
MEMORANDUM

DATE: February 23, 2024

EMAIL

TO: City of Ottawa IAD Review Officer

SUBJECT: 4497 O'Keefe Court – Preliminary Servicing Analysis

OUR FILE: DSEL Project No.14-746

ATTACHMENTS:

- A. Cedarview – Community Masterplan Concept, prepared by Urbantypology, dated August 2, 2023
- B. Cedarview – Concept Employment Block, prepared by Urbantypology, dated August 4, 2023
- C. Conceptual Servicing Figure, prepared by DSEL, dated February 2024
- D. Mattamy Cedarview Water Servicing Analysis, prepared by Stantec, dated February 8, 2024
- E. Sanitary Drainage, prepared by DSEL, dated August 2023
- F. Sanitary Design Sheet – Existing (Design Sewers), prepared by DSEL, dated August 2023
- G. Sanitary Design Sheet – Existing (As-Built Sewers), prepared by DSEL, dated August 2023
- H. Sanitary Design Sheet – Conservancy, prepared by DSEL, dated August 2023
- I. Sanitary Design Sheet – Option 1, prepared by DSEL, dated August 2023
- J. Sanitary Design Sheet – Option 2, prepared by DSEL, dated August 2023
- K. Mattamy Cedarview Development – Sanitary HGL Analysis, prepared by JFSA, dated October 6, 2023

Mattamy Homes has retained DSEL to investigate servicing opportunities to support urban residential development within their 4497 O'Keefe Court property. The subject property is located east of Highway 416, south of West Hunt Club Road, west of Cedarview Road, and north of Fallowfield Road and O'Keefe Court. The subject property was previously contemplated to be developed as Phase 2 of a country lot subdivision. Phase 1 of the country lot subdivision has been constructed and is located immediately to the north-east, see **Figure 1** below for the property limits.

The Phase 1 country lot subdivision is serviced by municipal watermain but relies on private lot-level septic systems for wastewater disposal and treatment. The subject property currently has draft plan of subdivision approval for development as a country lot subdivision, which was planned to follow the same municipal water and private lot-level septic system servicing strategy that was approved for the existing Phase 1 country lot subdivision.

