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50 Saunders Street

FUNCTIONAL SERVICING REPORT

Lotco II Limited

Document Control

File:

119106

Date:

December
3, 2019

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Issue	Date	Description
1	December 3, 2019	Draft Plan Submission

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1 Introduction

Tatham Engineering Limited has been retained by Lotco II Limited to prepare a Functional Servicing Report in support of Draft Plan Approval for the proposed 50 Saunders Street residential development in the Town of Collingwood. The objective of this report is to address the servicing requirements of the Town of Collingwood and Simcoe County with respect to the existing and proposed sanitary servicing, water supply and distribution, drainage and stormwater management (SWM), safe vehicular access to the site and utilities common to support a residential development (phone, hydro, cable, TV, gas, etc.).

Several other reports as well as engineering drawings have been prepared in conjunction with this report in support of the proposed residential development and are summarized below:

- *50 Saunders Street Stormwater Management Report* prepared by Tatham Engineering Limited (November 14, 2019);
- *50 Saunders Street Traffic Impact Brief* prepared by Tatham Engineering Limited (November 14, 2019);
- *Pre-Consultation Servicing Assessment* prepared by Tatham Engineering Limited (August 2, 2019); and
- *Servicing and Earthworks Assessment* prepared by C.C. Tatham & Associates Ltd. (May 8, 2018).



2 Site Description

2.1 SITE LOCATION

The subject property consists of approximately 3.89 ha of undeveloped land and is legally described as Lots R1, R2 and part of R3, registered plan 446, geographic Township of Nottawasaga, now in the Town of Collingwood, County of Simcoe. The site is bound on the east by Saunders Street, on the south by Poplar Sideroad, on the west by the Mountaincroft Subdivision and on the north by the St. Mary's Elementary Catholic School. Figure 1, included in the rear of this report, illustrates the location of the property in the Town of Collingwood. The site is currently vacant and mostly tree covered.

2.2 SITE CONDITIONS

The existing grading of the site generally slopes from south to north at an average gradient of 0.9% as detailed by the topographic survey of the site completed by Rudy Mak Surveying Ltd. dated June 28, 2017. The site is vacant with vegetation ranging from trees to brush.

The site is currently designated low density residential in the Official Plan which allows for the proposed development.

2.3 SUBSURFACE CONDITIONS

A geotechnical investigation, submitted under separate cover, was completed by Peto MacCallum Ltd. dated July 2017 and summarized the subsurface conditions as follows:

- 150 to 300 mm of sandy topsoil;
- 1.4 to 2.9 m of sand; and
- layered clay and silt from 1.4 to 2.9 m deep to termination of the borehole at 5 m deep.

The above noted geotechnical investigation established groundwater levels at 1.1 to 1.2 m below existing grade with a gradient following the topography sloping from south to north.



3 Proposed Development

The proposed development features a 20 m public right-of-way (ROW) crescent street with two intersections with Saunders Road (the north intersection is that with Mary Street). The development will feature 64 single family detached lots fronting either the proposed crescent road or Saunders Street with a park block and SWM block in the centre of the development. The majority lots will have 12.2 m frontages and be 32 m deep or greater. The proposed development is shown on the attached Overall Servicing plan, Figure 2, which is included at the end of this report. The proposed development provides an 8.76 m land dedication to the County of Simcoe along its south extent to facilitate a possible future road widening of Poplar Sideroad.



4 Water Supply and Distribution

4.1 EXISTING INFRASTRUCTURE

There is an existing 150 mm diameter ductile iron watermain located within the west boulevard of Saunders Street, fronting the 50 Saunders Street development. The watermain is looped connecting to the 150 mm diameter watermain on Poplar Sideroad and the 450 mm diameter watermain on Findlay Drive.

