CAPREIT 2 LIMITED PARTNERSHIP

5 & 15 TANGREEN COURT – MASTER PLAN

STORMWATER MANAGEMENT REPORT (PREPARED FOR CENTRECOURT)

March 15, 2023 FINAL

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STORMWATER MANAGEMENT REPORT (PREPARED FOR CENTRECOURT)

CAPREIT 2 LIMITED PARTNERSHIP

Project No.: 221-13290-00
Date: March 15, 2023

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Revision History

FIRST ISSUE		
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REVISION 2		
<Date>	<Remarks>	<Remarks>
Prepared by	Reviewed by	Reviewed by
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FINAL		
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1 INTRODUCTION

1.1 Scope

WSP Canada Inc. (WSP) has been retained by CAPREIT 2 Limited Partnership to prepare a Stormwater Management (SWM) Report to support the development applications for the proposed redevelopment of the property consisting of 5 and 15 Tangreen Court in the City of Toronto.

This SWM report examines the potential water quantity and water quality impacts of the proposed development and summarizes how each will be addressed in conformance with the requirements of the City of Toronto "Wet Weather Flow Management Guidelines" (WWFMGs, 2006), Toronto Green Standards (TGS) v.4, and Toronto and Region Conservation Authority (TRCA) flood management criteria.

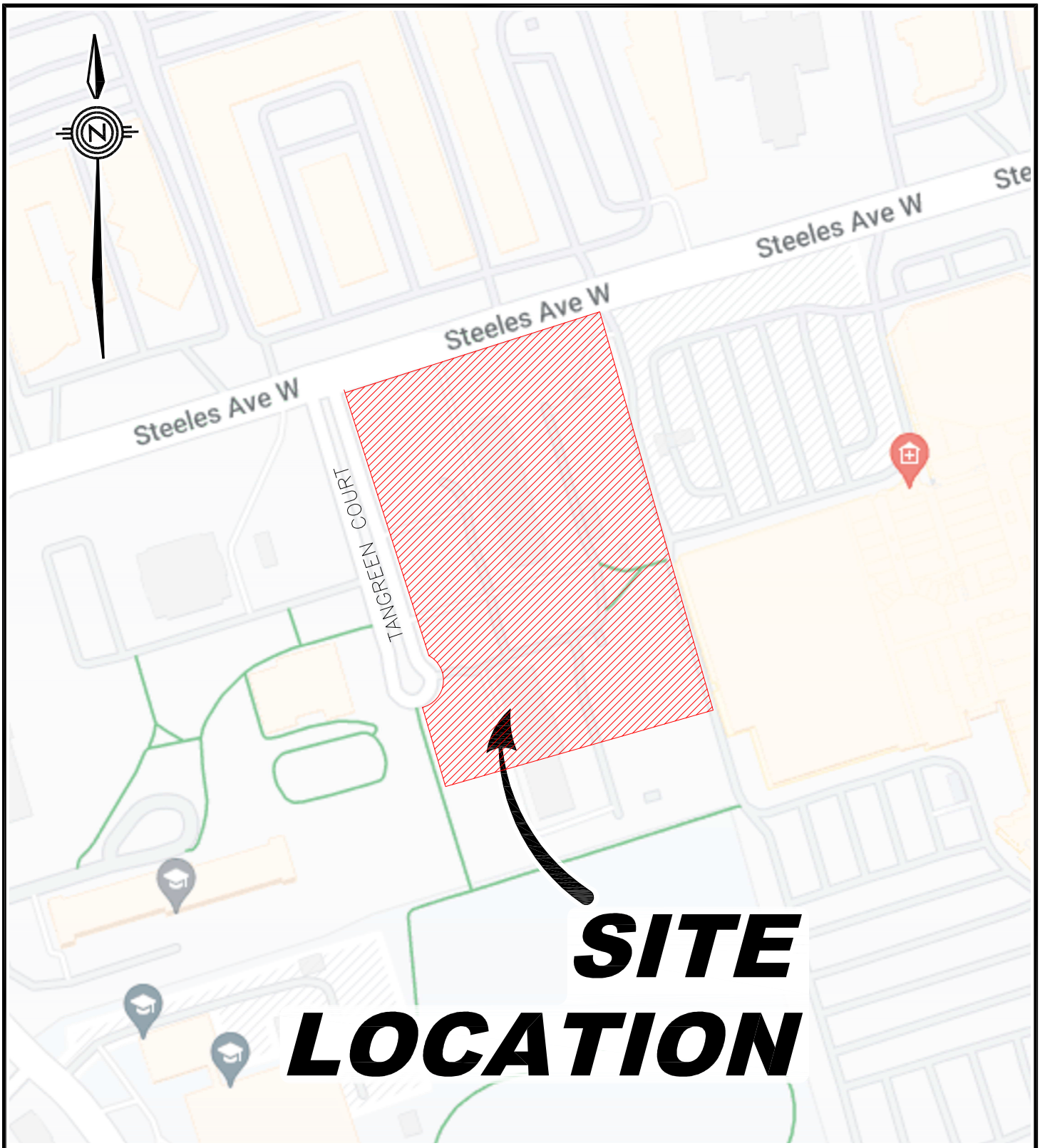
1.2 Site Location

The proposed development has a combined project area of 2.4 ha, located at 5 and 15 Tangreen Court, on the southeast side of Tangreen Court and Steels Avenue West in. The development consists of seven buildings and a new public right-of-way (ROW). The location of the proposed development is illustrated in **Figure 1**.

