



**TECHNICAL MEMORANDUM – INCREASE IN NUMBER OF UNITS**

May 4, 2020

To: Smart Living Properties  
226 Argyle Avenue  
Ottawa Ontario  
K2P 1B9

Re: **84/86, 88, 92, & 96 Hinton Avenue**  
**Revised Building Occupancy**

Kollaard Associates Inc. prepared a servicing and stormwater design report dated July 15, 2017 for the proposed development at 84 to 96 Hinton Avenue in the City of Ottawa. At the time the report was prepared, the proposed development was divided between two buildings referenced in the report as 84/86 Hinton Ave and 88-96 Hinton Ave and contained a total of 85 proposed units for a total combined population of 156.3 occupants.

The development currently proposed in 2020 remains divided between the two buildings as previously referenced. The proposed occupancy consists of 24 units in 84/86 Hinton and 110 units in 88-96 Hinton for a total of 134 units for a total combined population of 187.6 occupants. This technical memorandum is intended to assess the affect of the increase in number of units and population on the sanitary and water demand for the development and demonstrate that the increase in number of units does not negatively affect the available capacity of the existing municipal infrastructure and the design capacity of the proposed services or meet the sanitary and water demand from the proposed development.

**Sanitary Flow Demand**

The servicing and stormwater management report dated July 15, 2017 was designed for a total of 85 units divided between the two buildings as follows:

**84/86 Hinton**

| Type of Unit | Number | Persons per Unit | Total Population |
|--------------|--------|------------------|------------------|
| Bachelor     | 4      | 1.4              | 5.6              |
| One Bedroom  | 4      | 1.4              | 5.6              |
| Two Bedroom  | 8      | 2.1              | 16.8             |
| Total        | 16     |                  | 28.0             |

**88-96 Hinton**

| Type of Unit  | Number | Persons per Unit | Total Population |
|---------------|--------|------------------|------------------|
| Bachelor      | 11     | 1.4              | 15.4             |
| One Bedroom   | 27     | 1.4              | 37.8             |
| Two Bedroom   | 23     | 2.1              | 48.3             |
| Three Bedroom | 6      | 3.1              | 18.6             |
| Four Bedroom  | 2      | 4.1              | 8.2              |



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|-------|----|--|-------|
| Total | 69 |  | 128.3 |
|-------|----|--|-------|

The servicing and stormwater management report dated July 15, 2017 also included an allocation for commercial development based on an average flow of 50,000 L/ha/day for 88-96 Hinton Ave. Based on the above occupancy and including the commercial development, the peak sanitary flows for the proposed development were 0.453 L/sec and 2.224 L/sec for 84/86 and 88-96 Hinton Ave respectively. The total sanitary demand was equal to 2.677 L/sec for the proposed development excluding infiltration.

The site servicing plan prepared by Kollaard Associates Inc submitted together with the servicing and stormwater report indicated that the sanitary services would be connected to the existing sanitary main along Hinton Avenue at two locations consisting of one at 96 Hinton and one 84/86 Hinton. The proposed connections would make use of existing connection points to avoid coring into the existing sanitary main.

The proposed development has been revised since the servicing and stormwater management report dated July 15, 2017 was prepared to increase the number of units to 134 and to revise the sanitary service locations. The units remain divided between the two buildings as follows:

#### 84/86 Hinton

| Type of Unit | Number | Persons per Unit | Total Population |
|--------------|--------|------------------|------------------|
| Bachelor     | 13     | 1.4              | 18.2             |
| One Bedroom  | 11     | 1.4              | 15.4             |
|              | 24     |                  | 33.6             |

#### 88-96 Hinton

| Type of Unit | Number | Persons per Unit | Total Population |
|--------------|--------|------------------|------------------|
| Bachelor     | 80     | 1.4              | 112              |
| One Bedroom  | 30     | 1.4              | 42               |
|              | 110    |                  | 154              |

There revised design for the proposed development includes commercial development for 88-96 Hinton Ave. Based on City of Ottawa Technical Bulletin ISTB-2018-01, the commercial design flow rate has been reduced from 50,000 L/ha/day to 28 L/ha/day.