The Collingwood water treatment plant has a rated capacity of 31,140 m³/day per the *Town of Collingwood 2018 Water Compliance Report*. The 2017 and 2018 *Water Compliance Reports* showed maximum day flows of 21,143 m³/day (68% of rated capacity) and 24,277 m³/day (78% of rated capacity), respectively. The Town has advised that they have adequate water supply to sustain growth but must monitor and possibly limit the number of connections per year. The Town is in the process of initiating an environmental assessment for expanding the treatment plant's rated capacity which they estimate will be online in 5 years. The Town has advised that water servicing allocation is on a first come first serve basis at the time of registration of a plan of subdivision, condominium, or site plan and that they have enough capacity to service approximately 3,000 additional units (typical buildout in Collingwood is 300 – 400 units/year). However, the Town will not allocate units to 100% of treatment plant capacity and as such they are working on a plan for water allocation to manage the number of connections per year until the treatment plant expansion is complete. Developments that currently have water allocation include Summit View Phase 1 and Indigo Estates.

4.2 PROPOSED INFRASTRUCTURE

The proposed water servicing strategy for the 50 Saunders Street development includes extending a new looped 150 mm diameter watermain along the proposed crescent road with two connections to the existing 150 mm diameter watermain on Saunders Street with individual 25 mm diameter water services to each unit fronting the new main. The proposed units fronting Saunders Street will have new service connections extended from the existing 150 mm diameter watermain on Saunders Street. The proposed water system can be seen on Figure 2 included at the rear of this report.

4.3 WATER DEMANDS ASSESSMENT

4.3.1 Water Demands

Water supply demands for the proposed development have been calculated based on Ministry of the Environment Conservation and Parks (MECP) guidelines and the Town of Collingwood design standards, as noted below:



DESIGN CRITERIA		SOURCE
Residential Population	3.04 persons/unit	See calculation below
Average daily demand per person	450 L/day	Town of Collingwood
Maximum daily demand factor	4.5	MECP
Peak hourly demand factor	6.8	MECP
Minimum fire flow	38 L/s	Town of Collingwood
Allowable Pressure Ranges		
Maximum pressure	550 kPa (80 psi)	Town of Collingwood
Peak hour minimum pressure	275 kPa (40 psi)	Town of Collingwood
Maximum day plus fire suppression minimum pressure	140 kPa (20 psi)	Town of Collingwood

A population density of 3.04 persons/unit was calculated from the Town of Collingwood Official Plan Section 2.7.5.2 which notes "A minimum density target of 50 residents and/or jobs per hectare within designated Greenfield areas" (50 residents/ha x 3.89 ha/64 units = 3.04 residents/unit).

Note that peaking factors were interpolated from Table 3-3 of the *Design Guidelines for Drinking-Water Systems* (MOE 2008) based on the design population.

Water demands have been based on 64 units and are calculated as follows:

Design Population (P)	= 50 residents/ha x 3.89 ha
	= 194.5 persons
Average day demand (ADD)	= P x Average daily demand per person
	= 194.5 persons x 450 L/day
	= 87,525 L/day
	= 87.5 m ³ /day (1.0 L/s)
Peak Hour	= ADD x Peak hourly factor
	= 87.5 m ³ /day x 6.8
	= 595.0 m ³ /day (6.8 L/s)



Maximum day demand (MDD)	= ADD x Maximum daily factor
	= 87.5 m ³ /day x 4.5
	= 393.8 m ³ /day (4.5 L/s)
Maximum day plus fire flow	= MDD + Minimum fire flow
	= 4.5 L/s + 38 L/s
	= 42.5 L/s

4.3.2 Water Capacity

As outlined above, the Town of Collingwood drinking water treatment plant has a rated capacity of 31,140 m³/day and the maximum day flow in 2018 was 24,277 m³/day. Therefore, the proposed maximum day flow of 393.8 m³/day for the proposed 50 Saunders Street Development can be readily accommodated by the treatment plant (excess capacity is 6,863 m³/day).

The Town of Collingwood operates a hydraulic model of their water distribution system. We request that the Town add the proposed development to their model and confirm that the above demand flows can be achieved within the applicable pressure ranges as outlined above.



