WWFMG'). High-level feasibility calculations have been included to support the ZBA application. Details of SWM will be further developed as part of a future Site Plan Approval ('SPA') process.

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1.0 INTRODUCTION

1.1 BACKGROUND

This Functional Servicing and Stormwater Management Report ('FSSR') has been prepared to support an Official Plan Amendment ('OPA') and Zoning Bylaw Amendment ('ZBA') applications for the site municipally known as 48 Isabella Street, Toronto, Ontario, M4Y 1N2 (referred to as 'the site'). The report has been prepared on behalf of the applicant, Land's Edge Properties Ltd. (or 'client').

The proposed development is bound by Macy Dubois Lane to the north, Isabella Street to the south and existing apartment buildings to the west and east. Refer to **Figure 1 – Site Location Plan** for illustrations of the subject site within the context of its surroundings.


The proposed development for the 0.167ha site includes a 69-storey residential building. This new development will deliver a total of 814 residential units and include one level of shared underground parking. The existing building on the site contains 84 rental units, currently home to approximately 124 residents. These rental units will be replaced within the new development, resulting in a net increase of 730 residential units.

1.2 STUDY PARAMETERS

This servicing assessment is based on:

- Wet Weather Flow Management Guidelines, November 2006 ('WWFMG').
- Design Criteria for Sewers and Watermains, Second Edition, January 2021 ('Design Criteria').
- Atlas Mapping, City of Toronto.
- Plan and Profile, City of Toronto.
- MOE Design Guidelines for Drinking-Water Systems, 2008.
- Architectural Inputs, by Kirkor Architects and Planners
- Hydrant Flow Tests, by Lozzi Aqua Check
- On-Site Dye Testing Results, by Infrastructure Intelligence Services Inc. ('I2S').
- Subsurface Utility Engineering Survey, by J.D. Barnes
- Hydrogeological Investigation, by Toronto Inspection



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48 ISABELLA STREET TORONTO, ON	
SITE LOCATION PLAN	
DESIGNED BY: TZ CHECKED BY: KL DRAWING BY: TZ CHECKED BY: KL SCALE: NTS	DATE: NOV, 2024 PROJECT No. 249068 FIGURE No. 01



2.0 WATER SUPPLY

2.1 EXISTING WATER SUPPLY

There is an existing 150mm diameter watermain in Isabella Street that is currently servicing the site. An existing fire hydrant is located in front of 33 Isabella Street across the subject site. The site's existing water service is currently connected to the existing 150mm diameter watermain in Isabella. Refer to **Conceptual Servicing Plan – SW-CS** for more details.

The existing residential building contains 84 residential units which generates an equivalent population of 124. The existing domestic water demands were calculated using a per capita rate of 190 litres/person/day and peaked in accordance with City standards. Refer to Appendix B for more detailed calculations.

2.2 PROPOSED WATER SUPPLY

The proposed development is proposed to have private watermain connections into the municipal systems as follows in **Table 1**:

Table 1: Proposed Water Connection Locations

Municipal Main	Connection Type	2 nd Fire Connection (> 84m high)	Lateral Sizes (mm)
Isabella Street – 150mm dia.	Standard 'h' domestic/fire	No	150
Isabella Street – 150mm dia.	Fire	Yes	150

Refer to **Conceptual Servicing Plan – SW-CS** for more details.

The subject building will have one standard 'H' water service connection for domestic use and fire water supply. The proposed building is over 84m in height, which requires a secondary fire connection as specified in the city standards. As there is no other adjacent municipal watermain to the subject site, the secondary fire service is planned to connect to the existing 150mm diameter watermain in Isabella Street.

The City of Toronto's Design Criteria states that governing flows shall be the greater of: a) maximum day demand plus fire flow, or b) maximum hour demand. Fire flows for residential areas are not to be less than 4,800 L/min for a 2-hour duration, delivered with a residual pressure of not less than 140 kPa (20 psi).

Domestic water demands were calculated using a per capita rate of 190 litres/person/day and peaked in accordance with City standards. Fire Under Survey (FUS) parameters were determined based on the 2020 Water Supply for Public Fire Protection guidelines as listed in **Table 2**.