1.3 Stormwater Management Plan Objectives

The objectives of this stormwater management plan specifically for the Site are as follows:

- Determine site specific stormwater management requirements to ensure that the development project is in conformance with the City, TGS, and TRCA flood management criteria.
- Evaluate various stormwater management practices that meet the requirements of the City and recommend a preferred strategy.
- Prepare a stormwater management report documenting the strategy along with the technical information necessary for the preliminary sizing of the proposed stormwater management features.



@2022 Google - Map data @2022

CLIENT

CAPREIT 2 LIMITED PARTNERSHIP

TITLE

5 TANGREEN COURT,
NORTH YORK, TORONTO

SITE LOCATION

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Date MARCH 2023	Proj. No. 221-13290-00
Scale N.T.S	Figure No. 1 / Gr.No. .

FIGURE 1.dwg Site Location (2) C:\Users\calz\077846\ACCDocs\WSP Canada projects (AMER)\Land Development Ontario\Project Files\221-13290-00 5 Tangreen Court\SWM\Figures\ Mar 13, 2023 - 4:48pm

1.4 Design Criteria

The City of Toronto issued the WWFMG document in November 2006 to provide direction on the management of rainfall and runoff inside the City's jurisdiction. A summary of the stormwater management criteria applicable to this project is as follows:

Water Balance

The WWFMG requires a site to '*retain stormwater on-site, to the extent practicable, to achieve the same level of annual volume of overland runoff allowable from the development site under pre-development conditions'*. According to the guidelines, if the allowable annual runoff volume from the development site under post-development conditions is less than the pre-development conditions, then the maximum allowable annual runoff is 50% of the total average annual rainfall depth. Typically, the minimum on-site runoff retention will require the site to retain all runoff from a 5 mm storm event through infiltration, evapotranspiration, or rainwater reuse.

Water Quality

Under the WWFMG, the site is required to target a long-term removal of 80% of total suspended solids (TSS) on an annual loading basis, and ensure water discharged to the municipal storm sewers is in compliance with all city bylaws pertaining to water quality control.

Erosion Control

As indicated in WWFMG, '*For small infill / redevelopment sites < 2 ha, erosion control in the form of stormwater detention is normally not required, provided the on-site minimum runoff retention from a small design rainfall event (typically 5 mm) is achieved under the Water Balance Criteria.*' During construction, appropriate erosion and sediment controls will be implemented.

Water Quantity Control and Discharge to Municipal Infrastructure

As indicated in WWFMG, runoff from the 2-year up to 100-year design storms must not exceed the allowable release rate to the municipal storm sewer system. The allowable release rate to the municipal storm sewer system from the development site is the 2-year pre-development flow rate based on a runoff coefficient of 0.50 or the capacity of the receiving sewer, whichever is less.

2 EXISTING CONDITIONS

2.1 General

The 2.4 ha site is currently occupied by two residential rental buildings with above and underground parking facilities. Based on the plumping plan of the site, the site has two outfalls: one catchment is draining east into the existing 900 mm storm sewer in the easement and the other catchment is draining west to the existing 450 mm storm sewer within Tangreen Court. Dye tests results for the site can be found in **Appendix A**.

An 0.53 ha area which consists of a residential building and a public park at the southeast corner of site will remain unchanged under post-development conditions, and its existing drainage pattern will be maintained the post-development conditions. As such, it has not been included in the stormwater management analysis for water quality, water quantity, and water balance. The effective design development Project Area is 1.86 ha.

The existing condition of the site is shown in **Figure 2**.

2.2 Rainfall Information

The rainfall intensity for the site was calculated using the following equation:

$$I = AT^C$$

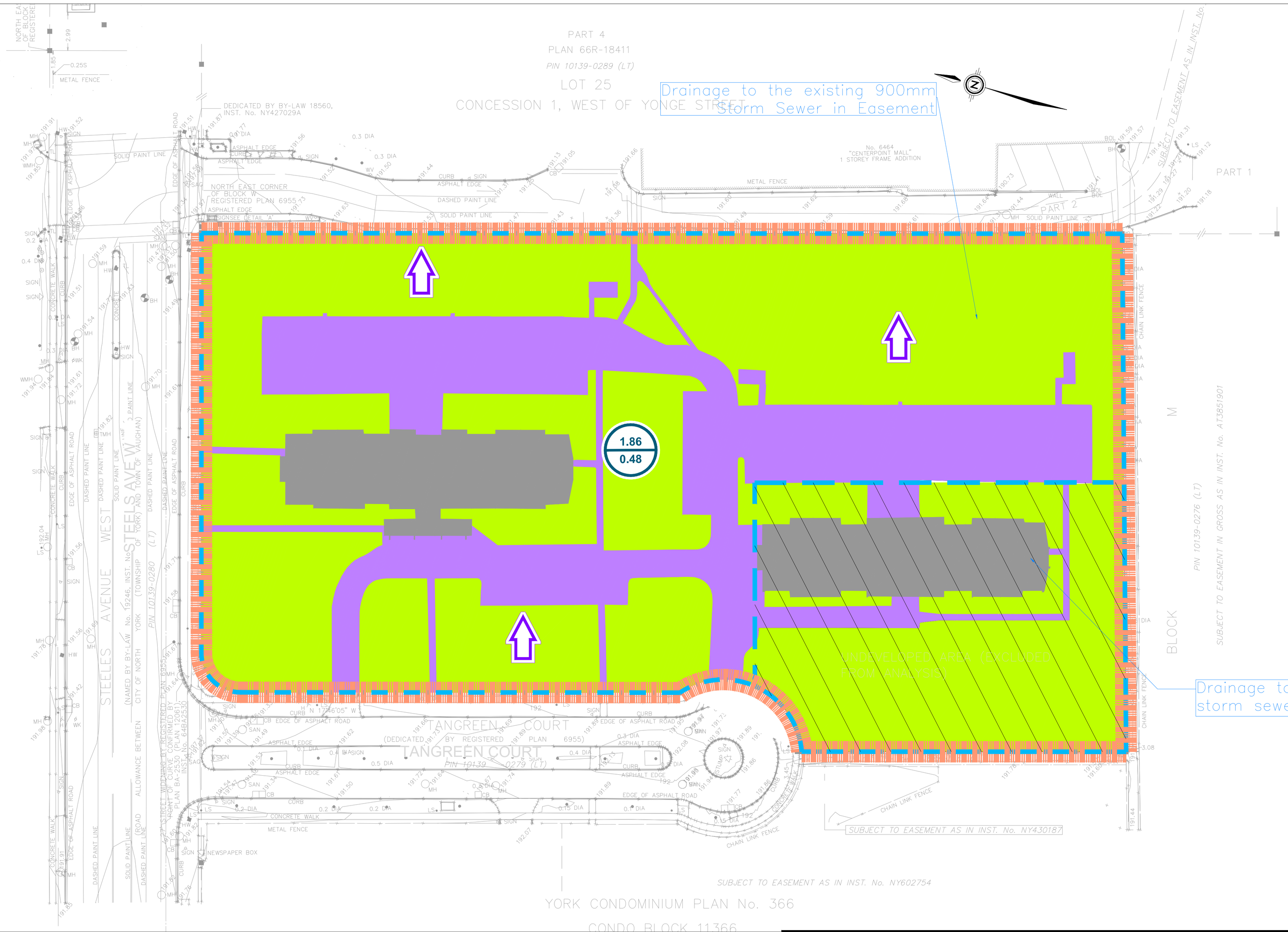
Where,

I = rainfall intensity in mm/hour

T = time of concentration in hours

A and C = constant parameters (see below)

The parameters (A, C) recommended for use by the City of Toronto (as per Section 3.1 of the Wet Weather Flow Management Guidelines) are summarized in **Table 2-1**.



LEGEND

- PROPERTY BOUNDARY
- CONTROLLED DRAINAGE AREA
- 1.86 / 0.48 — DRAINAGE AREA (ha) / AVERAGE RUNOFF COEFFICIENT
- IMPERVIOUS ROOF
- AT-GRADE IMPERVIOUS
- AT-GRADE LANDSCAPING
- AREA REMAINS UNCHANGED
- OVERLAND FLOW DIRECTION

CLIENT
CAPREIT 2 LIMITED PARTNERSHIP

TITLE
5 TANGREEN COURT,
NORTH YORK, TORONTO

EXISTING CONDITIONS

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Table 2-1: Rainfall Parameters

Return Period (Years)	2	5	10	25	50	100
A	21.8	32.0	38.7	45.2	53.5	59.7
C	-0.78	-0.79	-0.80	-0.80	-0.80	-0.80

Source: City of Toronto Wet Weather Flow Management Guidelines (November, 2006)

An initial time of concentration, T_C, of 10 minutes (or 0.167 hours) is recommended in the WWFMG document.

2.3 Allowable Flow Rates

The site is located in an area of urban development. As noted in **Section 1.4**, relevant policies from the WWFMG require the discharge rate from this site to be controlled to the allowable rate for discharge to municipal sewers. The allowable release rate is the 2-year pre-development flow rate to the municipal storm sewer system using a maximum runoff coefficient of 0.50.

The calculated runoff coefficient for the 1.86 ha development area under existing conditions is C = 0.48. The pre-development peak flow rates from the site are summarized in Error! Reference source not found.. Detailed calculations are contained within **Appendix B**.