5 Sanitary Servicing

5.1 EXISTING INFRASTRUCTURE

An existing 200 mm diameter PVC sanitary sewer extends along Saunders Street from Poplar Sideroad draining north to Findlay Drive then along Findlay Drive to Hurontario Street, ultimately draining to the Collingwood Wastewater Treatment Plant (WWTP).

The Town of Collingwood operates a hydraulic model of their sanitary sewer system. This model was updated to include development of 50 Saunders Street with 74 single family detached units. The model shows that the downstream sewer system can accommodate the development with minor surcharging which is of minimal concern as the surcharging is below basement floor elevations. As the proposed unit count for the development is 64, the downstream pipes have adequate capacity to accommodate the development.

In reviewing the *Collingwood Wastewater Treatment Plant Annual Compliance Reports* for 2017 and 2018, the plant has an average day flow rated capacity of 24,548 m³/day and a maximum day flow rate capacity of 60,900 m³/day. The 2017 reports show an average day flow and maximum day flow of 18,815 m³/day and 52,010 m³/day respectively whereas the 2018 reports show an average day flow and maximum day flow of 17,936 m³/day and 47,550 m³/day respectively. Taking the more conservative 2017 numbers, the plant is operating at 77% of its average day flow rated capacity and 85% of its maximum day flow rated capacity. The available average day and maximum day surplus capacities are 5,733 m³ and 8,890 m³ respectively.

5.2 PROPOSED INFRASTRUCTURE

Sanitary drainage from the proposed lots fronting the internal crescent road will drain to the existing sanitary maintenance hole located at the intersection of Mary Street and Saunders Road via a 200 mm diameter sanitary sewer. Record drawings show the north invert of the sanitary maintenance hole noted above as 192.21 m which will be confirmed prior to construction. The proposed lots fronting the existing Saunders Street will have service connections extended from the existing sanitary sewer on Saunders Road.

The proposed sanitary sewer system can be seen on Figure 2 included at the rear of this report.



5.3 ASSESSMENT

5.3.1 Sewage Demands

The corresponding sewage demands/ flows are premised on the following:

Design Population (P)	= 50 residents/ha x 3.89 ha
	= 194.5 persons
Infiltration (I)	= Infiltration Flow x Site Area
	= 0.23 L/s/ha x 3.89 ha
	= 0.89 L/s = 77,302 L/day = 77.3 m ³ /day
Average day flow (ADF)	= P x Average daily demand per person + I
	= 194.5 persons x 450 L/day + 77,302 L/day
	= 87,525 L/day + 77,302 L/day
	= 164,827 L/day
	= 164.8 m ³ /day = 1.9 L/s
Maximum Day Flow	= (ADF-I) * PF + I
	= (164.8 m ³ /day - 77.3 m ³ /day) x 4.5 + 77.3 m ³ /day
	= 471.1 m ³ /day = 471,100 L/day = 5.5 L/s

Note that the maximum day peaking factor (PF) of 4.5 was derived as outlined in Section 4.3 of this report.

5.3.2 Sewage Capacity

As noted above, the Collingwood WWTP has average day and maximum day available capacities of 5,733 m³ and 8,890 m³ respectively whereas the proposed average day and maximum day flows for the proposed development are 164.8 m³ and 471.1 m³ respectively. Therefore, the Collingwood WWTP can accommodate the increased sanitary flows from the 50 Saunders Street development.



6 Stormwater Management Plan

A separate Stormwater Management (SWM) Report has been prepared by Tatham Engineering to address drainage and stormwater management requirements for the development. The SWM report should be read in conjunction with this report. A summary of the SWM servicing strategy is as follows.