Table 2: FUS Parameters

Tower/Bldg.	Construction Type	Contents Factor	Effective Area (m ²)	System Type Reductions
Proposed Building	Fire Resistive	Limited Combustible	1,157	Yes – all

Resulting domestic and fire flow demands are as follows in **Table 3**:

Table 3: Summary of Water Demands

Tower/Bldg.	Max. Day (L/s)	Peak Hour (L/s)	Fire Flow (L/s)	Max. Day + FF (L/s)
Proposed Building	3.96	7.61	50.0	54.0

A hydrant flow test was completed by Lozzi Aqua Check to test the hydrant located across the subject site in front of 33 Isabella Street. The results are as follows in **Table 4**:

Table 4: Hydrant Flow Test Results

Watermain	Static Pressure (psi)	Flow at 20psi (L/s)	Greater than Demand?
Isabella Street – 150mm Watermain	65	121.2	Yes

As such, for each connection, the available flow in the municipal system at 20 psi/140 kPa exceeds the calculated maximum day plus fire flow demand rate. The municipal water systems can sufficiently support the proposed development. Refer to **Appendix B** for all water demand calculations and flow test results.



3.0 GROUNDWATER MANAGEMENT

Discharge of groundwater and foundation drains to municipal sewers must be in accordance with *Toronto Municipal Code, Chapter 681 Sewers* and *Toronto Foundation Drainage Policy and Guidelines* that took effect on January 1, 2022. The quality limits for discharge in the sewers must satisfy the limits as listed in *Table 1 – Limits for Sanitary and Combined Sewer Discharge* and/or *Table 2 – Limits for Storm Sewer Discharge of Chapter 681*.

A Permit to Take Water (PTTW) from the Ontario Ministry of the Environment, Conservation and Parks (MECP) is required for short term water taking over 400 m³/day. An Environmental Activity and Sector Registry (EASR) is required from the MECP for short term water taking between 50 m³/day and 400 m³/day. Long-term water taking is no longer allowed unless specific exemptions are satisfied.

A hydrogeological investigation was completed for the subject site by Toronto Inspection Ltd. dated May 21st, 2025 (under separate cover).

3.1 SHORT TERM (CONSTRUCTION)

The estimated maximum groundwater level for the subject site under seasonally high conditions is 103.81masl. The excavations for the construction are expected to extend to 105.75masl given an FFE of 112.55masl. Therefore, only perched water in wet pockets within the shallow overburn will be expected during construction dewatering. The anticipated groundwater flow rates will be below 50 m³/day. An EASR registration and A PTTW from MECP will not be required.

Additional dewatering volumes from precipitation was also considered. The precipitation would result in a total accumulation of **52,800L/day (52.8 m³/day)** during construction dewatering.

Sampled groundwater was compared to *Table 1 – Limits for Sanitary and Combined Sewer Discharge*, and *Table 2 – Limits for Storm Sewer Discharge*. Toronto Inspection Ltd. concluded that there were no exceedances relative to Table 1 criteria, however the total manganese exceeded the discharge limit outline in *Table 2 – Limits for Storm Sewer Discharge*. As such, groundwater encountered during construction activities (short term dewatering) can be discharged to the City's sanitary sewer system without prior treatment.

The total dewatering rate including accumulated rainfall volume will be less than the post-development sanitary discharge rate for the overall site. As such, a separate analysis of groundwater/precipitation discharge rates vs. the City's sanitary sewer system capacity is not required, as the sanitary analysis under Section 4.0 governs.

Refer to the hydro-geological report provided by Toronto Inspection for more details.

Temporary discharge to the municipal sewer system will require a Sewer Discharge Agreement from the City of Toronto, which will be finalized at a later stage.

3.2 LONG TERM DISCHARGE

Based on the current city policy and development proposal, there will be no foundation drainage onsite and there will be no direct or indirect connection to the municipal sewers in accordance with the City of Toronto Foundation Drainage Guidelines. Therefore, all basement structure will be constructed as watertight. Refer to Appendix E for watertight letters. As of the time of this report, a mechanical consultant has not been retained. As such, a watertight letter from the mechanical consultant will be provided at a later stage.



