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FUNCTIONAL SERVICING REPORT

FOR

SSUEA - EAST PARCEL

CAIVAN (STITTSVILLE SOUTH) INC.

CITY OF OTTAWA

PROJECT NO.: 21-1247
JUNE 2025
1ST SUBMISSION

EXECUTIVE SUMMARY

This Master Servicing Study (MSS) has been prepared for the East Parcel, a 15.05 ha parcel located at 1820 Shea Road, that is abutting the Stittsville South Urban Expansion Area (W-4) lands. The East Parcel is proposed to be brought into the City of Ottawa's urban boundary through an Official Plan Amendment (OPA) submission. The East parcel was contemplated within DSEL's ***Scoped MSS for Stittsville South Urban Expansion Area (W-4) (SSUEA MSS)*** and DSEL's ***Functional Servicing Report for Stittsville South Urban Expansion Area (W-4) (SSUEA FSR)***

The development area is expected to support 222 single family homes, 140 townhomes, a 0.95 ha park, and a 2.11 ha stormwater management block containing a pond facility. This FSR outlines feasible water, wastewater, and stormwater servicing strategies to accommodate the proposed portion of the development. The servicing strategies are consistent with the ***SSUEA MSS*** and ***SSUEA FSR*** submitted for the W-4 lands. The proposed overall development concept consists of detached single homes, townhomes, stacked townhomes, park blocks, stormwater management blocks, open space and road allowances. The development and servicing infrastructure of the East lands is critical to the overall development lands.

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1.0 INTRODUCTION

This Functional Servicing Report (FSR) addresses municipal servicing needs for the East Parcel, forming part of the larger Stittsville South Urban Expansion Area (SSUEA), identified as Area W-4 in the City of Ottawa's Infrastructure Master Plan. The East Parcel is located at 1820 Shea Road and lies outside the current urban boundary. This FSR supports the inclusion of the East Parcel within the urban boundary by demonstrating a viable servicing strategy consistent with City standards. This FSR outlines the required infrastructure servicing for water supply, wastewater collection, and stormwater management, drawing on the findings and recommendations of the ***SSUEA FSR***.

Exhibit 1 below illustrates the overall study area, with specific attention brought to the East parcel as part of this FSR. The Subdivision Plan is provided in ***Figure 2***.