Table 2-2: Pre-Development Peak Flow Rates

Return Period (Years)	Rainfall Intensity, I (mm/hr)	Pre-Development Peak Flow Rates[1] (L/s)	Allowable Release Rate[2] (L/s)
2	88.2	220.7	**228.3**
5	131.8	329.8	
10	162.3	406.1	
25	189.5	474.3	
50	224.3	561.4	
100	250.3	626.5	

[1] Based off a runoff coefficient C = 0.48, an area of 1.86 ha, and a T_c of 10 minutes

[2] 2-year WWFMG rate, runoff coefficient C = 0.50, and a site area of 1.86 ha and a T_c of 10 minutes

3 POST-DEVELOPMENT CONDITIONS

3.1 General

The project is planned to have three phases:

- Phase One, the construction of a mixed-used tower building (Towers A) with 55 storey a residential tower building (tower B) with 40 storeys.
- Phase Two, the construction of two residential tower buildings (Tower C and D) with 25 storeys; and
- Phase Three, the existing residential building at 5 Tangreen and the surface parking lots will be demolished. Additionally, this Phase consists of the construction of a mixed-used tower building (Towers E) with 55 storeys, a residential building tower (tower F) with 45 storeys, and a residential building tower (tower G) with 35 storeys.

There will be two levels of underground basement for Towers A and B, Towers C and D, and Towers E, F, and G, separately.

For the purpose of this report, no phasing or interim condition will be considered. Under the ultimate condition, the site will be separated into two blocks by the proposed E-W ROW. The north block consists of Catchment 101 and Catchment 103 and the south block consists of Catchment 102. Runoff generated from all blocks will be collected and conveyed to the existing 900 mm storm sewer. The future ROW will be considered as Catchment 104 for water quality and quantity control purpose and shall drain to the 900 mm storm sewer as well. **Figure 3** illustrates the proposed conditions.

A combined green roof area of 4,247 m^2 shall be provided on the building roofs. Under post-development conditions, the subject site has an average runoff coefficient of ~0.79 for development blocks and 0.90 for the ROW. Area breakdowns of the purposed development catchments are provided in the following tables, **Table 3-1 – Table 3-4.**

Table 3-1: Proposed Conditions Area - Catchment 101

Surface Type	Area (m^2)	Runoff **Coefficient, C**	% Coverage
Impervious Roof Coverage	1,165	0.90	24%
Green Roof Coverage	1,174	0.45	24%
At-grade Impervious	2,528	0.90	52%
Total Area	**4,867**	**0.79**	**100%**

Table 3-2: Proposed Conditions Area - Catchment 102

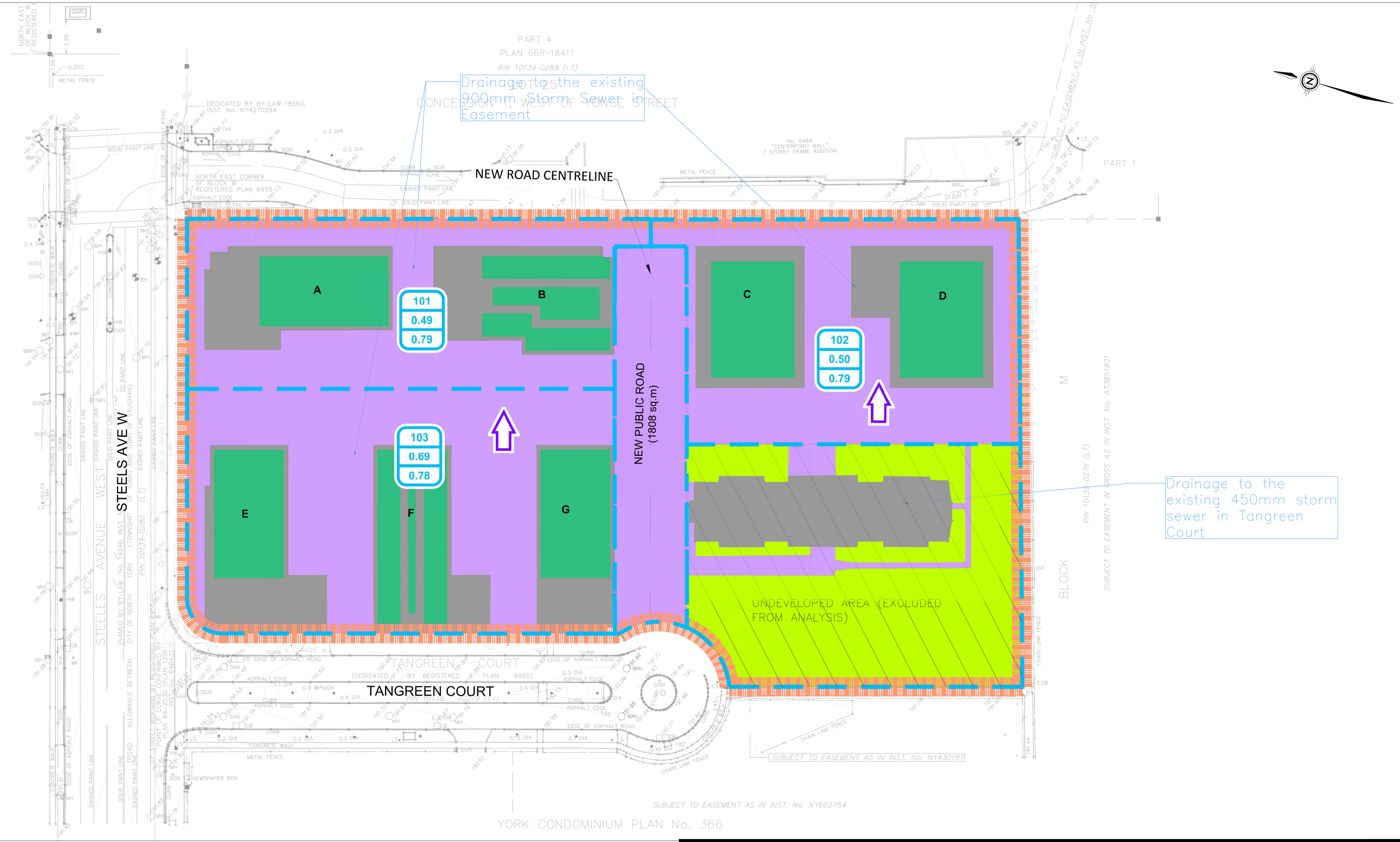
Surface Type	Area (m^2)	Runoff Coefficient, C	% Coverage
Impervious Roof Coverage	895	0.90	18%
Green Roof Coverage	1,280	0.45	26%
At-grade Impervious	2,841	0.90	57%
Total Area	**5,016**	**0.79**	**100%**