4.0 SANITARY SERVICING

4.1 EXISTING SANITARY SERVICING

There is an existing 450mm diameter combined sewer in Isabella Street. The 450mm combined sewer then goes east on Isabella Street and south to Gloucester Street until it reaches the combined sewers in Yonge Street. The sanitary flow then continues to be directed south along Yonge Street by the 1200x750 trunk sewer.

A dye testing program was completed (refer to **Appendix A**) by I2S which confirmed that the site's existing sanitary flows and most of the storm runoff are being discharged to the combined sewer in Isabella.

The exiting 11-storey residential building has a total of 84 units, generating an equivalent residential population of 124 persons. This results in 1.50 L/s of sanitary peak flow to the combined sewer in Isabella Street. Refer to **Appendix C** for the detailed calculations.

4.2 PROPOSED SANITARY SERVICING

The proposed building will be connected to the existing 450mm diameter combined sewer for sanitary discharge. Refer to **Conceptual Servicing Plan SW-CS** for the site servicing layout.

The proposed development will contain 814 total units, generating an equivalent residential population of 1,384 persons. The sanitary peak flow generated from the proposed building is **14.3 L/s**. The net increase in peak flow to the Isabella combined sewer is **12.8L/s**. Refer to **Table 5** for the summary of sanitary flows.

Table 5: Summary of Sanitary Flows

Tower/Bldg.	Connection	Units	Equiv. Pop	Peak Flow incl. Infiltration (L/s)
Existing Sanitary	450mm Combined Sewer	84	124	1.50
Proposed Sanitary	450mm Combined Sewer	814	1,384	14.29

4.3 EXTERNAL COMBINED SEWER CAPACITY

A dye testing investigation was completed which determined that 1,540m² of the site contributes stormwater into the Isabella Street combined sewer. Under a 2-year design storm event, this contributes **32.6 L/s** of stormwater to the combined sewer system. As indicated in **Table 6** below, post-development flows to the combined sewer system are reduced in both the 2 and 100-year storm events. As such, the combined sewer condition is improved through the re-development of the property. This meets the Procedural Guidelines, Section 3.1 *Onsite Discharge Investigation* of the City of Toronto's *Sewer Capacity Assessment Guidelines*, as $Q_p \leq Q_e$, meaning adequate sewer capacity is available. This also meets MECP Procedure F-5-5, as there is no increase in overflow rate to downstream CSO's. Refer to **Appendix C** and **Appendix D** for calculations of sanitary and stormwater inflows to the combined sewer system.

Table 6: Combined Sewer Impact Summary

Storm Event	Pre-Development to Combined			Post-Development to Combined		
	Storm (L/s)	Sanitary (L/s)	Total Flow (L/s)	Storm (L/s)	Sanitary (L/s)	Total Flow (L/s)
2-Year	32.60	1.50	34.10	0	14.29	14.29
100-Year	92.54	1.50	94.04	0	14.29	14.29

* Note: maximum allowable release rate, may be less when orifice is designed.



5.0 STORMWATER SERVICING

5.1 EXISTING STORMWATER DRAINAGE

There is an existing 600mm diameter storm sewer in Isabella Street.

The site was divided into two separate existing drainage areas as follows. Refer to **Figure 2 - Pre-Development Drainage Plan** for more details.

- Area EX.100: 0.154 ha area whose drainage is directed to the 450mm diameter combined sewer in Isabella Street.
- Area EX.101: 0.013 ha area whose drainage is directed to Isabella Street via overland flow.

Details of the pre-development catchment areas are summarized in **Table 7**. Refer to Appendix D for more detailed calculations.