The proposed sanitary demand for the revised development containing 134 units will consist of:

#### 84/86 Hinton Ave

##### Domestic

$$Q_{\text{Domestic}} = 34 \times 280 \text{ L/person/day} \times (1/86,400 \text{ sec/day}) = 0.11 \text{ L/sec}$$

$$\text{Peaking Factor} = 1 + \frac{14}{4 + (34 / 1000)^{0.5}} \times 0.8 = 3.68$$

$$Q_{\text{Peak Domestic}} = 0.11 \text{ L/sec} \times 3.68 = 0.41 \text{ L/sec}$$

##### Infiltration

$$Q_{\text{Infiltration}} = 0.28 \text{ L/ha/sec} \times 0.044 \text{ ha} = 0.01 \text{ L/sec}$$

##### Total

$$\text{Total Peak Sanitary Flow} = 0.41 + 0.01 = 0.42 \text{ L/sec}$$



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#### 88-96 Hinton Ave

##### Domestic

$$Q_{\text{Domestic}} = 154 \times 280 \text{ L/person/day} \times (1/86,400 \text{ sec/day}) = 0.50 \text{ L/sec}$$

$$\text{Peaking Factor} = 1 + \frac{14}{4 + (154/1000)^{0.5}} \times 0.8 = 3.55$$

$$Q_{\text{Peak Domestic}} = 0.50 \text{ L/sec} \times 3.55 = 1.77 \text{ L/sec}$$

##### Commercial

$$\text{Avg. Flow} = 28,000 \text{ L/ha/day}$$

$$\text{Peaking Factor} = 1.0$$

$$Q_{\text{Peak Comm}} = 0.148 \text{ ha} \times 28,000 \text{ L/ha/day} \times 1.0 \times (1/86,400 \text{ sec/day}) = 0.05 \text{ L/sec}$$

##### Infiltration

$$Q_{\text{Infiltration}} = 0.28 \text{ L/ha/sec} \times 0.148 \text{ ha} = 0.04 \text{ L/sec}$$

##### Total

$$\text{Total Peak Sanitary Flow} = 1.77 + 0.05 + 0.04 = 1.86 \text{ L/sec}$$

The following table provides a comparison of the peak sanitary flow between the design originally proposed in 2017 and the design currently proposed:

|                       | Peak Sanitary Flow L/sec |              |       |
|-----------------------|--------------------------|--------------|-------|
|                       | 84/86 Hinton             | 88-96 Hinton | Total |
| Proposed 2017         | 0.45                     | 2.22         | 2.68  |
| Current Proposal 2020 | 0.42                     | 1.86         | 2.28  |
| Difference            | -0.03                    | -0.36        | -0.40 |

Prior to development, the locations of the existing sanitary services were verified by a combination of site exploration and by CCTV of the sanitary main along Hinton. Based on the additional information obtained, the location of the proposed sanitary services were revised to the locations located on Kollaard Associates Inc drawing 170453-SER Rev 6 dated March 26, 2020. There are 3 services currently proposed consisting of one at 96 Hinton, one at 88 Hinton and one at 84/86 Hinton Avenue. Since the sanitary demand decreased and the proposed number of sanitary services increased, the proposed sanitary services will have sufficient capacity for the increased number of units.

Using the revised flow demand calculations as indicated by the City of Ottawa Technical Bulletin, the total sanitary demand for the revised proposed development is 2.28 L/sec which is 0.4 L/sec less than that calculated in the servicing and stormwater management report dated July 15, 2017. The sanitary demand for the individual buildings is decreased by 0.03 L/sec and 0.36 L/sec for 84/86 and 88-96 Hinton respectively.

Since the current sanitary flow demand for each building is less than the sanitary flow demand calculated in 2017, the increase in number of units does not negatively affect the assessment of available sanitary capacity of the proposed development.



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## Water Demand

In the servicing and stormwater management report dated July 15, 2017 the water demand for the proposed development was determined to be as follows:

|             | 84/86 Hinton | 88-96 Hinton | Total |
|-------------|--------------|--------------|-------|
| Average Day | 0.113        | 0.571        | 0.684 |
| Max Daily   | 0.283        | 1.380        | 1.663 |
| Peak Hourly | 0.623        | 3.008        | 3.631 |

Based on the increased population of the revised population as calculated above, the water demand for the revised design will be as follows:

### 84/86 Hinton

#### Domestic

$$Q_{\text{Domestic}} = 34 \times 350 \text{ L/person/day} \times (1/86,400 \text{ sec/day}) = 0.14 \text{ L/sec}$$

Maximum daily demand is  $2.5 \times 0.14 \text{ l/sec} = 0.34 \text{ l/sec}$ .