Table 3-3: Proposed Conditions Area - Catchment 103

Surface Type	Area (m^2)	Runoff Coefficient, C	% Coverage
Impervious Roof Coverage	1,466	0.90	21%
Green Roof Coverage	1,789	0.45	26%
At-grade Impervious	3,666	0.90	53%
Total Area	**6,922**	**0.78**	**100%**

Table 3-4: Proposed Conditions Area - Catchment 104 (Future ROW)

Surface Type	Area (m^2)	Runoff Coefficient, C	% Coverage
At-grade Impervious	1,808	0.90	100%
Total Area	**1,808**	**0.90**	**100%**



LEGEND

- PROPERTY BOUNDARY
- CONTROLLED DRAINAGE AREA
- 101 / 0.34 / 0.70 — SUB-CATCHMENT / DRAINAGE AREA (ha) / RUNOFF COEFFICIENT
- IMPERVIOUS ROOF
- AT-GRADE IMPERVIOUS
- GREEN ROOF
- AREA REMAINS UNCHANGED
- OVERLAND FLOW DIRECTION

CLIENT
CAPREIT 2 LIMITED PARTNERSHIP

TITLE
5 TANGREEN COURT,
NORTH YORK, TORONTO

PROPOSED CONDITIONS

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3.2 Water Balance

As noted in **Section 1.4**, the WWFMG states that the proponent should target the retention of runoff from a 5 mm rainfall event from all surfaces, in order to ensure 50% of the total average annual rainfall volume is retained on site. Due to the underground basement underlying the majority of the site, infiltration is not feasible for this project. A sump at the base of the rainwater cistern to capture water on-site for reuse is proposed to address water balance requirements.

The mechanism proposed to capture retention on site is via reuse volume in the base of stormwater cisterns located within the buildings. The runoff from the roof and at-grade areas will be directed to each of the cistern sumps via mechanical and civil systems. The sumps of each cistern are sized to retain the required water balance volume to satisfy the criteria for the entire site, over-capturing to offset for the water balance volume required for the ROW.

Table 3-5 – Table 3-8 set out the calculation to determine the required retention / reuse volume for the site based on a 5 mm rainfall event. For impervious areas, a standard initial abstraction value of 1 mm has been used. For all pervious areas, a standard initial abstraction value of 5 mm has been used. The calculation determined that the minimum retention storage volume of 57.47 m^3 is required for water balance reuse. Detailed calculations can be found in **Appendix B**.

Table 3-5: Water Balance - Catchment 101

Surface Type	Area (m^2)	Initial Abstraction (m)	Volume Abstracted (m^3)	5 mm Volume (m^3)	Water Balance (m^3)
Impervious Roof	1,165	0.001	1.17	5.83	4.66
Green Roof	1,174	0.005	5.87	5.87	0.00
At-grade Impervious	2,528	0.001	2.53	12.64	10.11
Total Site	**4,867**	**-**	**9.56**	**24.34**	**14.77**

Table 3-6: Water Balance - Catchment 102

Surface Type	Area (m^2)	Initial Abstraction (m)	Volume Abstracted (m^3)	5 mm Volume (m^3)	Water Balance (m^3)
Impervious Roof	895	0.001	0.90	4.48	3.58
Green Roof	1,280	0.005	6.40	6.40	0.00
At-grade Impervious	2,840	0.001	2.84	14.21	11.36
Total Site	**5,016**	**-**	**10.14**	**25.08**	**14.94**

