# KING AND JOHN APARTMENTS

# Functional Servicing Report

**Project Location:**
209 & 217 King Street South
Waterloo, Ontario

**Prepared for:**
SRM Architects Inc.
279 King Street West, Suite 200
Kitchener, ON  N2G 1B1

**Prepared by:**
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**MTE File No.: 41017-100**

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## FIGURES

## 1.0 INTRODUCTION

MTE Consultants Inc. has been retained by SRM Architects Inc., on behalf of the property owner, to complete a Functional Servicing Report for a new residential development to be constructed at King Street South and John Street West (herein referred to as 'the Site') in the City of Waterloo in support of the Zoning By-Law Amendment Application.

The Site is located south of the intersection of King Street South and John Street West. The property is bounded to the north by John Street West, to the east by King Street South, to the south by the existing Sun Life Financial commercial building, and to the west by Caroline Street South. For the exact location of the Site refer to Figure 1.0.

The proposed development for the Site is the construction of a 22-storey and a 21-storeyapartment building with associated underground parking. The proposed development also includes the relocation an existing residential home to accommodate the new development plan. The proposed buildings are designed to have three levels of underground parking.

The purpose of this report is to document the opportunities and constraints for the subject property with respect to servicing, grading and stormwater management in support of the Zoning By-Law Amendment Application. Pending approval of the Official Plan and Zoning By-Law Amendment application, detailed design of the site will commence and be submitted to the City in support of Site Plan Approval.

## 2.0 EXISTING CONDITIONS

### 2.1 Existing Topography

The Site encompasses an area of 0.519ha and currently comprises of three single family residential lots facing King Street South and three single family residential lots facing Caroline Street South, each with associated driveways and grassed yard space. In the existing condition, surface runoff from the Site drains from southeast to northwest towards John Street West. There is a noticeable elevation difference (approx. 2.25 metres) between the southeast property line and the northwest property line. There are several retaining walls existing on site to accommodate this change in elevation.


F1.0

Date: NOV.27/15
Scale: NTS

**LOCATION PLAN**

MTE
Engineers | Scientists | Surveyors

Project No.: 41017-100

November 27, 2015 — 3:00 p.m. — Plotted By: chiebert

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## 2.2 Existing Servicing

### *2.2.1 Water*

The existing houses facing King Street South are currently serviced by an existing 250mm diameter municipal watermain along King Street South. The existing houses facing Caroline Street South are currently serviced by an existing 100mm diameter municipal watermain along Caroline Street South. All existing water services will be decommissioned and capped at their respective municipal watermains as part of the redevelopment of the Site. The closest municipal fire hydrant is located in the Caroline Street South right-of-way across from the existing property at 181 Caroline Street South. There is also a municipal fire hydrant located in the King Street South right-of-way between the Sun Life Financial building and the existing property at 217 King Street South.

### *2.2.2 Sanitary*

There is an existing 250mm diameter sanitary sewer along King Street South that services the houses on this street and drains towards the northwest. There are two existing manholes in the King Street South right-of-way in front of the site. The manhole furthest upstream is approximately 2.5m deep and the downstream manhole located in the intersection of King Street South and John Street West is approximately 2.0m deep. The houses fronting Caroline Street South are assumed to be serviced by the existing 200mm diameter sanitary sewer along Caroline Street West which drains towards the northwest. All existing sanitary services will be decommissioned and capped at the property line as part of the redevelopment of the site.

### *2.2.3 Storm*

There is an existing 200mm diameter storm sewer along John Street West that drains towards the southwest. The closest existing manhole is located in the intersection of John Street West and Caroline Street South and is approximately 2.0m deep.

## 3.0 PROPOSED GRADING AND SERVICING STRATEGY

Preliminary grading and servicing strategies for the proposed development have been developed based on plan and profile information as well as the Conceptual Site Plan prepared by SRM Architects Inc., dated February 2, 2017.

## 3.1 Proposed Grading

The proposed development will have a 22-storey and a 21-storey apartment building, associated underground parking, and a relocated residential home, complete with a common entrance off of John Street West. The proposed grading strategy will respect the existing grades along all property lines and provide barrier free access from John Street West to the principal building entrances.