Maximum Hourly demand is  $= 2.2 \times 0.34 \text{ l/sec} = 0.76 \text{ l/sec}$ .

### 88-96 Hinton

#### Domestic

$$Q_{\text{Domestic}} = 154 \times 350 \text{ L/person/day} \times (1/86,400 \text{ sec/day}) = 0.62 \text{ L/sec}$$

Maximum daily demand is  $2.5 \times 0.62 \text{ l/sec} = 1.56 \text{ l/sec}$ .

Maximum Hourly demand is  $= 2.2 \times 1.56 \text{ l/sec} = 3.43 \text{ l/sec}$ .

#### Commercial:

Average daily water demand is  $28000 \text{ L/Ha/day} \times 0.148 \text{ ha} \times (1/86,400 \text{ sec/day}) = .05 \text{ l/sec}$

Maximum daily demand is  $1.5 \times 0.05 \text{ l/sec} = 0.07 \text{ l/sec}$ .

Maximum Hourly demand is  $= 1.8 \times 0.07 \text{ l/sec} = 0.13 \text{ l/sec}$ .

#### Total

Average Daily Demand is  $0.67 \text{ L/sec}$

Maximum daily demand is  $1.63 \text{ L/sec}$ .

Maximum Hourly demand is  $3.56 \text{ L/sec}$ .

The following table provides a comparison of the peak water demand between the design originally proposed in 2017 and the design currently proposed:

|                       | Peak Water Demand L/sec |              |       |
|-----------------------|-------------------------|--------------|-------|
|                       | 84/86 Hinton            | 88-96 Hinton | Total |
| Proposed 2017         | 0.62                    | 3.01         | 3.63  |
| Current Proposal 2020 | 0.76                    | 3.56         | 4.32  |
| Difference            | 0.14                    | 0.55         | 0.69  |

There were two water services proposed for the development in 2017 consisting of one at 96 Hinton and one at 84/86 Hinton. The water services were originally proposed to be 152 mm PVC to



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accommodate the demands of the sprinkler system. The water service diameter and location currently proposed in 2020 remain unchanged from that previously proposed in 2017.

The servicing and stormwater management report completed in 2017 provided the following: "Since each building will be fitted with a sprinkler system and standpipe it is considered that the minimum service size should be 150 mm. Using the HGL at MaxDay + Max FireFlow of 106.0 m results in a residual pressure of about 279 kPa on the fourth floor of the proposed building. Since the residual pressure of 279 kPa is greater than the minimum pressure requirements by MOE the proposed 150 mm diameter water service is sufficient."

Recalculating the available pressure on the fourth floor of the proposed building using the increase in flow demand for 3.56 L/sec produces a residual pressure on the fourth floor of about 279 kPa indicating that the increase in flow demand from 3.01 to 3.56 does not have a significant effect on the available pressure in the proposed building when using a 152 mm diameter service.

A review of the residual pressures indicates that the increase in total flow demand from 3.631 L/sec to 4.32 L/sec during the peak hourly conditions does not affect the residual pressure at each floor within the proposed development at either 84/86 Hinton or 88-96 Hinton when using the proposed water services.

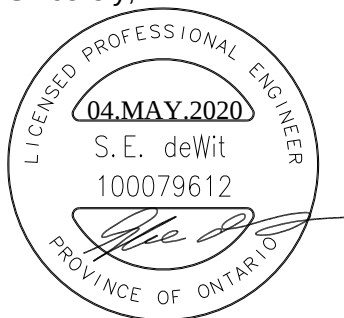
#### Conclusion

Based on the changes to the sanitary flow and water demand resulting from the increase in number of units and corresponding increase in population in the proposed development as discussed above, it is expected that the increase in the number of proposed units will not have a negative impact on the capacity of the proposed services or existing municipal infrastructure.

The proposed services will have sufficient capacity to accommodate the increase in number of units without revising the proposed services. The existing municipal water main and sanitary sewer will have sufficient capacity to meet the sanitary and water demands from the site resulting from the increased number of units.

We trust that this memorandum provides sufficient information for your present purposes. If you have any questions concerning this memorandum please do not hesitate to contact our office

Sincerely,



Steven deWit, P.Eng.  
Kollaard Associates Inc