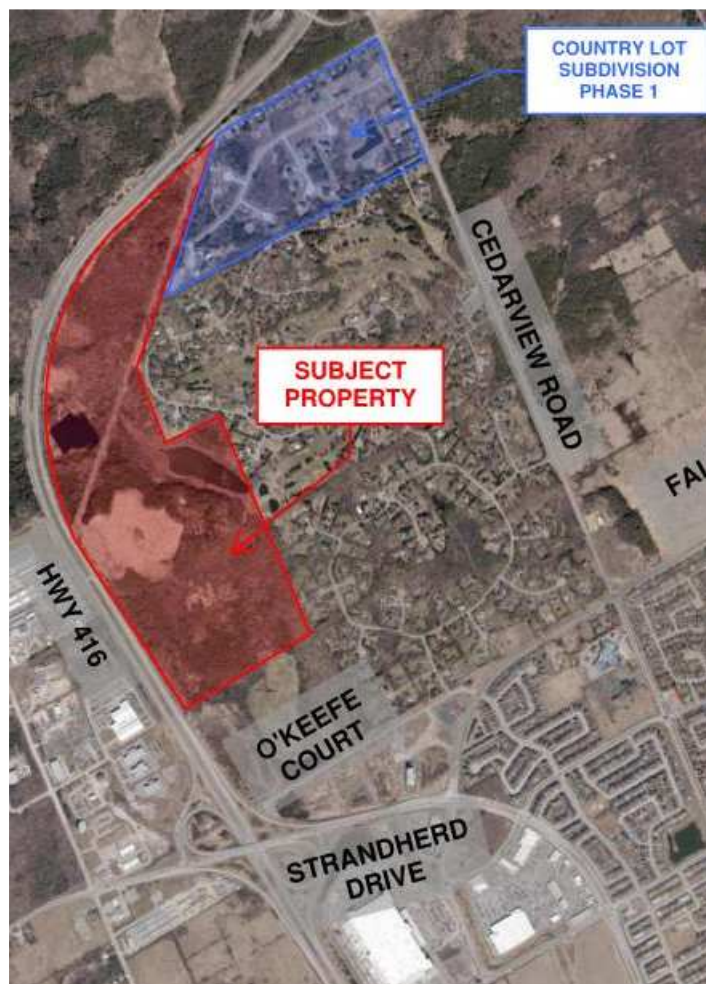


Figure 1: Site Location

The following memo outlines the potential water, wastewater, and storm servicing strategy for an updated and urbanized development concept plan for 4497 O'Keefe Court. Refer to **Attachment A** for concept plan details and statistics. The proposed plan is comprised of a mix of residential areas with varying densities, mixed-use blocks, parks, conservation areas, and a road network that includes proposed street connections to O'Keefe Court to the south and Onassa Circle to the north of the subject property.

Mattamy Homes is also exploring the acquisition and development of a vacant parcel to the south of the subject property. A potential concept plan for this parcel, referred to as the Cedarview Employment Lands for the purposes of this memo, has been included as **Attachment B**.

Water Supply Servicing

The subject property is proposed to be serviced by connections to existing watermain within Pressure Zone 3SW. Specifically, connections are to be made to the existing 600mm diameter watermain within O'Keefe Court, and the existing 305mm diameter watermain within Onassa Circle, at Trilby Court. The 600 mm watermain within O'Keefe Court is connected to the Moodie Drive elevated tank, approximately 1 km to the west – across Hwy 416. Refer to **Attachment C** for details of the existing watermain network in the area.

Stantec has completed a preliminary water servicing analysis for the subject property and the Cedarview Employment Lands. See the *Mattamy Cedarview Water Servicing Analysis* (Stantec, February 8, 2024), included as **Attachment D** for details. Further investigations are to be completed as the development process advances and the development statistics are refined, and additional input is provided by the City of Ottawa (e.g. boundary conditions).

Per the Stantec analysis, offsite upgrades to the City's potable water distribution system are expected to be required to service the subject property. Specifically, but not limited to, pumping upgrades within Pressure Zone 3SW.

It is understood that the City of Ottawa is in the process of a multi-year water infrastructure upgrade program to reconfigure the pressure zones in Barrhaven. Further coordination with City staff will be required to confirm that the planned upgrades will be sufficient to service the subject property.

Wastewater Servicing

The subject property is proposed to be serviced via a gravity sewer connection to the South Nepean Collector (SNC) sanitary sewer. The upper end of the existing 525 mm diameter South Nepean Collector is located within Strandherd Drive at the Maravista Drive intersection, approximately 1.8 km to the south of the subject property. An existing, nearby sanitary sewer is also located within Citigate Drive, approximately 1.4 km south of the subject property, and varies in size from 250 to 375 mm. Refer to **Attachment C** for an illustration of the existing and proposed sanitary sewer network.

The design of the SNC was detailed in the *Strandherd Drive Widening Project – South Nepean Collector Phase 3: Sanitary Flow Calculations* report (Novatech, May 2019). DSEL has recreated the SNC drainage plan and sewer design sheet from this report, to investigate the capacity of the SNC to accommodate wastewater flows from the subject property. Refer to **Attachment E** and **Attachment F**, respectively.

The SNC sewer design sheet has also been updated using recorded as-built information made available from the City of Ottawa, see **Attachment G**. Considering the recorded as-built conditions, it has been identified that the residual free-flowing capacity within the critical sewer segment of the downstream SNC (MHSA 9 to MHSA 10, part of SNC Phase 2, located within Chapman Mills Drive) is 121.21 L/s.

Since the time that the *Strandherd Drive Widening Project – South Nepean Collector Phase 3* sanitary analysis was prepared, the Barrhaven Conservancy development project has been added to the planned SNC drainage area. The location of the Barrhaven Conservancy development is illustrated in **Attachment E**. The capacity of the SNC, when considering the wastewater flow contribution from Barrhaven Conservancy, is presented in **Attachment H**. With the wastewater flows from Barrhaven Conservancy considered, the residual free-flowing capacity within the critical SNC sewer segment is reduced to 32.85 L/s.