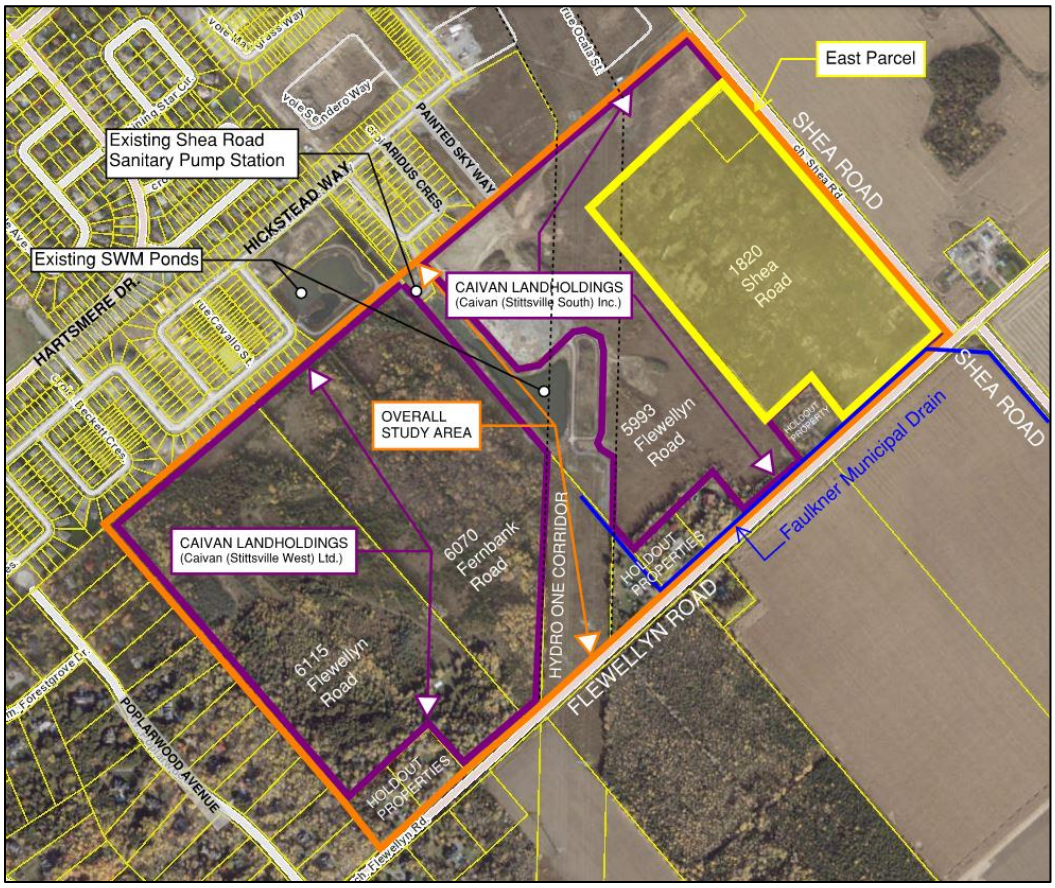

Exhibit 1: Stittsville South Urban Expansion Area

As illustrated in ***Exhibit 1***, the overall development area has been divided into two distinct land parcels on either side of the Faulkner Municipal Drain. The easternmost parcel of Caivan's lands covers 15.05ha (1820 Shea Road) and is referred to as the East parcel, as well as the holdout property measuring 0.81ha (5971 Flewellyn Road), was considered within this FSR.

The proposed future development activities within the SSUEA are contemplated to include the following land uses:

- Low Density Residential (single detached homes);
- Medium Density Residential (townhomes and stacked townhomes);
- Parkland;
- Woodlot / Open Space;
- Stormwater Management Facilities;
- Hydro Easement / Open Space; and
- Roads (18 m and 24m right-of-ways (ROW)) and Multiuse Pathways.

For further details please refer to the ***SSUEA FSR***.

1.1 Development Plan

The proposed development within the East parcel is anticipated to consist of 222 single detached homes, 378 townhomes, a 0.95 ha neighborhood park, and a 2.11 ha stormwater management block. This land use composition aligns with the objectives of the Official Plan and Infrastructure Master Plan policies for compact, efficient, and sustainable urban development. The development will integrate with the larger SSUEA community, with coordinated servicing and road network continuity. The following table summarizes the land use breakdown and anticipated populations associated with the development of the East parcel.

Table 1: Development Statistics Projection

Land Use (1)	Area (ha)	Projected Residential Units	Residential Population per Unit	Projected Population
Single Family Home (Low Density)	-	222	3.4	755
Townhouse (Low Density)	-	140	2.7	378
Holdout Properties	0.81	-	-	-
Parks	0.95	-	-	-
Stormwater Facilities	2.11	-	-	-
Total	**-**	**-**	**-**	**1133**

Notes:
(1) Population projections may differ from population estimates used in other background studies. Population projection and residential population per unit values are based on Ministry of Environment, Conservation, and Parks (MECP) guidelines for servicing demand calculations and through consultation with City of Ottawa staff.

The above statistics were used to inform the servicing design for the site and is in line with the ***SSUEA MSS*** and ***SSUEA FSR***. Please reference ***Appendix A.1***.of the ***SSUEA FSR*** for the proposed Draft Plan.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following documents were referenced in the preparation of this report:

- **Design Guidelines for Drinking-Water Systems,**
  Ministry of the Environment, Conservation, and Parks, May 11, 2023.

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, Conservation, and Parks, September 4, 2024.

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.

- **Low Impact Development Stormwater Management Guidance Manual**,
  Draft for Consultation
  Ministry of the Environment, Conservation, and Parks, January 2022.

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, May 29, 2024.

- **City of Ottawa Official Plan**
  City of Ottawa, November 4, 2022.

- **City of Ottawa Infrastructure Master Plan**
  City of Ottawa, June 2024.

- **Mississippi-Rideau Source Water Protection Plan,**
  MVCA & RVCA, April 28, 2022.

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012.

    - Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines – Sewer,
      City of Ottawa, February 5, 2014.

    - Technical Bulletin PIEDTB-2016-01, Revisions to Ottawa Design Guidelines – Sewer,
      City of Ottawa, September 6, 2016.

    - Technical Bulletin ISTB-2018-01, Revisions to Ottawa Design Guidelines – Sewer,
      City of Ottawa, March 21, 2018.

    - Technical Bulletin ISTB-2018-03, Revisions to Ottawa Design Guidelines – Sewer,
      City of Ottawa, June, 2018.

- Technical Bulletin ISTB-2019-02, Revisions to Ottawa Design Guidelines – Sewer,
  City of Ottawa, July 8, 2019.