Table 3-7: Water Balance - Catchment 103

Surface Type	Area (m^2)	Initial Abstraction (m)	Volume Abstracted (m^3)	5 mm Volume (m^3)	Water Balance (m^3)
Impervious Roof	1,466	0.001	1.47	7.33	5.86
Green Roof	1,789	0.005	8.95	8.95	0.00
At-grade Impervious	3,666	0.001	3.67	18.33	14.66
Total Site	**6,921**	**-**	**14.08**	**34.61**	**20.53**

Table 3-8: Water Balance - Catchment 104

Surface Type	Area (m^2)	Initial Abstraction (m)	Volume Abstracted (m^3)	5 mm Volume (m^3)	Water Balance (m^3)
At-grade Impervious	1,808	0.001	1.81	9.04	7.23
Total Site	**1,808**	**-**	**1.81**	**9.04**	**7.23**

The site will have a total retention volume exceeding 57.75 m^3, which is retained for reuse within the storm water cisterns. The reuse methods for the captured stormwater are being assessed in conjunction with the mechanical design of the building's water supply systems.

It is confirmed that irrigation will be one of the reuse options for the site. The average water usage is 46 m^3 within a 72-hour period for the plans inside current property line. The calculation for the irrigation demand can be found in **Appendix B**. Other reuse options include flushing of toilets in the commercial areas at ground floor level and any additional non-potable demand in the communal building areas. Catchment 4 is to be developed into a roadway and as a result there are fewer reuse methods that can be utilized, thus additional capture is provide within the sumps of the cisterns in the private

blocks. It is assumed that sufficient opportunities exist within the development to reuse the full volume of retained stormwater within a reasonable drawdown time. The mechanical design of the rainwater reuse pump systems from the cistern will ensure that the cistern is empty prior to switching to the City's water supply.

3.3 Water Quality Control

Stormwater runoff from the site will require water quality treatment. The standard for water quality treatment is 80% TSS removal on a long-term average annual loading basis. Roof top areas do not generate high TSS loading and do not require treatment.

A membrane filtration unit is proposed upstream of each of the cisterns to treat runoff from the controlled areas of the site. This will provide pre-treatment for the water balance volume and ensure excessive sediment does not accumulate within the tank. For Catchment 101 and Catchment 103, an MFS Strom Filter model SFPD 0811 was sized for each block, based on their respective drainage areas and land uses. For Catchment 102, an MFS Strom Filter model SFPD 0814 was sized for the drainage catchment and land use. Details of the proposed water quality units can be found in **Appendix C**.

3.4 Erosion Control

As mentioned in **Section 1.4**, this development is an overall small footprint development. According to the WWFMG, '*For small infill / redevelopment sites < 2 ha, erosion control in the form of stormwater detention is normally not required, provided the on-site minimum runoff retention from a small design rainfall event (typically 5 mm) is achieved under the Water Balance Criteria.*'

The development area for this application consists of two blocks: 1.2 ha of the north block and 0.69 ha of the south block, which are all well below the 2.0 ha guideline. Given that the 5 mm water balance requirement has been addressed, additional measures for erosion control are not recommended.

3.5 Water Quantity Control

3.5.1 The Future ROW (Catchment 1)

A superpipe is proposed to capture the runoff within the future ROW and shall provide a minimum of 31.8 m^3 storage volume. The storage pipe has a diameter of 900 mm, length of 50 m and 0.03% slope. A 150 mm orifice tube is proposed to limit a maximum release rate of 55.6 L/s. The maximum required storage to control the 100-year post-development runoff is 29.9 m^3, resulting a peak elevation of 0.83 m.

3.5.2 Catchment 101

As noted in **Section 2.3**, the development area discharges to the 900 mm storm sewer in easement and have an allowable discharge rate of 228.3 L/s, based on an existing drainage area of 1.86 ha to the storm sewer. However, under post-development conditions, drainage area tributary to the 900 mm storm sewer from the development area is decreased to 0.49 ha and the future ROW takes up 24% of the allowable release rate for the site. Therefore, the target discharge rate from Catchment 101 to this municipal sewer system is limited to 45.50 L/s. This is equivalent to the peak runoff rate under pre-development conditions during a 2-year design storm event using a runoff coefficient of 0.50.

A model of the site was constructed in HydroCAD and used to determine the required storage volume in the stormwater cistern and to calculate the discharge rates achieved by the proposed flow controls under all storm events. The modified rational method (an inherent subroutine of the HydroCAD software) has been used for the modelling exercise.

An emergency overflow will be provided at the top of the cistern, with discharge to the street level and the adjacent right of way. This will prevent flow from backing up into the building pipework if the primary outlet is blocked, or if a storm event in excess of the 100-year return period occurs.