Stormwater quality control will be provided by the existing South Collingwood subdivision SWM pond. Minor drainage will be directed by storm sewer to a centralized low impact development (LID). This LID will control 5 year peak flows to pre development levels and outlet to the existing 600 mm diameter storm sewer on Saunders Street. Major storm (greater than the 5 year storm) drainage will be conveyed by overland flow to the Hamilton Drain and to the pond following Mary Street, Saunders Street and Findlay Drive. Storm sewers will be installed along the proposed crescent road and individual service connections will be provided to each lot fronting this road. The proposed lots fronting Saunders Street shall have individual storm sewer connections extended from the existing 450 mm diameter storm sewer on Saunders Street.

The proposed storm sewer system is illustrated on Figure 2.



7 Traffic Impact Brief

A Traffic Impact Brief has been completed by Tatham Engineering under separate cover. A summary of the conclusions and recommendations are as follows:

- Based on existing traffic volumes, an exclusive left turn lane at Poplar Sideroad and Saunders Street is warranted but actual conditions deem it not necessary;
- Based on the proposed traffic volumes, no improvements to the surrounding road network are required to accommodate the proposed development;
- Sight lines along Saunders Street are acceptable per TAC design standards; and
- Sight lines to and from the proposed south site access do not satisfy the minimum requirements, however, this is not considered an issue given the sight lines along Saunders Street and the stop control at Saunders Street and Poplar Sideroad making traffic approach at a reduced speed.



8 Utilities

8.1 ELECTRICAL SERVICE

EPCOR Utilities was contacted to discuss the proposed development from an electrical servicing standpoint and advised that they can only confirm if external plant upgrades are required to service the site following submission of an electrical distribution plan. However, they did note that the proposed unit count of 64 single family detached homes can likely be serviced from their existing plant in the area.

8.2 GAS SERVICE

Enbridge Gas was contacted about their existing gas plant in the area and their ability to service the proposed development. They advised that they have a 1.25" gas main on the east side of Saunders Street which will likely have insufficient capacity to service the proposed development. They noted that they have a 4" gas main on Findlay Street to the north which could be extended south along the west side of Saunders Street to service the proposed development.

8.3 TELEPHONE AND INTERNET SERVICE

Bell has advised that their existing plant on Saunders Street would be insufficient to service the proposed development. However, they advised that they can extend a new fibre line to the site from either Findlay Street or Poplar Sideroad to service the subdivision with fibre to each lot.

Rogers was contacted regarding their plant in the area and is yet to provide confirmation. It is assumed that they have similar existing infrastructure surrounding the site as Bell and can service the development.



9 Summary

As outlined above, existing services surrounding the proposed 50 Saunders Street development can adequately service the development for sanitary drainage, potable water, stormwater management, hydro, natural gas, Bell, and cable TV. Additionally, a Traffic Impact Brief submitted under separate cover confirms that the proposed development will not adversely affect the existing surrounding road network. A summary of the servicing strategy is as follows:

- Sanitary flows from the proposed development will drain to the existing Municipal sanitary sewer on Saunders Street tying into an existing maintenance hole at the intersection of Mary Street and Saunders Street;
- A new 150 mm diameter looped watermain will be extended from the existing 150 mm diameter watermain on Saunders Street and run the length of the proposed crescent road;
- Stormwater management quality control will be provided by the South Collingwood Subdivision pond with on site controls to attenuate minor (5 year and less) peak flows from the site to pre-development levels;
- The two proposed site accesses connecting to Saunders Street and additional traffic to be generated by the proposed development will not adversely affect the surrounding traffic operations; and
- Hydro, natural gas, Bell and cable TV will be extended from their existing plants to service the proposed development.

Additional details related to the various servicing components will be provided at the detailed design stage. Detailed drawings will be completed for approval by the Town and relevant regulatory agencies to clear the conditions of Draft Plan Approval and allow for registration of the Plan of Subdivision and the associated Subdivision Agreement.



