



# Victoria Park Village – Block 107 (12 Poole Street)

## Functional Servicing and Stormwater Management Report

**Project Location:**

12 Poole Street, Guelph, ON

**Prepared for:**

Victoria Park Village Inc.  
PO Box 220, Burlington, ON

**Prepared by:**

MTE Consultants  
520 Bingemans Centre Drive  
Kitchener, ON N2B 3X9

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Existing Conditions Plan 2 MTE Drawing No. EX.2 .....	Separately Appended
Functional Site Grading Plan 1 MTE Drawing No. GP.1 .....	Separately Appended
Functional Site Grading Plan 2 MTE Drawing No. GP.2 .....	Separately Appended
Functional Site Servicing Plan 1 MTE Drawing No. SSP.1 .....	Separately Appended
Functional Site Servicing Plan 2 MTE Drawing No. SSP.2 .....	Separately Appended

## 1.0 Introduction

MTE Consultants Inc. was retained by Victoria Park Village Inc. to complete a Functional Servicing and Stormwater Management Report (FS-SWM) for a new residential development to be constructed at Block 107 within the Victoria Park Village Subdivision which has now been given the municipal address of 12 Poole Street (herein referred to as 'the Site') in the City of Guelph.

The purpose of this study is to support of the Official Plan Amendment (OPA) Application. This will be accomplished by reviewing the opportunities and constraints for the subject property with respect to servicing, grading, and stormwater management; reviewing the requirements of the reviewing agencies; describing the development concept; and demonstrating the functional serviceability of the property. Pending approval of the Amendment Application, detailed design of the Site will commence and be submitted to the City in support of Site Plan Approval.

### 1.1 Site Description and Proposed Development

The Site is currently a vacant residential block within the existing Victoria Park Village Subdivision. The Site is approximately 2.37ha and will be bound to the north by a future municipal pedestrian trail and the Torrence Creek Swamp (a Provincially Significant Wetland), to the east by Decorso Drive right-of-way, to the south by Poole Street right-of-way, and to the west by Hutchinson Road right-of-way, Keegan Court right-of-way and a municipal SWM Facility for the subdivision. For the exact location of the Site refer to Figure 1.0.

The proposed development for the Site is the construction of 520 residential dwelling units in the form of twelve 4-storey stacked townhouses, and a 6 to 10-storey multi-residential apartment building complete with underground parking, surface parking, outdoor amenity and landscape areas. The Site will be connected through internal drive aisles complete with driveway entrances off Keegan Court, Hutchinson Road and Decorso Drive.

### 1.2 Official Plan Amendment

The current Official Plan designation of the Site is Low Density Greenfield Residential. The Official Plan Amendment is proposed to re-designate the Site as High Density Residential.

### 1.3 Reviewing Agencies

Grading, servicing and stormwater management designs as well as this Functional Servicing and Stormwater Management Report will be required for submission to the City of Guelph in support of the Official Plan Amendment Application. The City will also be responsible for the review and approval of site plans, lighting and landscape design and ultimately issuing building permits.

As the north portion of the Site falls within the GRCA Regulation limit, the site engineering design will also be submitted to the GRCA for their review and approval. A 'Fill Permit' will be required.



Figure 1.0      Date: DEC.10/2021  
Scale: N.T.S.

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**SITE LOCATION PLAN**

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Engineers, Scientists, Surveyors

## 2.0 Grading

### 2.1 Topography

Based on the design grades by Urbantech Consulting, the surface runoff from the Site drains from south to north toward the West Course Tributary/Torrence Creek Swamp. There is an elevation difference of approximately 5.5m between the southeast property line fronting Decorso Drive and the north property line at the rear of the Site. In the current condition, the site has not been filled to the proposed grades to accommodate the future underground parking area. A topsoil stockpile from the subdivision works is currently located on the Site which will need to be removed prior to development.

### 2.2 Existing Soils Information

A Geotechnical Investigation was completed by Chung and Vander Doelen Engineering Ltd dated June 8, 2006 and a Hydrogeological Investigation was completed by Banks Groundwater Engineering Limited in April 2015. Both reports noted high groundwater elevations at the previous existing ground elevations. Since then, the subdivision has had extensive fill imported. The high groundwater elevation in the vicinity of the site is around 331+/-mASL. The design grades along the property line of the Site vary from 331.70 to 337.46mASL.