Runoff from the site will be collected into a stormwater cistern at the P1 level where it will be pumped into a discharge manhole. The cistern was modelled with a base area of 45.0 m^2 and a height of 3.9 m providing 195 m^3 of storage. The reuse volume for water balance is contained below the invert of the pump and is assumed full at the onset of the storm and shall provide a minimum volume of 15.75 m^3 to satisfy the water balance criteria. The pump is designed to be turned on when the water level exceeds the pump invert within the cistern. The maximum pump head will be 3.0 m. The pump will be operated at a max pump rate of 36.7 L/s (2,200 L/min) when the cistern is full.

A summary of the modelling results is provided below in **Table 3-9**. Full HydroCAD modelling output is provided in **Appendix D**

Table 3-9: Summary of Modelling Results for Catchment 101

Return Period (Years)	Allowable Release Rate (L/s)	Peak Cistern Discharge Rate (L/s)	Utilized Storage (m^3) (of 195 m^3)	Water Depth in Cistern (m)
2	**45.5**	34.3	38.8	0.863
5		34.9	64.0	1.423
10		35.4	82.4	1.831
25		35.8	99.1	2.201
50		36.3	120.5	2.679
100		36.7	136.6	3.036

The modelling results demonstrate that the post-development peak flow rates for all events up to the 100-year storm are lower than the target release rate established in accordance with the WWFMG. The maximum required storage volume to control the 100-year post-development runoff is 136.6 m^3. Note that this total utilized storage volume includes the previously quoted sump storage volume, and the sump has been modelled as full at the beginning of the storm event.

The storm duration producing the highest combination of peak flows from the cistern has been iteratively determined to be t_d = 13 minutes (for the 100-year event) according to the modified rational method process.

3.5.3 Catchment 102

As noted in **Section 2.3**, the development area discharges to the 900 mm storm sewer in easement and have an allowable discharge rate of 228.3 L/s, based on an existing drainage area of 1.86 ha to the storm sewer. However, under post-development conditions, drainage area tributary to the 900 mm storm sewer from the Catchment 102 is decreased to 0.50 ha and the future ROW takes up 24% of the allowable release rate for the site. Therefore, the target discharge rate from Catchment 102 to this municipal sewer system is limited to 46.4 L/s. This is equivalent to the peak runoff rate under pre-development conditions during a 2-year design storm event using a runoff coefficient of 0.50.

A model of the site was constructed in HydroCAD and used to determine the required storage volume in the stormwater cistern, and to calculate the discharge rates achieved by the proposed flow controls under all storm events. The modified rational method (an inherent subroutine of the HydroCAD software) has been used for the modelling exercise. An emergency overflow will be provided at the top of the cistern, with

discharge to the street level and the adjacent right of way. This will prevent flow from backing up into the building pipework if the primary outlet is blocked, or if a storm event in excess of the 100-year return period occurs.

The runoff from the site will be collected into a stormwater cistern at the P1 level where it will be pumped into a discharge manhole. The cistern was modelled with a base area of 70.0 m^2 and a height of 3.9 m providing 273.0 m^3 of storage. The reuse volume for water balance is contained below the invert of the pump and is assumed full at the onset of the storm and shall provide a minimum volume of 21.0 m^3 to satisfy the water balance criteria. The pump is designed to be turned on when the water level exceeds the pump invert within the cistern. The maximum pump head will be 3.0 m. The pump will be operated at a max pump rate of 40 L/s (2400 L/min) when the cistern is full

A summary of the modelling results is provided below in **Table 3-10**. Full HydroCAD modelling output is provided in **Appendix D**.

Table 3-10: Summary of Modelling Results for Catchment 102

Return Period (Years)	Allowable Release Rate (L/s)	Peak Cistern Discharge Rate (L/s)	Utilized Storage (m^3) (of 273 m^3)	Water Depth in Cistern (m)
2	**46.4**	37.4	43.9	0.627
5		37.8	69.7	0.995
10		38.1	88.5	1.265
25		38.3	105.7	1.511
50		38.7	127.9	1.826
100		39.0	144.5	2.064

The modelling results demonstrate that the post-development peak flow rates for all events up to the 100-year storm are lower than the target release rate established in accordance with the WWFMG. The maximum required storage volume to control the 100-year post-development runoff is 144.5 m^3. Note that this total utilized storage volume includes the previously quoted sump storage volume, and the sump has been modelled as full at the beginning of the storm event. The storm duration producing the highest combination of peak flows from the cistern has been iteratively determined to be t_d = 12 minutes (for the 100-year event) according to the modified rational method process.

3.5.4 Catchment 103

As noted in **Section 2.3**, the development area discharges to the 900 mm storm sewer in easement and have an allowable discharge rate of 228.3 L/s, based on an existing drainage area of 1.86 ha to the storm sewer. However, under post-development conditions, drainage area tributary to the 900 mm storm sewer from the Catchment 103 is decreased to 0.69 ha and the future ROW takes up 24% of the allowable release rate for the site. Therefore, the target discharge rate from Catchment 103 to this municipal sewer system is limited to 64.1 L/s. This is equivalent to the peak runoff rate under pre-development conditions during a 2-year design storm event using a runoff coefficient of 0.50.

