



61-69 Ainslie Street South

Servicing Report

Project Location:

61-69 Ainslie Street South
Cambridge, Ontario

Prepared for:

2699380 Ontario Inc.

Prepared by:

Karugu Consulting Inc.
111 Waterloo Street
London, ON N6B 2M4

July 16, 2020

File No: 19084

TABLE OF CONTENTS	Page
1.0 INTRODUCTION.....	2
2.0 MUNICIPAL SERVICING	3
2.1 Sanitary Servicing	3
2.1.1 Existing Sanitary Servicing	3
2.1.2 Proposed Sanitary Servicing and Peak Discharge Rates.....	3
2.2 Water Distribution	5
2.2.1 Existing Water Services & City Watermains.....	5
2.2.2 Proposed Water Services	5
2.2.3 Domestic Flow Demand	5
2.2.4 Fire Flow Demand.....	6
3.0 STORMWATER MANAGEMENT	7
3.1 HYDROLOGY	7
3.1.1 Existing Drainage.....	7
3.1.2 Post Development Drainage	7
3.2 Quality Control	9
4.0 EROSION AND SEDIMENT CONTROL.....	10
5.0 SUMMARY	11

1.0 INTRODUCTION

This report addresses proposed Site Servicing, Grading Design, Stormwater Management and Erosion and Sediment Control design, in support of a site plan control application by 2699380 Ontario Inc. for lands located at 61-69 Ainslie Street South, Cambridge. The subject site is approximately 0.73 ha bounded by Warnock Street to the north, Wellington Street to the east, Bruce Street to the south and Ainslie Street to the west. The property consists a commercial building roughly in the center of the site and a vacant structure near the south west corner of the property. The rest of the site is mostly asphalt and some grassed areas.

It is proposed to re-develop the site with two residential towers ranging in height between 10 and 18 storeys as well commercial and amenity spaces and multi-level parking. The Mill Creek 20-foot-wide culvert runs east to west across the southern part of the property within an existing easement. No permanent structures are proposed on the easement. This report presents a site servicing plan to demonstrate that the site can be adequately serviced and will produce no adverse effects to neighboring property following its implementation.