## 3.2 Proposed Servicing

### *3.2.1 Water*

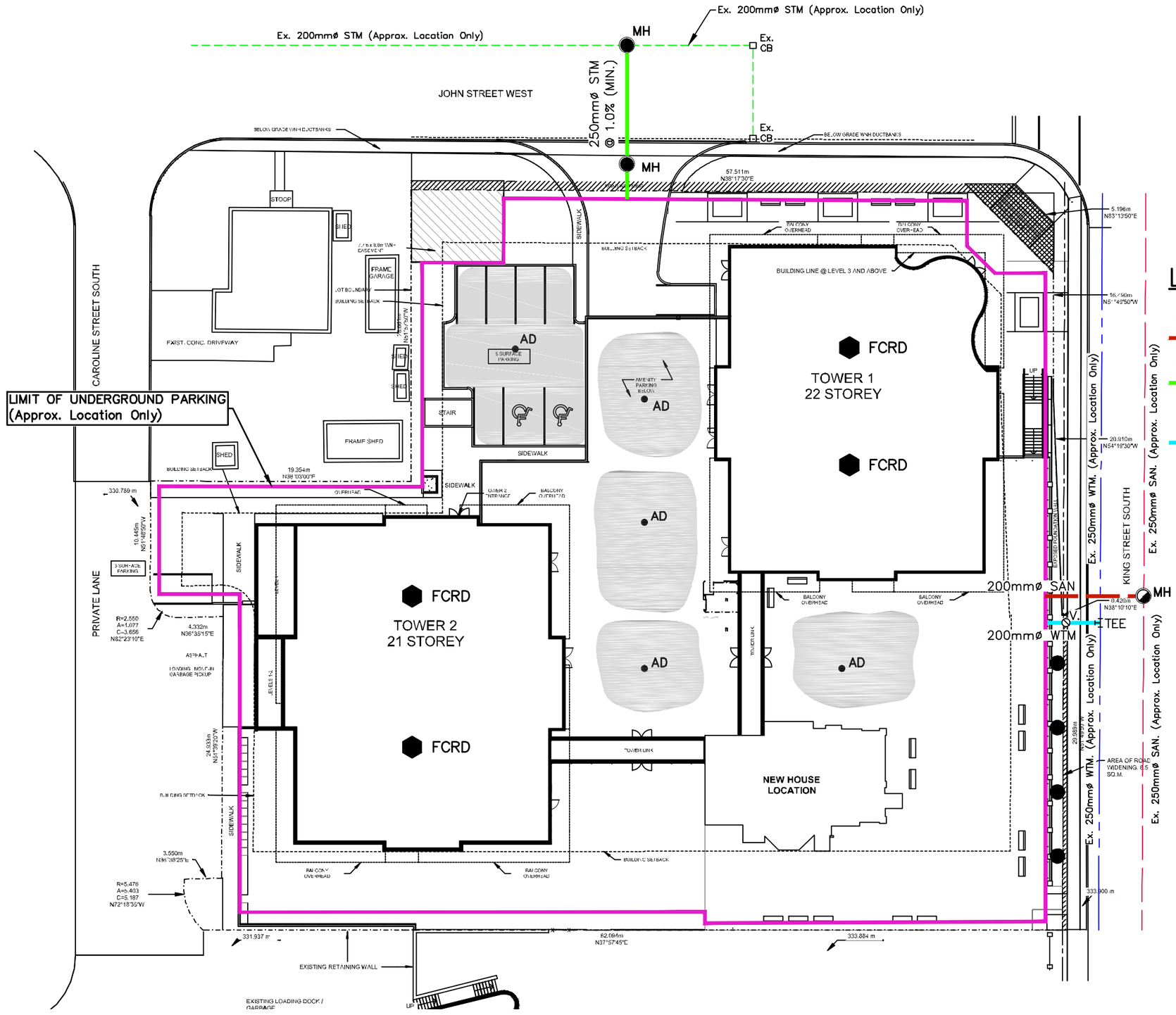
A new connection to the 250mm diameter municipal watermain along King Street South will be required in order to service the proposed buildings. The required private water service size will be determined during detailed design, but will likely be 200mm diameter. The 200mm diameter water service will enter the site off of King Street South and be connected through the underground parking garage and into the mechanical water system for the development. Refer to Figure 2.0 for a sketch of the conceptual servicing design. It is anticipated that a new hydrant will be required to service the three proposed buildings. If required, a fire flow analysis will be completed at the detailed design stage to ensure that adequate flow and pressure will be available at the proposed on-site hydrant.

### *3.2.2 Sanitary*

It is proposed that the site will be serviced by a 200mm diameter sanitary sewer complete with new manhole at the municipal sewer on King Street South. The 200mm diameter sanitary sewer will enter the site off of King Street South and be connected through the underground parking garage and into the mechanical sanitary system for the development. The private sanitary sewer is to be installed at a slope that provides depth for the servicing of the buildings while maintaining adequate capacity. The service sizes and inverts will be confirmed at detailed design.