- Technical Bulletin IWSTB-2024-04, Screening Criteria – Infiltration-type LIDs for Development,
  City of Ottawa, September 12, 2024.

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.

  - Technical Bulletin ISD-2010-2
    City of Ottawa, December 15, 2010.

  - Technical Bulletin ISDTB-2014-02
    City of Ottawa, May 27, 2014.

  - Technical Bulletin ISTB-2018-02
    City of Ottawa, March 21, 2018.

  - Technical Bulletin ISTB-2021-03
    City of Ottawa, August 18, 2021.

  - Technical Bulletin IWSB-2024-05
    City of Ottawa, November 18, 2024

- Hydraulic Capacity and Modeling Analysis – Stittsville South Urban Expansion Area Development (Technical Memorandum - *Final*). GeoAdvice Engineering Inc., January 17, 2025. *(**GeoAdvice Hydraulic Analysis**)*

- Existing Conditions Report – Servicing for Stittsville South Urban Expansion Area, DSEL, September 2023 (***Existing Conditions Report***)

- Shea Road Pump Station and Fernbank Capacity Review Memorandum, Novatech, May 2023.

- Shea Road Pump Station Upgrade Options, Novatech, December 2024.

- Caivan Lands – Stittsville West Ltd., & Stittsville South Inc.: Conceptual SWM Ponds Sizing and Preliminary HGL Analysis, JFSA, August 9, 2024.

- Scoped Master Servicing Study for Stittsville South Urban Expansion Area (W-4), DSEL, April 2025 (***SSUEA MSS***)

- Functional Servicing Report for Stittsville South Urban Expansion Area (W-4), DSEL, April 2025 (***SSUEA FSR***)

3.0 WATER SUPPLY SERVICING

3.1 East Parcel Water Supply

The East Parcel, within the broader SSUEA lands, is south of the City's Pressure Zone 3W, which is supplied by the Glen Cairn and Campeau Drive Pump Stations and the Stittsville Elevated Tank.

The pressure zone receives supply from the Campeau Drive and Glen Cairn Pump stations. The Stittsville Elevated Tank provides balanced storage during peak usage and fire flow conditions. The available options for connectivity to the City's water supply network include:

- The major water supply line in the vicinity of the development is a 400mm diameter watermain along Fernbank Road, with a watermain stub approximately 300m southwest of the Fernbank Road and Shea Road intersection;
- An existing 250mm diameter watermain located within the Parade Drive ROW, immediately north of the western portion of the development area. A future southbound ROW block from Parade Drive is located between civic addresses 714 and 720 Parade Drive;
- An existing 250mm diameter watermain is located within the Aridus Crescent ROW which is north of the Davidson Lands parcel. An existing 50mm water service within a servicing block from Aridus Crescent to the SRPS pump station is also installed facilitating water supply to that facility;
- An existing 200mm diameter watermain located within the Painted Sky Way ROW at the northwest portion of the Davidson land parcel; and;
- An existing 200mm diameter watermain location within the Ocala Street ROW north of the northeastern portion of the Davidson land parcel.

3.2 Water Supply Servicing Design

Water supply options and analysis for the subject lands are discussed in the ***SSUEA MSS*** and further analyzed in ***GeoAdvice Hydraulic Analysis*** found in ***Appendix B.2*** of the ***SSUEA FSR***. ***Figure 3*** illustrates the contemplated water supply network.

The proposed trunk watermain network has been shown to generally follow the proposed road network. Note that as the road network is conceptual in nature and is subject to change, the watermain network is also subject to change. Easements may be required for local and trunk watermains as detailed design progresses for the development lands, to meet City and MECP guidelines. A detailed hydraulic analysis will be prepared for the proposed water distribution network within the East parcel which is a logical extension of the distribution network contemplated as part of the ***SSUEA FSR***.

During detailed design of the East parcel within the SSUEA:

- *Demands will be updated, and distribution refined, once more detailed development information is available;*

- *Demand factors according to Section 4.2.1 of the City of Ottawa Design Guidelines & subsequent Technical Bulletins will be used (for localized areas with populations less than 3,000 and/or areas less than 50 ha);*

- *Local watermain sizing will need to be evaluated at the subdivision approval stage; and,*

Individual residential blocks will be evaluated for required fire flow as detailed plans for these sites are developed. Adequate water pressure and flow exist to support full buildout. The primary watermain extension into the East Parcel is a logical continuation of the trunk watermain network proposed for the broader SSUEA development, specifically connecting via the eastern extension of the internal road network. ***Figure 3*** demonstrates the conceptual watermain servicing plan for the East parcel.