### 2.3 Proposed Grading

The proposed development will have twelve 4-storey stacked townhouses, and a 6 to 10-storey multi-residential apartment building complete with underground parking, surface parking, outdoor amenity and landscape areas. The Site will be connected through internal drive aisles complete with driveway entrances off Keegan Court, Hutchinson Road and Decorso Drive. The proposed grading strategy will respect the design grades along all property lines. The grading strategy was developed to ensure the major overland flow route was towards Hutchison Road and Keegan Court was maintained per the subdivision Design. To achieve this a large retaining wall is proposed on-site along the north property line where embankments could not be utilized.

Preliminary grading strategy for the proposed development was developed based on the subdivision design grades for the Victoria Park Village Subdivision and Conceptual Site Plan prepared by IBI Group. Refer to the separately appended Functional Site Grading Plans for more information on the grading design for the Site.

## 3.0 Servicing

Service connections were installed to the property line of Block 107 as part of the construction of the Victoria Park Village Subdivision. The existing servicing information was compiled from the As-Constructed Plan & Profile Drawings by Urbantech Consulting. However, the Plan & Profile Drawings do not include As-Constructed invert information for the service connections to Block 107 thus the as designed service information was assumed to be correct.

### 3.1 Water

There are three existing 150mm diameter water service connections stubbed at the property line of the Site, off of Hutchison Road, Keegan Court and Decorso Road, complete with property line valves and temporary hydrants. It is proposed that the Site will be serviced by removing one of the temporary hydrants and extending the 150mm water service from the property line to the

limit of the underground parking garage. The proposed stacked townhouses, apartment building and any internal fire hydrants will then be serviced through the underground parking garage.

During detailed design it will be determined if there are any benefits in utilizing any of the other stubbed water service connections. Any redundant water service connections will be decommissioned and capped at the municipal watermain as part of the proposed development of the Site.

Given the height of the proposed apartment building, internal booster pumps may be required to achieve appropriate flow and pressure on the upper floors. This will be confirmed by the mechanical engineer during detailed design.

### 3.2 Sanitary

There are three existing 200mm diameter sanitary service connections stubbed at the property line of the Site, off of Hutchison Road, Keegan Court and Decorso Road. All sanitary service connections were designed with a 1.0% slope producing a combined capacity of 98.4L/s, or 32.8L/s each.

Based on the proposed development having 520 units and a site area of 2.37ha, the proposed density is 220 units per hectare. The City of Guelph's Development Engineering Manual notes a flow rate of 6L/s/ha is to be used for sites with 150 units per hectare and 7L/s/ha is to be used for sites with 295 units per hectare. Using linear interpolation, the assumed flow rate for the site based on the City's Development Manual is 6.5L/s/ha. Therefore, the resulting peak sanitary flow with infiltration is expected to be 15.4L/s (6.5L/s/ha x 2.37ha). Thus each of the existing sanitary service connections have adequate capacity to convey the flow from the proposed development.

It is proposed that the Site will be serviced by extending all three 200mm diameter sanitary services from the property line to the limit of the underground parking garage. The proposed stacked townhouses and apartment building will then be serviced through the underground parking garage. This will give the Mechanical Engineer flexibility in designing the internal sanitary system and help avoid headroom issues within the underground parking garage. This is subject to change during detailed design through coordination with the Mechanical Engineer. Any sanitary connections determined to be redundant will be decommissioned and capped at property line as part of the proposed development.

### 3.3 Storm

There is an existing 450mm diameter and 675mm diameter storm service connection stubbed at the property line of the Site off of Hutchison Road and Keegan Court, respectively. Both storm service connections were designed with a 1.0% slope producing a capacity of 285.1L/s and 840.5L/s, respectively.

It is proposed that the Site will be serviced by extending both storm services from the property line to the limit of the underground parking garage. The proposed area drains, which collect runoff from the common drive aisles, amenity and landscape areas, will then be serviced through the underground parking garage. The runoff collected by the area drains will ultimately be directed to the existing storm sewers in the Hutchison Road and Keegan Court right-of-way. A clean water system will also be installed within the Site through the underground parking garage to collect rooftop runoff from the proposed stacked townhouses and apartment building. The runoff collected in the clean water system will be directed to the on-site infiltration galleries. Runoff from the frontage of the property and dedicated amenity space and green space will drain un-attenuated towards the Decorso Drive, Poole Street, Hutchison Road and Keegan

Court right-of-way and West Course Tributary, respectively. The size and inverts of the proposed storm sewer and clean water system will be confirmed at detailed design.