There are two potential routes to extend the subject property's sanitary sewer network to the existing SNC on Strandherd Drive. Option 1 would be for external sanitary sewers to be installed on O'Keefe Court, Fallowfield Drive, and Strandherd Drive before connecting to the existing SNC on Strandherd Drive at the Maravista Drive intersection. Option 2 would be for external sanitary sewers to be installed on O'Keefe Court, Fallowfield Road, and Citigate Drive before connecting to the existing sanitary sewer on Citigate Drive and ultimately connecting to the existing SNC via

Systemhouse Street. Both routing options can be seen in **Attachment C**. Note that Option 2 will likely require sanitary sewer replacements/upsizing within Citigate Drive and Systemhouse Street.

The design sheets for both Option 1 and Option 2 can be found in **Attachment I** and **Attachment J**, respectively. Note that in both options, the planned wastewater flow from Barrhaven Conservancy and the Cedarview Employment Lands have been considered. According to the updated sewer design sheets, the free-flowing capacity of the critical downstream sewer segment of the SNC is exceeded by roughly 5% for both options. Refer to **Table 1** for a comparison of the free-flowing sewer capacity at the critical SNC sewer segment.

Table 1: Summary of Residual Capacity in Critical SNC Trunk Sewer Segment

Critical Sewer Segment	As-Built Conditions per SNC Phase 3 Report		Barrhaven Conservancy Added		Subject Development Added	
	Residual Capacity (L/s)	Capacity Ratio	Residual Capacity (L/s)	Capacity Ratio	Residual Capacity (L/s)	Capacity Ratio
MHSA 9 to MHSA 10	121.21	71%	32.85	92%	-20.55	105%

As shown in **Attachments I and J**, MHSA 9 to MHSA 10 is the only sewer segment that is expected to exceed the pipe's free-flowing capacity, likely due to the recorded as-built sewer slope of 0.05%. Seeing as this segment of the SNC was shown to be above capacity in the proposed development conditions, JFSA has conducted a preliminary sanitary Hydraulic Grade Line (HGL) analysis for the SNC, included as **Attachment K**. The JFSA analysis determined that, although the sewer design sheet shows that the peak wastewater flow rate within the MHSA 9 to MHSA 10 SNC sewer segment will exceed the pipe's calculated free-flowing capacity by 20.55 L/s, the HGL will remain a minimum of 12 cm below the obvert of the SNC sewer, indicating that the pipes will not be surcharged during peak flow conditions. These results are interpreted to indicate that there is capacity within the SNC to accommodate wastewater flows from the urbanized development of the subject property and the Cedarview Employment Lands to the south of the subject property.

Stormwater Management

The subject property is located in the Jock River subwatershed. Under existing conditions, runoff is directed into the O'Keefe Municipal Drain located south of the subject property.

Stormwater runoff from the urbanized development of the subject property will be collected into a storm sewer network and directed into on-site wet ponds. The runoff will be treated in the wet ponds for quantity and quality control before being directed into the O'Keefe Municipal Drain. The treatment criteria will be established to adhere to Official Plan policies, the City of Ottawa and MECP design guidelines, and the *Jock River Reach 1 Subwatershed Study* (Stantec, June 2007).

It is conceptually proposed that the treated stormwater flows from the ponds will be directed into the O'Keefe Drain just before the drain crosses O'Keefe Court. Please see **Attachment C** for the preliminary layout of the trunk stormwater sewers, proposed wet ponds, and the location of the existing water features in the area. It is anticipated that a report will need to be prepared by a Drainage Engineer to account for the proposed land use changes, in accordance with the Drainage Act.

Please contact the undersigned if you have any questions.

Yours truly,
David Schaeffer Engineering Ltd.

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David Schaeffer Engineering Ltd.



Per: Braden Kaminski, P.Eng.

Per: Matt Wingate, P.Eng.

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