Table 7: Summary of Pre-Development Catchment Areas

Catchment ID	Area 100 –Isabella	Area 101 – Isabella
Impervious Area	0.146 ha	0.007 ha
Pervious Area	0.008 ha	0.006 ha
Total Area	0.154 ha	0.013 ha
Runoff Coefficient	0.87	0.59

Pre-development storm flows are summarized in **Table 8**:

Table 8: Summary of Pre-Development Storm Flows

Storm Event	Area 100 –Isabella	Area 101 – Isabella
Receiving System	Combined – 450mm in Isabella St.	Storm – 600mm in Isabella St.
2-Year	32.60	1.88
5-Year	48.72	2.81
10-Year	59.99	3.46
25-Year	70.06	4.04
50-Year	82.93	4.78
100-Year	92.54	5.34

5.2 STORMWATER MANAGEMENT CRITERIA

The following stormwater management criteria was established for the project, based on City design criteria:

- **Quantity Control:** control all storm events, up to the 100-year design storm event, to the calculated allowable release rate (refer to Section 5.3).
- **Quality Control:** provide quality control on discharged stormwater such that 80% of total suspended solids ('TSS') are captured on an annual basis.
- **Water Balance:** retain, infiltrate or re-use runoff generated from a 5mm storm event.

There may be runoff from rainstorms that exceeds the capacity of City's storm sewer service connections. Therefore, the future site plan design shall be responsible for providing flood protection or a safe overland flow route for the proposed development without causing damage to the proposed adjacent public and private properties. Existing drainage patterns on adjacent properties shall not be altered and stormwater runoff from the subject development shall not be directed to drain onto adjacent properties. Refer to **Conceptual Grading Plan – SW-CG** for the proposed conceptual overland flow route and the existing overland flow routes for adjacent properties.

5.3 ALLOWABLE RELEASE RATE

The site's imperviousness under existing conditions is greater than 50%. In accordance with the City's WWFMG, the maximum runoff coefficient to be used for calculating an allowable release rate would be limited to 0.50, or less, if the existing imperviousness is less. An RC value of 0.50 was used to calculate the allowable release rate for Areas 100 and 101.

The allowable release rate is calculated as the 2-year peak flow rate at the above noted runoff coefficient. Refer to **Table 9** and **Appendix D** for allowable release rate calculations.

Table 9: Allowable Release Rates

Pre-Development Drainage Area	Receiving System	Release Rate (L/s)
Area EX. 100	Isabella Street 450mm Combined	18.81
Area EX. 101	Isabella Street 600mm Storm	1.59
Total =		20.4

5.4 PROPOSED STORM SERVICING

As the proposed underground limits of the site partially covers the developable area, the majority of stormwater will be captured by area drains and conveyed internally through the building via mechanical plumbing, or through 'site' catchbasins which are connected to either the building plumbing system or a site system.

The post-development drainage areas are as follows, per **Figure 3 - Post-Development Drainage Plan** for more details. Table 11 describes the details of the pre-development catchment areas.

- Area 200: 0.159 ha, controlled drainage directed to storm sewer system in Isabella Street.
- Area 201: 0.008ha, allowance for uncontrolled drainage to Isabella Street via overland flow.

The site's storm runoff will be discharged to the 600mm diameter storm sewer in Isabella Street. The storm connection is proposed to control flows from the proposed development with an orifice device and an underground storage tank. Refer to **Conceptual Servicing Plan – SW-CS** for the site servicing layout.

Due to the existing site has little drainage directed to the existing storm system in Isabella Street, a downstream storm sewer capacity analysis was conducted to verify the storm sewer capacity to support the proposed development. Refer to **Figure 4 – Storm Sewer Capacity Drainage Plan** and **Appendix D** for more details.

A few assumptions were made for this analysis:

- It was assumed that all existing properties currently discharge stormwater runoff into the existing storm sewers within the subject catchment areas. This represents a conservative assumption, as it does not account for the possibility that some properties may be connected to combined sewers.
- The catchment areas north of Gloucester Street consist of primarily apartments and high-rise residential buildings. A runoff coefficient of 0.8 was used based on Table 21: Runoff Coefficients

from the City of Toronto's Design Criteria for Sewers and Watermains. Meanwhile the catchment areas including Gloucester Street, Dundonald Street and Monteith Street are predominately composed of single family residentials and townhouses, for which a runoff coefficient of 0.75 was used.

- It was assumed that the development site contributes a total allowable release rate of 20.4 L/s to the storm sewer system in Isabella Street. This is conservative, as the actual release rate of the site is smaller due to the designed orifice device.