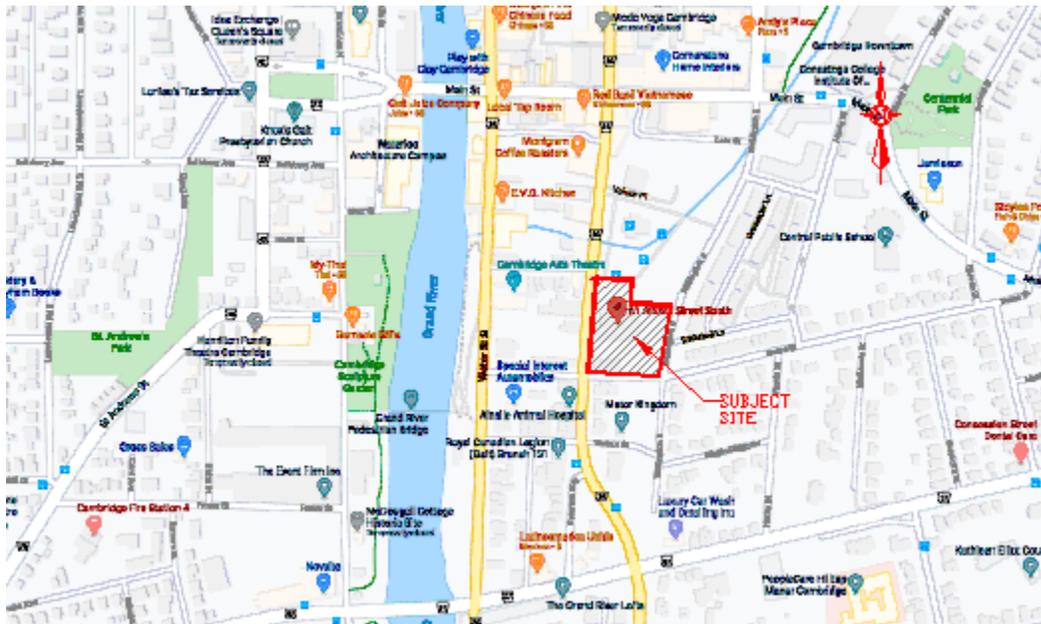


Figure 1: Location Map

2.0 MUNICIPAL SERVICING

2.1 Sanitary Servicing

2.1.1 Existing Sanitary Servicing

City records indicate that 250mm diameter sanitary municipal sewers are available on Ainslie Street and Bruce Street. City records also indicate that there are existing sanitary services from both Ainslie Street and Bruce Street to the property. All redundant services will be capped at the property line by the Developer's Contractor.

2.1.2 Proposed Sanitary Servicing and Peak Discharge Rates

The sanitary servicing for the proposed development is proposed to be provided by means of a proposed 200mm diameter sanitary connection to the existing sanitary manholes on Ainslie just north of the Mill Creek culvert as shown on the servicing drawing. An inspection manhole for the sanitary service has been provided at the property line and is to be located on the private side.

The proposed peak sanitary discharge generated from the development has been calculated as follows:

Number of Units	= 392
Number persons/unit	= 1.6
Population	= 392 x 1.6 = 628 persons
Daily flow	= 275 L/person
Total Daily Flow	= 628 x 275 = 172,700 L/Day = 2.00 L/s
Peaking Factor	= $1 + \frac{14}{4+P^{0.5}} = 1 + \frac{14}{4+0.628^{0.5}} = 3.92$
Design Peak Discharge	= 2.0 x 3.92 = 1.6 L/s
Infiltration Amount	= 0.6 L/sec/ha x 0.73 ha = 0.44 L/sec
Total Average Discharge	= Peak Discharge + Infiltration Amount

$$= 3.92 \text{ L/sec} + 0.44 \text{ L/sec}$$

$$= 4.36 \text{ L/sec}$$

Therefore, the peak sanitary discharge to the existing sanitary sewer will be approximately 4.36 L/sec.

The City, as indicated in the pre-consultation comments, will be undertaking an assessment of the municipal sanitary system and will confirm if there is sufficient downstream reserve capacity to service the proposed development once the assessment has been completed.

2.2 Water Distribution

2.2.1 Existing Water Services & City Watermains

City records indicate that a 450mm diameter watermain is available on Ainslie Street and 100mm diameter watermain is available on Bruce Street. City records also indicate that there are existing water services from both Ainslie Street and Bruce Street to the property. All redundant services will be capped at the main by City's Public Works Department at the Developer's expense.

2.2.2 Proposed Water Services

The proposed 150mm diameter water service to the property is proposed to be connected to the existing 450mm diameter watermain on Ainslie Street. The length of the service between the property line and the building is less than 30m and as such a water meter chamber is not proposed at the property line. The location and configuration of this proposed service is shown on the Site Servicing Plan.

2.2.3 Domestic Flow Demand

Proposed domestic flow demand based on DGSSMS as follows:

Number of Units	= 392
Number persons/unit	= 1.6
Population	= 392 x 1.6 = 628 persons
Daily flow	= 225 L/person/day
Total Daily Flow	= 628 x 225 = 141,300 L/Day = 2.00 L/s
Average Flow	= 1.63 L/s
Max Day Factor	= 3.5
Max Day Flow	= 5.70 L/s
Max Hour Factor	= 7.8
Max Hour Flow	= 12.71 L/s

2.2.4 Fire Flow Demand

Fire flow requirements for the proposed building will be determined by the mechanical consultant as part their design for the fixed fire fighting installation within the buildings.

Existing fire hydrants are located at the intersections Ainslie and Warnock Streets, Ainslie and Bruce Streets, Bruce and Wellington Streets and on Wellington Street immediately north of the site. Internal fire hydrants have not been proposed as the distance between the closest fire hydrant and the proposed fire department connection is less than 45m.