Preliminary servicing strategy for the proposed development have been developed based on the subdivision servicing design for the Victoria Park Village Subdivision and Conceptual Site Plan prepared by IBI Group. Refer to the separately appended Functional Site Servicing Plans for more information on the servicing design for the Site.

## 4.0 Preliminary Storm Water Management Design

### 4.1 SWM Criteria

Block 107 was included in the stormwater management design for the Victoria Park Village Subdivision. It is our understanding the downstream SWM Facility provides water quantity and water quality control for the site based on a designed runoff coefficient of 0.75 or 78% impervious. Therefore, the stormwater management design criteria for the Site, as established in the subdivision stormwater management design, Water Balance Calculations and by the City of Guelph, are as follows:

- i. Provide on-site water quality and quantity control if the total impervious area of the Site is greater than 78%; and,
- ii. Infiltrate 5,005m<sup>3</sup>/year of clean rooftop water based on 916mm of annual rainfall.

### 4.2 Water Quantity and Quality Control

As stated previously, the Site is located within the drainage area of the subdivision SWM Facility which provides water quantity and water quality control for its contributing drainage area. The Storm Drainage Area Plan by Urbantech notes that subdivision design assumed a run-off coefficient of 0.75 for this block (78% imperviousness). The proposed development encompasses an area of 2.37ha with an overall imperviousness of 70%. Therefore, no additional on-site water quantity or quality controls are required. No modelling is required as the Site is under the designed imperviousness.

The overland flow route for the development was designed to be directed towards Hutchison Road and Keegan Court right-of-ways in accordance with the subdivision design.

### 4.3 On-site Infiltration

Based on the Water Balance Calculations for the Victoria Park Village Subdivision – Phase 2 and Remaining Lands by Urbantech, Block 107 was designated to have roof water infiltration incorporated into the site design during the Site Plan Process. The on-site infiltration galleries are to be sized to meet an annual infiltration of 5,005m<sup>3</sup>/year, which is based on capturing 40mm of participation from an assumed total roof area of 5,461m<sup>2</sup> for Block 107. This results in needing a cumulative storage volume of at least 218.4m<sup>3</sup> for the on-site infiltration galleries to meet the infiltration requirement for the Site.

The proposed development has a total roof area of 9,326m<sup>2</sup>, which exceeds the assumed total roof area in Urbantech's Water Balance Calculations. Due to the extra roof area, the on-site galleries only need to be sized to capture approximately 25mm of participation instead of 40mm to meet the requirements for the development. Due to the Site Plan layout four infiltration galleries will be provided. The runoff collected from the roof areas will be captured and directed to the corresponding infiltration galleries through the underground parking garage.

The following is a sample calculation used to size the infiltration galleries:

**Block A, B, C, D, E, F, G, H, & I:**

Roof Area x 25mm storm event: 5,525m<sup>2</sup> x 0.025m rainfall = 138.1m<sup>3</sup>

The following table summarizes the sizing details for each gallery.

**Table 1.0 – Infiltration Gallery Sizing**

Block(s)	Roof Area to be Infiltrated (m <sup>2</sup> )	Required Infiltration Gallery Vol. (m <sup>3</sup> )	Infiltration Gallery ID	ADS Gallery Dimensions (m)	Provided Infiltration Gallery Vol.(m <sup>3</sup> )
A, B, C, D, E, F, G, H, & I	5,525	138.1	1 2	41.1x2.6x1.7 14.9x2.6x1.7	104.8 37.2
J, K, & L	1,810	45.3	3	19.2x2.6x1.7	48.5
Apartment	1,991	49.8	4	21.4x2.6x1.7	54.1
<b>Total</b>	<b>9,326</b>	<b>233.2</b>	-	-	<b>244.6</b>

The dimensions for each infiltration gallery are detailed on the functional servicing plan, SSP.1 & SSP.2. For storms greater than the 25mm storm, once the gallery is full, runoff will be conveyed through the reversed slope overflow pipes into the on-site storm sewers.