The analysis examined the storm catchment areas starting from the 375mm storm sewer south of Bloor Street E on Church Street, and ending at the drainage discharge point to the 2100mm diameter storm trunk sewer on Wellesley Street E. The analysis included for the allowable release rate from the subject site and confirmed that the downstream storm sewers can accommodate the proposed development.

5.5 STORMWATER QUANTITY CONTROL

5.5.1 Controlled (Area 200)

An orifice control device will be installed for controlling post-development flows to a rate of **14.11 L/s** at this connection point. The storage required to meet this allowable release rate has been calculated to be **52m³**. Storage will be located in the underground basement limits of the building. More details will be finalized at SPA stage.

5.5.2 Uncontrolled (Area 201)

Area 201 is proposed to release stormwater flows uncontrolled to Isabella Street via overland flow. The 100-year post-development flows generated from this area is **4.88 L/s**.

5.5.3 Quantity Control – Summary

The following table contains a summary of quantity controls provided for the re-development.

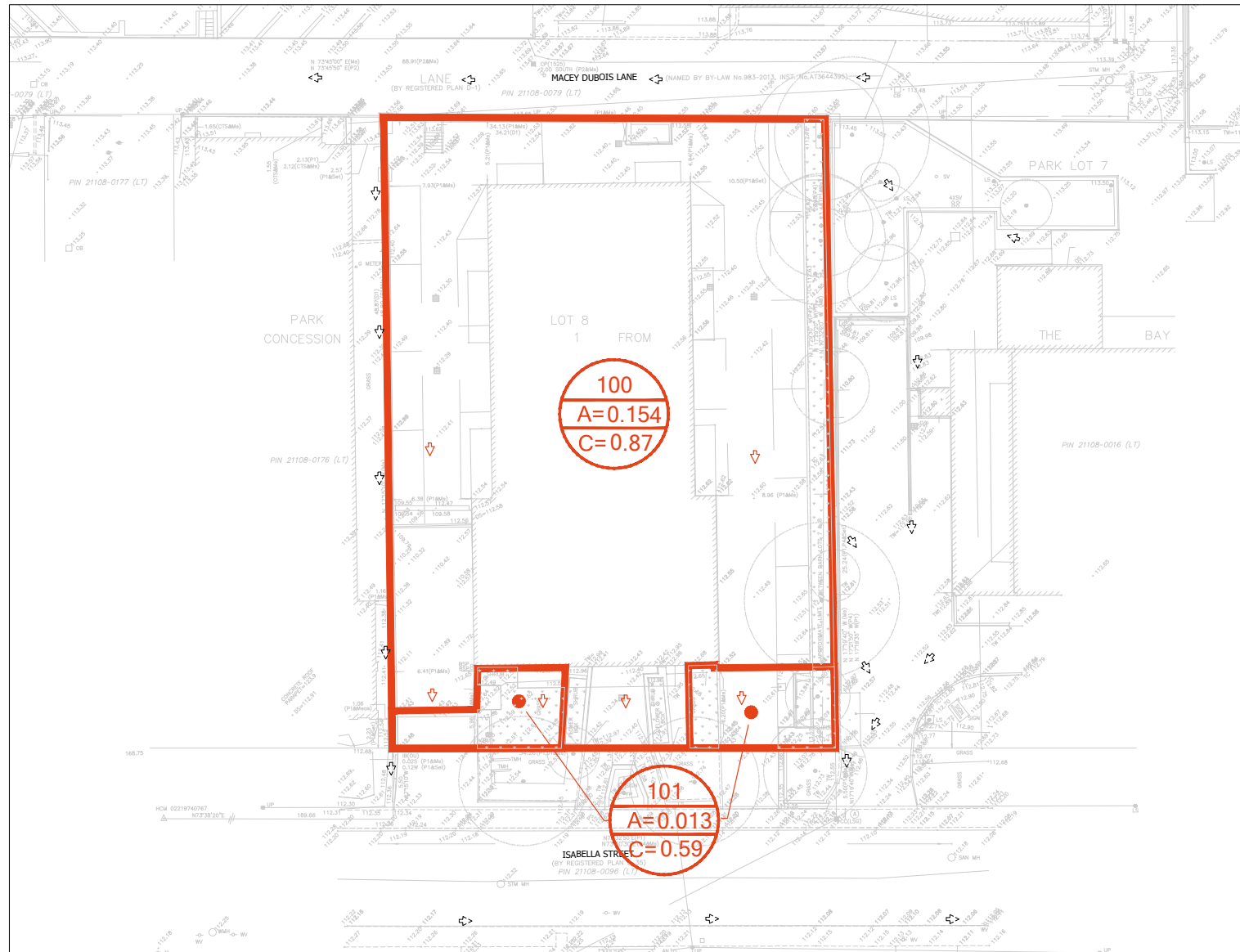
Table 10: Quantity Control Summary





Allowable (L/s)	Areas (SWM2)	RELEASE Rate (L/s)	Storage (m ³)
20.41	200 Controlled	14.11	52
	201 Uncontrolled	4.88	0


Refer to the pre and post-development drainage plans and **Appendix D** for all stormwater management calculations.

5.6 PROPOSED QUALITY CONTROLS

The subject site will be required to provide quality control on discharged stormwater such that 80% of total suspended solids ('TSS') are captured on an annual basis.



- 
 ID
 AREA
 RUNOFF COEFFICIENT
- 
 OVERLAND FLOW ARROW
- 
 EXISTING OFFSITE OVERLAND FLOW ARROW
- 
 DRAINAGE BOUNDARY

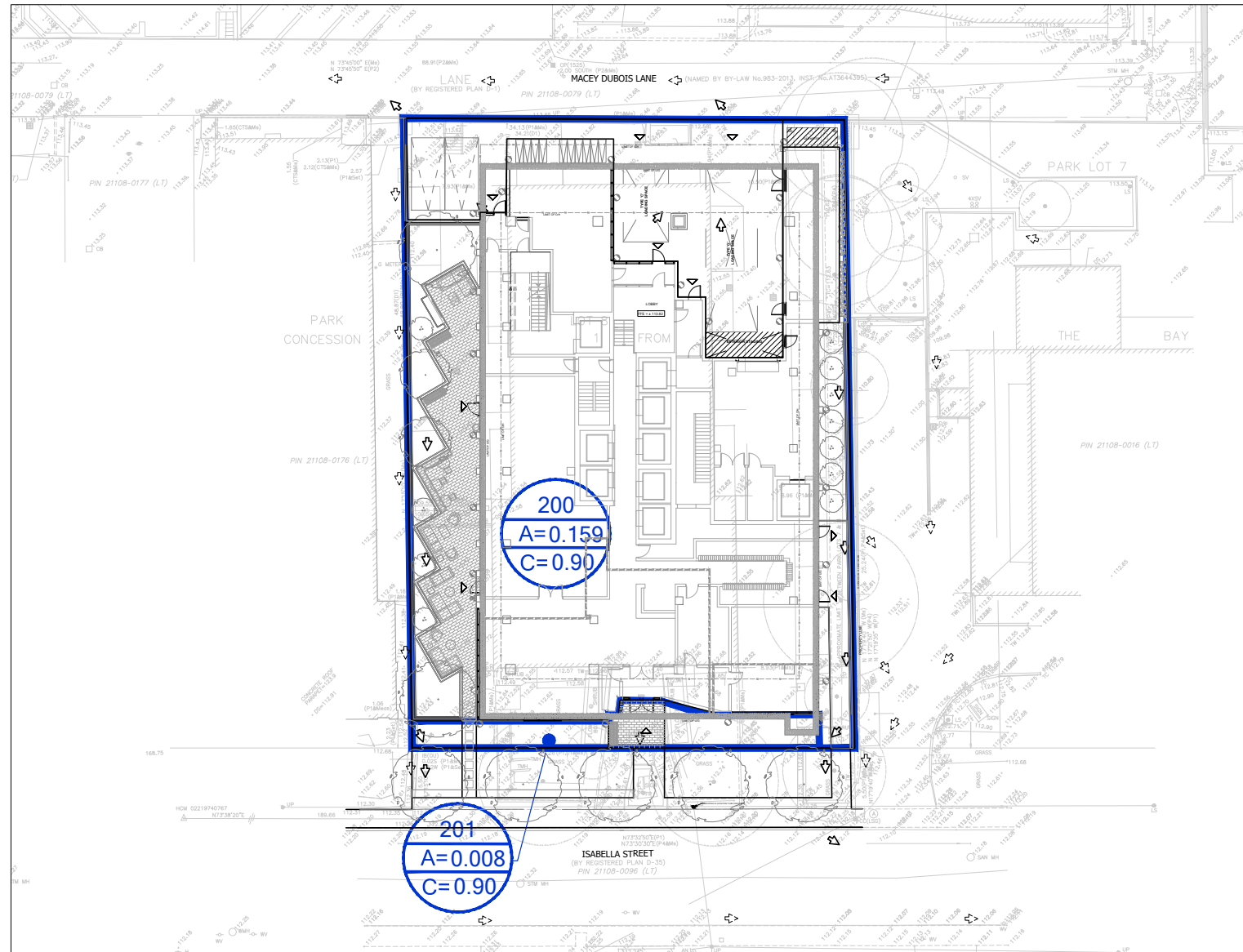
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48 ISABELLA STREET
 TORONTO, ON