3.0 STORMWATER MANAGEMENT

3.1 HYDROLOGY

3.1.1 Existing Drainage

The site currently consists of a commercial building and a vacant structure. These two building are served by asphalt parking areas. The parking area to the north of the commercial building drains via an existing catchbasin to existing storm sewers on Ainslie Street. A 0.11ha external drainage area located northeast of the site, drains to this existing CB north of the commercial building as well. The parking area between the commercial and residential building drains via an existing catchbasin to the existing City sewer south of the site. A portion of the site mostly grassed to east of the property drains to Wellington Street. Available information indicates that there are no quality or quantity control measures implemented on this site.

The existing site statistics are as follows (See Figure 2):

Pre Development Site Statistics (See Figure 2)

Roof Area	2036 m ²	c=0.90	ac=	1832.40
Asphalt Areas	3947 m ²	c=0.90	ac=	3552.30
Landscaped Areas	1317 m ²	c=0.25	ac=	329.25
<hr/>				
Total	7300 m ²		ac=	5713.95

Composite post-development coefficient = $5713.95 / 7300 = 0.78$

3.1.2 Post Development Drainage

The site will be developed with two residential towers ranging in height between 15 and 20 storeys as well commercial and amenity spaces and multi-level parking. After the North Tower is constructed, runoff from the external drainage area to the north east of this site will be blocked. It is therefore proposed to grade part the external drainage as shown on the grading plan to redirect this runoff to Warnock Street where it will be pick by catchbasins on the road and ultimately drain to same storm sewer as it currently does.

Post Development Site Statistics (See Figure 3)

Roof Area	4088m ²	c=0.90	ac=	3679.20
Conc S/W Areas	70 m ²	c=0.90	ac=	63.00
Landscaped Areas	3142 m ²	c=0.25	ac=	785.50
<hr/>				
Total	7300 m ²		ac=	4527.70

Composite post-development coefficient = $4527.70 / 7300 = 0.62$

The proposed development results in a lower runoff coefficient than existing conditions. Therefore, post development runoff will be less than existing conditions and as such, quantity control is not proposed. Runoff from this site is proposed to be directed to the Mill Creek Box Culvert. Refer to Figure 3 and Site Servicing Plan Drawing #3 for proposed servicing.

Based on past correspondence on this project referencing information obtained from GRCA, it is understood that the 3m high Mill Creek Culvert flows at only 10% full during the 5-year storm event. Subject to GRCA confirmation and approval, it can therefore be assumed that there exists sufficient capacity in this culvert to accommodate runoff from this site.

Due to grading requirements, small landscaped portions of the site along the exterior of the building will drain to streets fronting those sides. Major flows will flow onto adjacent streets and ultimately into the Grand River. A small portion of the site is in the flood plan and as such it is expected to flood during the regulatory flood. Accordingly, the grading design has been undertaken to ensure that no entrance into the building is below the Regulatory Flood Elevation (RFE) of 266.80m. Further no habitable space is proposed below the RFE.

Table 1 shows a summary of existing and post development peak runoff for the various storms. Calculations are included in Appendix A.

TABLE 1: PEAK FLOW SUMMARY

YEAR	EXISTING	POST-DEV
	L/S	L/S
2	259.77	206.49
5	275.00	218.59
10	287.99	228.92
25	331.29	263.33
50	388.34	308.68
100	418.80	332.90

3.2 Quality Control

The City's water quality control requirement is to provide Level 1 (Enhanced) treatment level as per the MOEE SWMM Practices Planning and Design Manual 2003. There is no outside parking proposed for this development and almost all of the land outside the building will be landscaped. Since runoff from landscaped areas and roof is typically considered to be free of sediments, no quality control is proposed for this site.

4.0 EROSION AND SEDIMENT CONTROL

Prior to any grading or servicing works taking place on-site, sediment and erosion control measures must be in place to prevent the transport of sediments off the site and into the secondary drains or adjacent properties. The location and design of sediment control includes:

- Installation of siltation control fencing
- Proposed and/or existing catchbasins or inlets within the work area are to be protected from silt by wrapping their tops with filter fabric or providing a sediment trap around the structure
- Proposed swales are to be sodded after they have been shaped in order to prevent scouring and/or down-cutting of the swale invert.
- Spoils from any excavation should be removed from the site. Excavated soils should not be placed over the table land near the crest of slope.
- During construction, stockpiles of materials, supplies and construction debris should be located away from the slope crest. Additional loading from stockpiled materials should be avoided in proximity to the slope crest.
- Debris littering the slope should be removed and vegetation on the slope surface and site should be maintained as much as possible.