A model of the site was constructed in HydroCAD and used to determine the required storage volume in the stormwater cistern, and to calculate the discharge rates achieved by the proposed flow controls under all storm events. The modified rational method (an inherent subroutine of the HydroCAD software) has been used for the modelling exercise. An emergency overflow will be provided at the top of the cistern, with discharge to the street level and the adjacent right of way. This will prevent flow from backing up into the building pipework if the primary outlet is blocked, or if a storm event in excess of the 100-year return period occurs.

The runoff from the site will be collected into a stormwater cistern at the P1 level where it will be pumped into a discharge manhole. The cistern was modelled with a base area of 60.0 m^2 and a height of 3.9 m providing 234.0 m^3 of storage. The reuse volume for water balance is contained below the invert of the pump and is assumed full at the onset of the storm and shall provide a minimum volume of 21.0 m^3 to satisfy the water balance criteria. The pump is designed to be turned on when the water level exceeds the pump invert within the cistern. The maximum pump head will be 3.0 m. The pump will be operated at a max pump rate of 58 L/s (3500 L/min) when the cistern is full

A summary of the modelling results is provided below in **Table 3-11**. Full HydroCAD modelling output is provided in **Appendix D**.

Table 3-11: Summary of Modelling Results for Catchment 103

Return Period (Years)	Allowable Release Rate (L/s)	Peak Cistern Discharge Rate (L/s)	Utilized Storage (m^3) (of 234 m^3)	Water Depth in Cistern (m)
2	**64.1**	55.9	47.6	0.794
5		56.5	81.9	1.366
10		57.0	107.3	1.789
25		57.4	130.5	2.176
50		58.0	160.5	2.675
100		58.3	193.1	3.052

The modelling results demonstrate that the post-development peak flow rates for all events up to the 100-year storm are lower than the target release rate established in accordance with the WWFMG. The maximum required storage volume to control the 100-year post-development runoff is 193.1 m^3. Note that this total utilized storage volume includes the previously quoted sump storage volume, and the sump has been modelled as full at the beginning of the storm event. The storm duration producing the highest combination of peak flows from the cistern has been iteratively determined to be t_d = 16 minutes (for the 100-year event) according to the modified rational method process.

4 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION PERIOD

During construction, there is potential for short-term sediment wash-off from the site. To protect the downstream receiving sewer system and other natural features, on-site sediment control measures are necessary during construction.

As sediment and erosion control strategies focus on minimizing adverse environmental impacts by restricting the mobilization and transport of sediment, the following general practices will be observed:

- Sediment and erosion control works, as shown on the project's erosion and sedimentation control plans which will be provided during the detailed design stage, must be in place prior to the commencement of construction, and not removed until the end of the construction period, when the site has been stabilized.
- Construction phasing must be scheduled to minimize the extent and period to which disturbed soils are exposed to weathering. As such, all disturbed areas must be stabilized as quickly as possible. Stabilization of disturbed areas may be accomplished by sodding, seeding, mulching, hydroseeding, planting, or covering of constructed slopes with an appropriate material such as geotextile or jute mesh.
- Access to the construction site must be minimized.
- A continuous siltation fence must be constructed along the perimeter of the proposed development. The silt fence must be in place prior to the commencement of construction, and must be removed at the end of the construction period.

5 CONCLUSIONS

A stormwater management plan has been prepared to support the site development applications for the proposed development of 5 and 15 Tangreen in The City of Toronto. The key points are summarized below.

Water Balance

The site is required to retain 50% of the total average rainfall volume for reuse on-site. The site is required to retain a volume of 57.47 m^3 from all rainfall events 5mm or less. A total retention volume of 57.75 m^3 is provided within the site, divided across the various reuse chambers of the block cisterns to satisfy the water balance requirement. The proposed reuse methods are irrigation on the tower rooftop and any other non-potable demand in the communal building areas.

Water Quality

Stormwater runoff from the site will require water quality treatment for each block. The MFS Storm Filter treatment units have been sized for each catchment based on their respective land use and treatment drainage areas.

Erosion Control

Each individual development blocks are below the 2.0 ha erosion control guideline and the on-site minimum retention is achieved under the water balance criteria within each of the blocks. Therefore, no further measures are recommended.

Water Quantity

Runoff from the controlled catchments on-site will be directed to a stormwater cistern. Post-development flows in the Catchment 101, Catchment 102, Catchment 103, and Catchment 104 have been controlled to below 45.5 L/s, 46.4 L/s, 64.1 L/s, and 55.6 L/s respectively, in compliance with the target release rate to the municipal storm sewer system by use of a cisterns volume and orifice tube controls at the outlet.

The proposed SWM strategy described in this report addresses all stormwater management-related impacts from the project and satisfies the intent of the City of Toronto Wet Weather Flow Management Guidelines.

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