PRE-DEVELOPMENT DRAINAGE PLAN

DESIGNED BY: TZ DATE: NOV, 2024
 CHECKED BY: GR PROJECT No. **249068**
 DRAWING BY: GD
 CHECKED BY: GR FIGURE No. **02**
 SCALE:



200
A=0.018
C=0.81

ID
AREA
RUNOFF COEFFICIENT



PROPOSED ONSITE OVERLAND
FLOW ARROW




EXISTING OFFSITE OVERLAND
FLOW ARROW



DRAINAGE BOUNDARY

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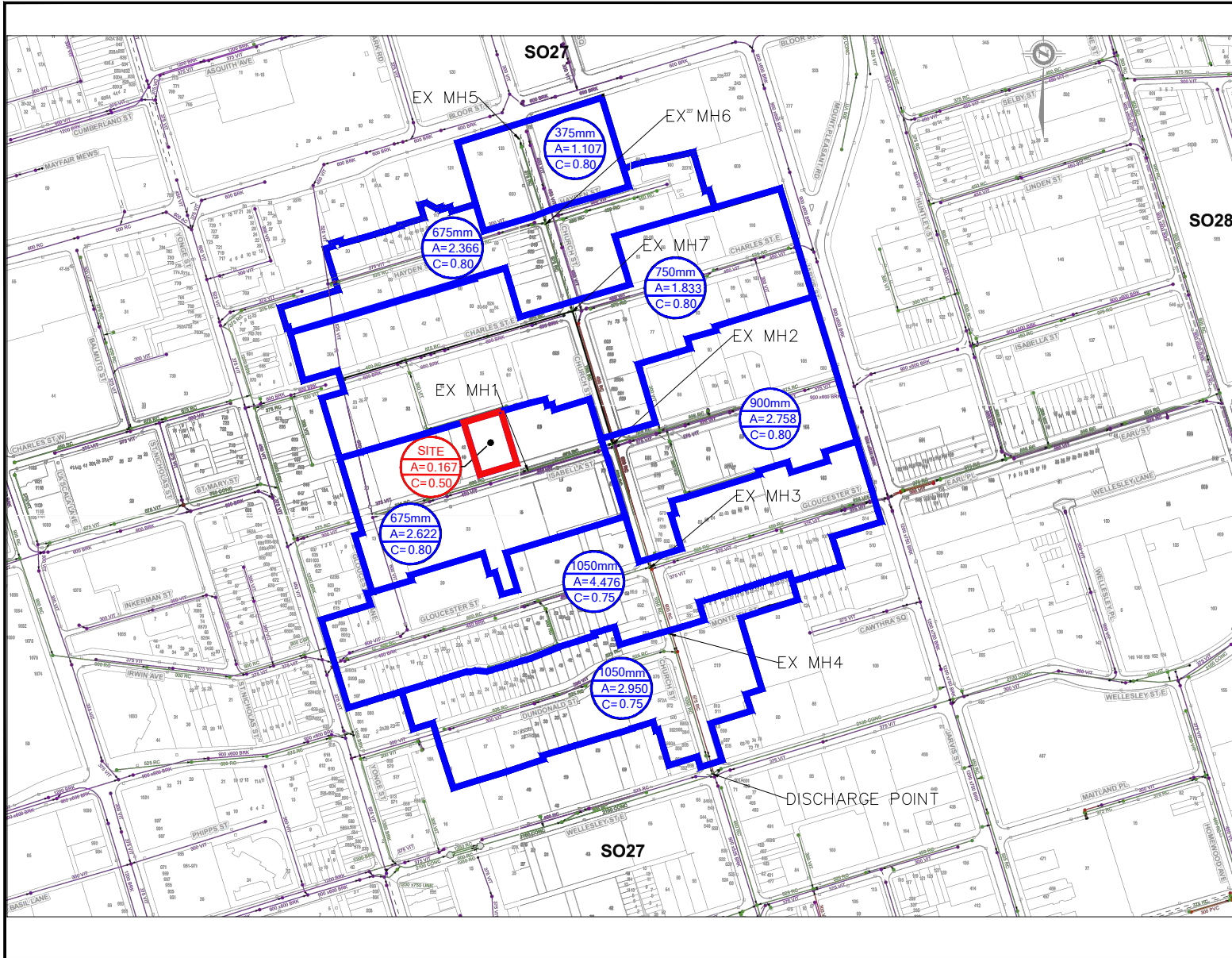