The erosion control measures shall be maintained in good repair during the entire construction period until all construction is complete or until determined they are no longer required.

5.0 SUMMARY

The main findings of the servicing report for the proposed DEVELOPMENT are:

1. The proposed development can be serviced through the existing sanitary and storm sewer systems adjacent.
2. Stormwater management flow patterns for the development remains similar to existing conditions. The proposed quality control facility shall provide the required Level 1 quality treatment.

KARUGU CONSULTING INC.



George Karugu, P.Eng.

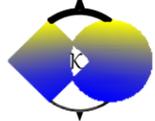
Appendix A

Figures and SWM Calculations



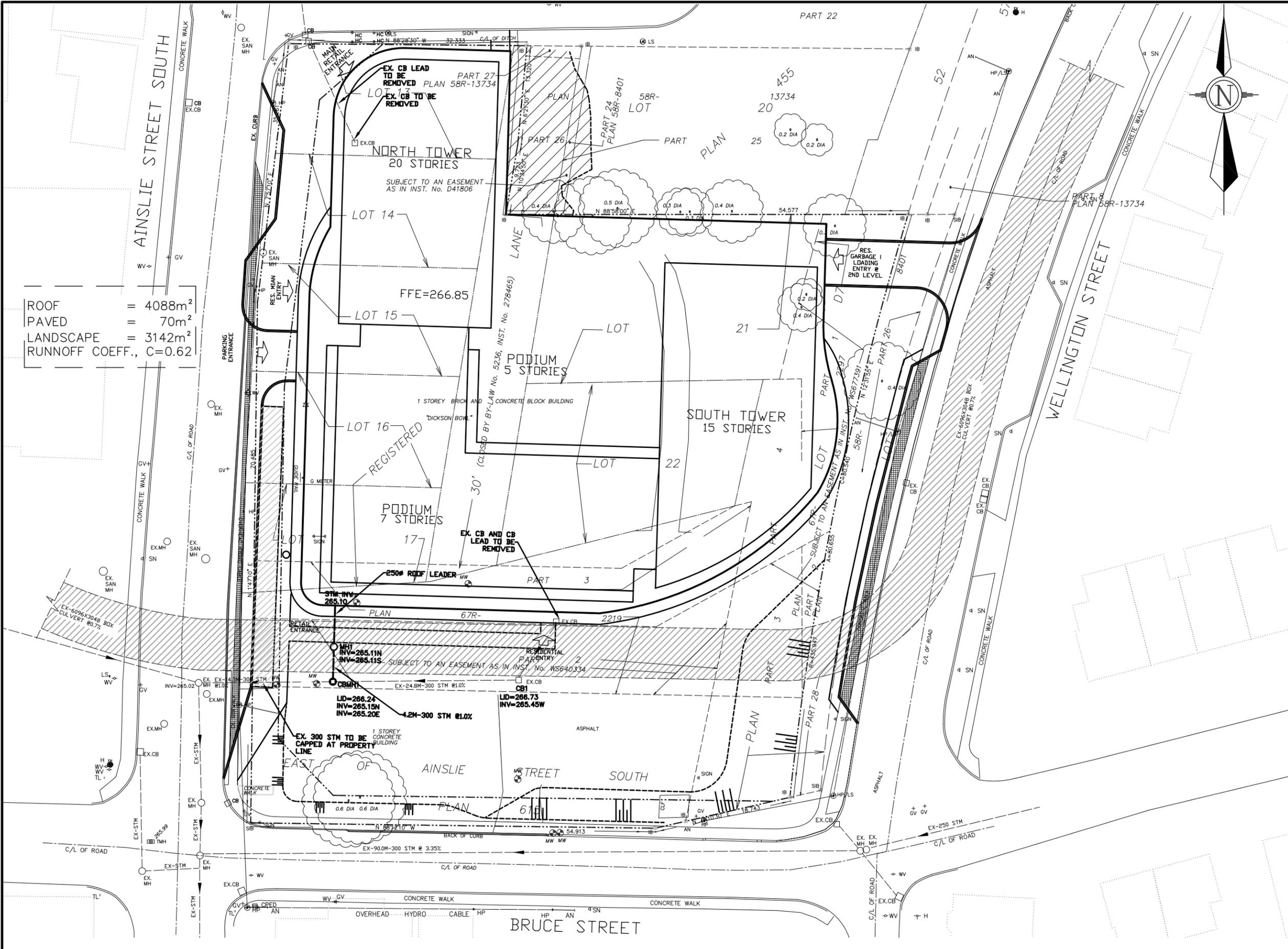
ROOF = 2036m²
 PAVED = 3947m²
 LANDSCAPE = 1317m²
 RUNOFF COEFF., C=0.78