The proposed trunk watermains will be looped and sized to meet fire flow requirements of 167 L/s, as supported by the *Hydraulic Capacity and Modeling Analysis – Stittsville South Urban Expansion Area Development* ***(GeoAdvice Hydraulic Analysis)*** prepared by *GeoAdvice Engineering Inc.* dated January 17, 2025, is enclosed in the ***SSUEA FSR*** for reference. Local distribution within the East Parcel will be detailed during future design and conform to City of Ottawa and MECP guidelines.

3.3 Water Supply Conclusion

The SSUEA is to be serviced by a proposed network of trunk watermains varying in diameter from 150 mm to 250 mm. The proposed watermain network within the West and South Lands are shown within the ***SSUEA FSR***. A network of local watermains is assumed to service the East parcel as it is a logical extension of the network.

All proposed water infrastructure is to be designed and constructed in accordance with Ministry of the Environment, Conservation, and Parks (MECP) and City of Ottawa guidelines as part of detailed design.

4.0 WASTEWATER SERVICING

4.1 East Parcel Wastewater Servicing

Sanitary servicing for the East Parcel will be provided by gravity sewers discharging to the Shea Road Sanitary Pump Station (SRSPS), located north of the existing Davidson SWM Pond. The SRSPS, as outlined in ***Section 4.1*** of the ***SSUEA FSR***, currently has a firm capacity of 84 L/s and is equipped with dual 200 mm forcemains connected to the Fernbank Trunk Sewer.

The East lands provide the most logical servicing strategy to support future pump station overflows as they are situated at the lowest elevation within the SSUEA. A sanitary overflow will be routed to the proposed stormwater management pond at the southeastern corner of the East Parcel to ensure backup protection during emergency events. This contingency aligns with the City of Ottawa servicing policies and will be refined at the detailed design stage.

4.2 Wastewater Servicing Design

Wastewater collection options and analysis for the subject lands are discussed in the ***SSUEA FSR. Drawing No. 4*** illustrates the contemplated wastewater collection system.

The wastewater conveyance systems will be designed to support the phased developments as described in the ***SSUEA FSR***, which considers the East parcel. All proposed sanitary sewer infrastructure is to be designed in accordance with the City of Ottawa Sewer Design Guidelines and all MECP guidelines.

The proposed gravity sewer conveyance systems are shown to generally follow the proposed road network. Note that as the road network is conceptual in nature, the alignments of the trunk sanitary sewers are also subject to change. Easements may be required in order to provide efficient servicing to address City and MECP guidelines.

During design of the East parcel development within the ***SSUEA*** lands:

- *Demands will be updated and distribution refined, once the more detailed development information is available;*
- *Design parameters according to City of Ottawa Sewer Design Guidelines will be used;*
- *Design of the trunk sewers are to be optimized for construction efficiencies, provided that there are no significant negative impacts to affected landowners and that other requirements for minor amendments are met;*
- *Local sanitary sewer sizing will need to be evaluated at the subdivision approval stage; and*
- *Capacity in downstream infrastructure will be confirmed through sanitary sewer network modelling, as-builts, and/or sanitary design sheet information, as required.*
- *Shea Road Sanitary Pump Station upgrade requirements will be reviewed from a timing and cost perspective.*

4.3 Wastewater Servicing Conclusion

The design of the sanitary sewer network is in accordance with the City of Ottawa Sewer Design Guidelines.

As described in the ***SSUEA FSR***, the sanitary flows from the East parcel are tributary to the Shea Road Sanitary Pump Station (SRSPS) and Fernbank Trunk sanitary sewer. The East lands are to be directed to the Shea Road Sanitary Pump Station via the proposed trunk sanitary infrastructure as outlined in ***Drawing No. 4***. Please see the ***SSUEA FSR*** for additional details.

All proposed sanitary sewer infrastructure is to be designed and constructed in accordance with the City of Ottawa Sewer Design Guidelines and MECP guidelines as part of detailed design.