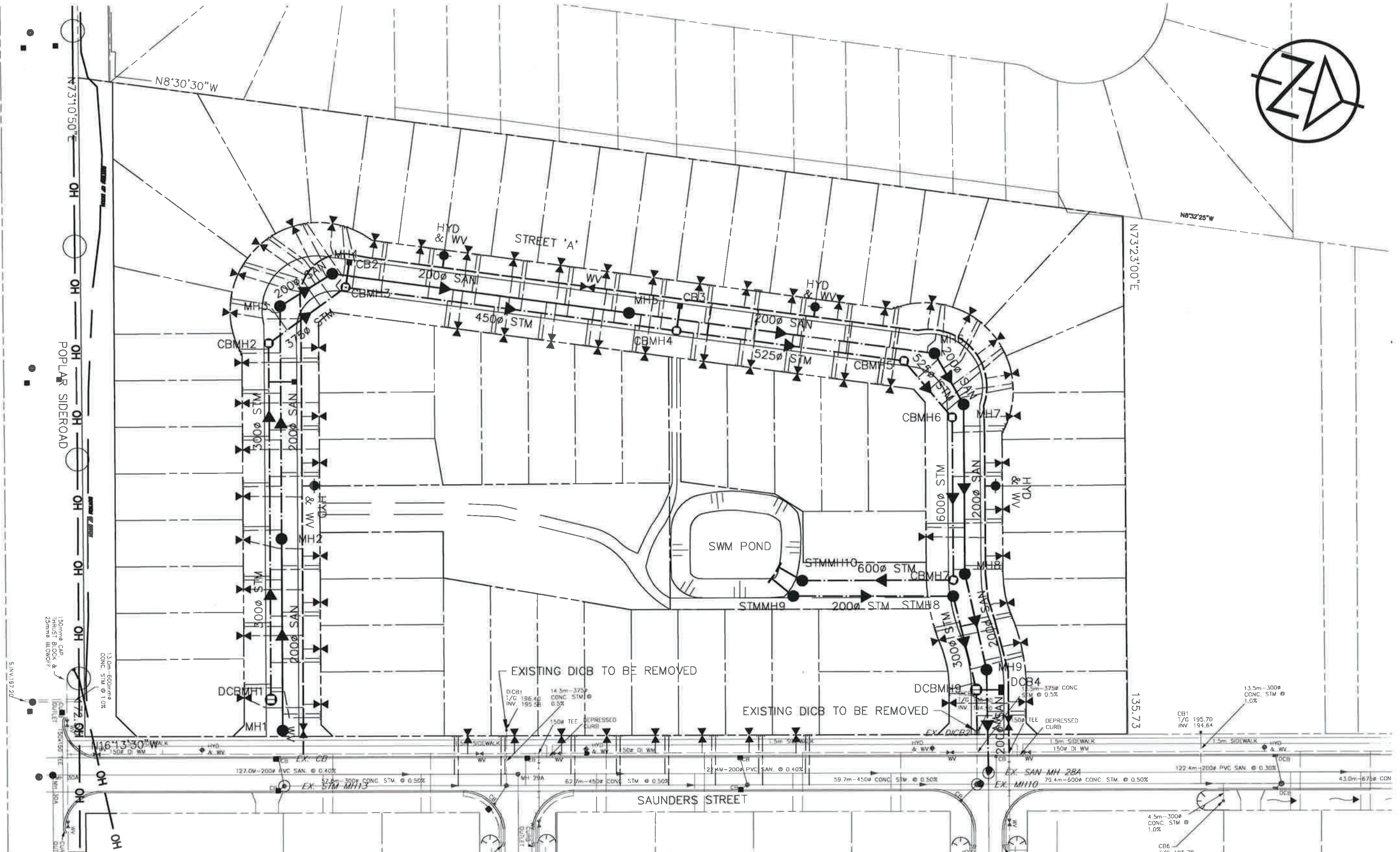


50 SAUNDERS STREET
SITE LOCATION PLAN

SCALE: NTS

DATE: NOV/19

DWG. No. FIG. 1



OVERALL SERVICING PLAN			DWG. No.
50 SAUNDERS STREET			FIG. 2
SCALE: 1:1000	DRAWN: AC	DATE: NOV/19	JOB NO. 119106