### *3.2.3 Storm*

A private storm sewer system will be installed on-site to collect rooftop runoff from the two towers and runoff from the common driveway and parking areas. The runoff collected in the storm sewers will be directed to the municipal storm sewer in the John Street West right-of-way, complete with new manhole. Runoff from the frontage of the property will flow towards the John Street West and King Street South right-of-ways.




# LEGEND OF EXISTING FEATURES

Ex. 300mmø SAN. — Ex. MH — EXISTING SANITARY SEWER

Ex. 200mmø WTM. — Ex. HYD. SET — EXISTING WATERMAIN

Ex. 375mmø STM. — Ex. MH — EXISTING STORM SEWER

# LEGEND OF PROPOSED FEATURES

MH 14.6m–200mmø SAN @ 2.0% (MIN.) — SANITARY SEWER

MH 21.3m–250mmø STM @ 1.0% (MIN.) — STORM SEWER

HYD. SET — 200mmø WTM — V. — TEE — WATERMAIN

STORMWATER PONDING

FIGURE 2.0

Date: FEB.14/17
Scale: 1:400

**CONCEPTUAL SITE SERVICING PLAN**

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## 4.0 CONCEPTUAL STORM WATER MANAGEMENT DESIGN

### 4.1 SWM Criteria

The stormwater management design criteria for the subject site, as established by the City of Waterloo, are as follows:

i) Attenuation of the post-development peak flows for the 5 year storm event to the pre-development (existing) peak flow; and
ii) Implementation of Normal (level 2) water quality controls.

### 4.2 Water Quantity Control

In the existing condition, the flow rate leaving the site is 0.062m³/s. The proposed development presents an increase in the overall imperviousness of the site. Runoff from the increased impervious area will need to be attenuated to reduce post development peak flows to pre-development rates. Water quantity requirements for the site can be achieved by utilizing flow control roof drains on Tower 1 and Tower 2. Area drains will be installed on top of the proposed parking deck between the two towers and will provide additional storage volume. The runoff generated from the rooftops and parking deck will be conveyed to a manhole within the main entrance to the site, which will also collect runoff generated within the parking area off of the site entrance. The flow will then be conveyed to the municipal storm sewer in the John Street West right-of-way by a 250mm diameter storm service at a minimum of 1.0%. The pipe will restrict the post development flow rate to 0.062m³/s, matching the existing flow rate off of the site.

### 4.3 Water Quality Control

In the existing condition there is a common asphalt drive aisle with approximately 30 parking spaces located in the middle of the site between the existing buildings. In the proposed condition, the surface asphalt is greatly reduced. The majority of the site will consist of above grade parking deck used solely for amenity/landscape space between the two Towers. The stormwater collected on the parking deck can be considered clean water as it is restricted to pedestrians. There will be a small parking area at grade (approx. 440m³) that will generate “dirty” stormwater. This area is greatly reduced compared to the existing condition and the stormwater quality is therefore improved in the post-development condition.

### 4.4 Erosion & Sediment Control

In order to minimize the effects of erosion during the grading of the site, sediment control fencing will be installed around the perimeter of the site and around any stockpiles and catchbasins during construction. Any sediment that is tracked onto the road way during the course of construction will be cleaned by the contractor. These measures will be shown on the detailed design drawings.

## 5.0 CONCLUSIONS

Based on the foregoing analysis, it is concluded that:

i) Existing municipal infrastructure for water, sanitary and storm is available along King Street South and John Street West;

ii) A 150 or 200mm diameter water service connection off of King Street South will service the proposed development. A private hydrant will likely be required to provide fire flow coverage to all of the proposed buildings. A fire flow test will be required at the detailed design stage. All existing water services will be decommissioned and capped at the municipal water main as part of the redevelopment of the site;

iii) A 200mm diameter sanitary service connection off of King Street South will service the proposed development. A new manhole will be required at the municipal sewer. All existing sanitary services will be decommissioned and capped at the property line as part of the redevelopment of the site;

iv) The stormwater quantity criteria can be achieved by installed FCRD's on the proposed Towers and providing ponding on top of the parking deck;

v) The stormwater quality is improved in the post-development condition and therefore no additional controls are proposed; and,

vi) Additional grading, servicing and storm water management details will be provided during detailed design.

All of which is respectfully submitted,

**MTE CONSULTANTS INC.**

Chelsea Hiebert, E.I.T.
*Designer*


Rebecca Kerr, P.Eng.
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