5.0 STORMWATER MANAGEMENT

5.1 East Parcel Stormwater Management

Stormwater from the East Parcel will be captured and conveyed to a new stormwater management pond located entirely within the East parcel's 2.11 ha stormwater block. This facility corresponds with Option 1A described in ***Section 7.4.1*** of the ***SSUEA MSS***, which identifies the east pond (within the East parcel) as the optimal location based on topography. The pond will provide both quantity and quality and is strategically located at the lowest point on the site. Note that the East parcel is lower than the W-4 lands. Therefore, locating a pond within this parcel promotes efficient land use. Preliminary hydrologic and hydraulic analyses was completed as described in the ***SSUEA FSR***. Please refer to the ***SSUEA FSR*** for additional details and see ***Drawing No. 3*** for the proposed storm sewer layout and ***Figure 5*** for the proposed SWM facility within the East parcel. With respect to Section 4.7.1 Policy 2), the ***SSUEA FSR*** has evaluated the City of Ottawa's climate change stress test (100-year 3-hour Chicago storm plus 20%) for the SSUEA lands, inclusive of the East Parcel, to confirm that no basement flooding and no unacceptable flooding is expected in this test condition.

5.2 Stormwater Management Design

Per the ***SSUEA FSR***, the preferred stormwater servicing strategy for the East parcel within the SSUEA is to have minor and major system flows directed to a new stormwater management facility (SWMF) utilizing the FMD as its outlet. The facility will be required to provide an enhanced level of protection as well as providing flow control to pre-development levels and is most appropriately located in the southeast portion of the property abutting the Flewellyn Road ROW.

The minor and major sewer systems and associated stormwater management facility within the East parcel will be designed to support phased developments within the broader SSUEA. All proposed storm sewer infrastructure will be designed in accordance with the *Ottawa Sewer Design Guidelines*. The South SWM pond designs will be completed according to City guidelines and the *MOE SWMP Design Manual*, further detailing inlet and outlet structures, orifice sizing, and pond block design – including the maintenance of natural heritage lands along the FMD and the implementation of multi-use pathways within the Pond blocks to create connectivity. Pond side slopes design is to be approved by a licensed Geotechnical Engineer prior to construction.

The proposed gravity sewer conveyance systems are shown to generally follow the proposed road network and will connect to the broader SSUEA lands that are within the City's urban boundary. Note that the road network is conceptual in nature and is subject to change. As such, the trunk storm sewer routing is also subject to change. Easements may be required to provide efficient servicing per City of Ottawa and MECP standards.

During design of the East parcel development within the ***SSUEA*** Lands:

- *Average runoff coefficients will be updated to reflect detailed pervious/impervious surfaces information;*
- *Design parameters factors according to City of Ottawa Sewer Design Guidelines will be used;*

- *Design of the trunk sewers are to be optimized for construction efficiencies, provided that there are no significant impacts to affected landowners and other requirements related to minor amendments are met;*

- *Local storm sewer sizing will need to be evaluated at the subdivision approval stage;*

- *Permissible grade raises will be further analyzed and confirmed by a licensed Geotechnical Engineer;*

- *Detailed storage calculations/modelling will be done to ensure storage targets are being met;*

- *Overland flow routes will be detailed further; and,*

- *Capacity in downstream infrastructure will be confirmed through storm sewer network modelling, as-builts, and rational method design information.*

5.3 Stormwater Servicing Conclusions

Based on the existing site topography and constraints including the FMD and tributary drain, DSEL prepared a stormwater servicing solution consisting of a new SWM pond, servicing the South Lands, within the East parcel.

The stormwater runoff is designed to be captured by an internal gravity sewer system that will convey flows to the east pond within the East parcel.

Please refer to the ***SSUEA FSR*** for additional details.

6.0 CONCLUSIONS

This Functional Servicing Report (***FSR***), to be reviewed in conjunction with the ***SSUEA MSS*** and ***SSUEA FSR***, presents the recommended servicing strategy for the East parcel. Sufficient detail is provided to demonstrate that the development of the East parcel is essential to the development of the broader South Lands within the SSUEA. The logical extension of the distribution network into the East parcel has been demonstrated within the ***SSUEA FSR*** and will conform to current guidelines and design criteria. The conclusions from this report are as follows:

- The recommended water servicing for the East parcel is to extend the watermain network and provide sufficient looping to meet guideline requirements. Detailed modelling at the detailed design stage will confirm phasing of the extensions of trunk watermains and sizing of the local watermain network. The proposed water design supply is to conform to all relevant City and MECP Guidelines and Policies.

- Sanitary service will be provided for the subject property via the upgrading of the adjacent Shea Road Sanitary Pump Station located within the north central portion of the site. Additional analyses and studies will assess the full scope of the upgrades and staging of the improvements. A sanitary overflow will be provided at the east pond within the East parcel to protect the development under emergency conditions.

- Stormwater service is to be provided by capturing stormwater runoff by an internal gravity sewer system that will convey flows to a new SWM Pond within the East parcel at southeast quadrant of the site. This pond will service lands east of the FMD and has been selected as the optimal location based on topography.

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