- LEGEND:**
- PROPERTY LINE
 - D/S DOWN SPOUT
 - PROPOSED DRAINAGE DIRECTION
 - EXISTING DRAINAGE DIRECTION
 - ~ SWALE
 - ← OVERLAND FLOW ROUTE
 - ▭ SILT FENCE
 - x 252.55 EXISTING ELEVATION
 - x 252.55 PROPOSED ELEVATION
 - x 252.55 EXISTING ELEVATION TO REMAIN
 - EXISTING SANITARY MANHOLE
 - EXISTING STORM MANHOLE
 - PROPOSED SINGLE/DOUBLE CATCHBASIN
 - PROPOSED CATCHBASIN MANHOLE
 - EXISTING HYDRANT & VALVE
 - WV ⊗ PROPOSED WATER VALVE
 - M WATER METER
 - ▨ EXTERNAL DRAINAGE AREA



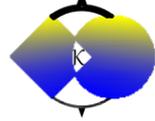
KARUGU CONSULTING INC.
 111 Waterloo St. Suite 200
 London, ON N6B 2M4
 Tel: 226 270-2559
 Cell: 226 270-2438
 Website: www.karugu.com

PROJECT:		61-69 AINSLIE STREET S CAMBRIDGE, ON	
DRAWING NAME:		SWM-EXISTING CONDITIONS FIG - 2	
DESIGNED BY:	GK	DATE:	JULY 16, 2020
DRAWN BY:	GK		
CHECKED BY:	GK	PROJECT No.	19084
SCALE:	NTS		



ROOF = 4088m²
 PAVED = 70m²
 LANDSCAPE = 3142m²
 RUNOFF COEFF., C=0.62

- LEGEND:**
- PROPERTY LINE
 - D/S DOWN SPOUT
 - PROPOSED DRAINAGE DIRECTION
 - EXISTING DRAINAGE DIRECTION
 - SWALE
 - ← OVERLAND FLOW ROUTE
 - SILT FENCE
 - x 252.55 EXISTING ELEVATION
 - x 252.55 PROPOSED ELEVATION
 - x 252.55 EXISTING ELEVATION TO REMAIN
 - EXISTING SANITARY MANHOLE
 - EXISTING STORM MANHOLE
 - PROPOSED SINGLE/DOUBLE CATCHBASIN
 - PROPOSED CATCHBASIN MANHOLE
 - EXISTING HYDRANT & VALVE
 - WV PROPOSED WATER VALVE
 - M WATER METER
 - ▨ EXTERNAL DRAINAGE AREA



KARUGU CONSULTING INC.
 111 Waterloo St. Suite 200
 London, ON N6B 2M4
 Tel: 226 270-2559
 Cell: 226 270-2438
 Website: www.karugu.com

PROJECT:
 61-69 AINSLIE STREET S
 CAMBRIDGE, ON

DRAWING NAME:
 SWM-PROPOSED CONDITIONS
 FIG - 3

DESIGNED BY: GK	DATE: JULY 16, 2020
DRAWN BY: GK	---
CHECKED BY: GK	PROJECT No. 19084
SCALE: NTS	