48 ISABELLA STREET
TORONTO, ON

POST-DEVELOPMENT DRAINAGE PLAN

DESIGNED BY: TZ
CHECKED BY: GR
DRAWING BY: GD
CHECKED BY: GR
SCALE:

DATE: NOV, 2024
PROJECT No. **249068**
FIGURE No. **03**



LEGEND

1050mm	AREA ID
A=4.476	AREA (ha)
C=0.75	RUNOFF COEFFICIENT

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ENGINEERING

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48 ISABELLA STREET
TORONTO, ON

STORM SEWER CAPACITY DRAINAGE PLAN

DESIGNED BY: TZ	DATE: NOV, 2024
CHECKED BY: GR	PROJECT No. 249068
DRAWING BY: GD	FIGURE No. 04
CHECKED BY: GR	
SCALE: NTS	

Runoff from rooftop surfaces and landscape areas are generally considered clean with 80% TSS removal prior to any treatment. Therefore, only the vehicular areas will be routed towards the treatment devices to achieve a total of 80% TSS removal of the entire site. Refer to **Table 11** and **Appendix D** for more details. Quality control devices such as oil/grit separator ('OGS') units will be proposed at the controlled storm connection for Area 200. The unit will be located in the underground basement downstream of the proposed stormwater management tank. Details will be provided at SPA stage.

Table 11: Quality Control Summary

Areas	Routed Area (ha)	Initial TSS Removal	Additional Removal	Final TSS Removal
200	0.159	67%	16%	83%

5.7 WATER BALANCE

The subject site will be required to meet the WWFMG water balance criteria. The minimum run-off retention requirement is to retain all run-off generated from a small design event, typically classified as a 5mm event. This runoff must be retained through infiltration, evapotranspiration, or rainwater reuse.

In order to calculate the overall volume retention requirement, the following initial abstraction values were used:

- Conventional Roof-Top Areas: 1mm.
- Asphalt Paving Areas: 1mm.
- Landscaped Areas: 5mm.

The water retention volume required for the proposed building has been calculated to be **3.44 m³**. Refer to **Appendix D** for detailed calculations.

The water balance target will be achieved through the storm tank located in P1 level by retaining rainwater onsite. Details regarding water recycling usage will be provided at SPA stage.



6.0 CONCLUSIONS

This FSSR presents a site servicing strategy for the proposed development that addresses the requirements of the applicable regulatory agencies and provides the basis for detailed servicing design.

We trust this report sufficiently addresses the site servicing requirements and allows for approval of an Official Plan Amendment ('OPA') and Zoning Bylaw Amendment ('ZBA') application. Should there be any questions or comments, please feel free to contact the undersigned.

Sincerely,

Counterpoint Land Development by Dillon Consulting Limited



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