A preliminary infiltration water balance analysis was completed to illustrate the proposed development not only meets but exceeds the on-site infiltration requirement. Through the proposed infiltration galleries and the landscape areas beyond the underground parking garage limit, which passively infiltration runoff, 7,960m<sup>3</sup>/year will be infiltrated. This results in a net gain of 2955m<sup>3</sup>/year above the required 5,005m<sup>3</sup>/year. Refer to Appendix A for the infiltration water balance analysis calculations.

**4.4 Erosion & Sediment Control**

Precautions will need to be taken during construction to limit erosion and sedimentation. Typically, the following measures are recommended during construction for erosion and sedimentation control:

- i. Erosion and sedimentation facilities such as sediment control fencing and silt sacks are to be installed prior to any area grading operations and clearing and grubbing of the Site should be kept to a minimum;
- ii. All erosion control measures are to be inspected and monitored by the contractor and repairs are to be completed as required;
- iii. Erosion and control measures are to be installed around the base of any stockpiles and around any existing catchbasins or proposed area drains;
- iv. All disturbed areas, not included in the construction zone, are to be top soiled and seeded immediately after completion of area grading;
- v. All materials and equipment used for the purpose of Site preparation and project completion should be operated and stored in a manner that prevents any deleterious substance from leaving the Site; and,
- vi. To minimize the amount of mud being tracked onto the road way, a mud mat should be installed at the primary construction entrance. The owner will be responsible for cleaning the municipal roadways from sediments.

## 5.0 Conclusions

Based on the foregoing analysis, it is concluded that:

- The proposed grading design will respect the subdivision design grades along all property boundaries;
- Existing municipal infrastructure to the Site is adequate to service the proposed development;
- The Site has a proposed percent imperviousness of 70% which is less than the required 78% as designed in the overall subdivision design. No on-site quantity or quality controls are required.

Additional grading, servicing and stormwater management details will be provided during detailed design.

All of which is respectfully submitted,

**MTE Consultants Inc.**

**Tyler Arndt, E.I.T.**

Designer

519-743-6500 ext. 1386

[tarndt@mte85.com](mailto:tarndt@mte85.com)

**Jeff Lerch, P.Eng.**

Design Engineer

519-743-6500 ext. 1307

[jlerch@mte85.com](mailto:jlerch@mte85.com)

TMA:dlb

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# Appendix A

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## **Water Balance (Infiltration) Analysis**



**1159 Victoria Road South - Block 107**  
**WATER BALANCE (INFILTRATION) ANALYSIS**  
 Guelph, Ontario

Project Number: 50151-100  
 Date: December 10, 2021  
 Design By: TMA  
 Checked By: JPL  
 File: Q:\50151\100\50151-100\_Micro Drainage Analysis\_Rev2.xlsx

**Hydrologic Cycle Component Values**

Annual Precipitation = 916mm

Soil Group "CD" (Clay Loam)

Post-Development (Flat Lands - Urban Lawns)	Roof Areas
565 mm Evapo-Transpiration	120mm Evapo-Transpiration
176 mm Runoff	<b>796 Net Runoff from roof</b>
<b>175 mm Infiltration</b>	0 mm Infiltration

**INFILTRATION**

Location	Required			Post-development						Comments
	Area Draining to Location	Infiltration Rate	Infiltration Volume	Pervious			Impervious			
				Area Draining to Location	Infiltration Rate	Infiltration Volume	Area Draining to Location	Infiltration Rate	Infiltration Volume	
	ha	mm/yr./m <sup>2</sup>	m <sup>3</sup> /yr.	ha	mm/yr./m <sup>2</sup>	m <sup>3</sup> /yr.	ha	mm/yr./m <sup>2</sup>	m <sup>3</sup> /yr.	
<b>As Designed</b>										
Total Site Area	2.369									
<b>Post-development</b>										
Building Areas - To On-site Infiltration Galleries (Active)							0.933	796	7427	
Landscape Areas - Beyond the U/G Parking (Passive)				0.294	175	515				
<b>Total</b>	2.369		<b>5005</b>	0.294	175.00	<b>515</b>	0.933	796	<b>7427</b>	
<b>Net Gain of Infiltration</b>									<b>2936</b>	<b>m<sup>3</sup>/yr.</b>