

TIMBER RIDGE SUBDIVISION

PROPOSED SETTLEMENT AREA BOUNDARY EXPANSION

FUNCTIONAL SERVICING REPORT

Prepared For

2219260 ONTARIO INC.

August 05, 2026



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1.0 INTRODUCTION

This report has been prepared to present the servicing strategy for the future expansion of the Timber Ridge Subdivision, east of Phases 1 and 2. The land in question is 81.28ha in size, owned by 2219260 Ontario Inc., having a legal description being Lots 27 and 28, Concession 5 in the Township of Lucan-Biddulph. The properties are located east of Saintsbury Line two and three lots south of Fallon Drive, respectively. The subject land is neighboured by residential properties being municipal 34122 and 34170 Saintsbury Line as well as agricultural lands to the north, east and south.

The Settlement Area Boundary for Lucan currently includes Timber Ridge Subdivision Phase 1, Phase 2, as well as the land north of Phase 2, and a portion of the lands east of Phase 1 (Approx. 14.55ha) favouring the south limit of the property that were both brought into the settlement are through OPA 10. This report will focus on the remaining 45.47ha of land (which includes a 10.72ha woodland area) located on Lots 27 and 28, Concession 5 to support inclusion in the settlement area boundary. See Figure 1 for a detailed view of the area proposed for inclusion and surrounding phases/properties as well as the conceptual road alignments prepared by Siv-ik Planning and Design Inc.

2.0 Background Information

The following documents were reviewed to assist with establishing a servicing strategy:

Stormwater Management Report

Detail Design Report – Timber Ridge Subdivision Phase 1

Prepared by Dillon Consulting in June of 2025, this document details the stormwater drainage strategy for Phase 1. With a focus on the interim stormwater management facility constructed on Block 63 prior to the completion of the future regional stormwater management pond to be located south of Phase 1, past lands owned by others and immediately adjacent to the Whitfield open channel municipal drain.

Timber Ridge Subdivision – Phase 1 Issued for Construction Drawing Set

Prepared by Dillon Consulting in June of 2025, the drawings detail the right-of-way, sewer, watermain, and servicing layout. They also provide the storm and sanitary design sheets as well as drainage area plans (including external areas).

Township of Lucan-Biddulph 2021 Lucan Urban Municipal Servicing Master Plan

Prepared by B.M. Ross and Associates Limited in October of 2021, this document evaluates the existing sanitary, storm, and water infrastructure for the Town of Lucan.

Ridge Crossing Subdivision - Phases 1 and 2 As-constructed Drawing Sets

Prepared by Dillon Consulting in June 2014 and October 2017 respectively, these documents detail the existing sanitary, storm, and water infrastructure along Gilmour Drive and westward.

Hardy-Engel Drain 2014 Township of Lucan Biddulph

Prepared by Spriet Associates in November of 2014, this document evaluates the existing drainage conditions and incorporates a municipal drain realignment and improvement north of the existing Gilmour Drive lots.

City of London – 2026 Design Specifications and Requirements Manual

Prepared by The City of London updated in January 2026, this document outlines the design requirements and specifications that are typically followed by the Township of Lucan Biddulph.

Geotechnical/Hydrogeological Desktop Investigation

Prepared by MTE Consultants in May of 2026, this document outlines the subsurface soils information and hydrogeological characteristics for the subject lands.

3.0 SUBDIVISION ACCESS

The 45.47 ha portion of the property being evaluated for inclusion in the growth boundary is situated east of two (2) existing or planned dead end roads that were intentionally left this way for the ease of future access.

1. Addison Avenue, within Timber Ridge Subdivision Phase 1, which has already been constructed and facilitates immediate access to Saintsbury Line.
2. Gilmour Drive, west of Saintsbury Line, planned to extend east by way of the Timber Ridge Subdivision Phase 2 draft plan.

In addition to the two (2) accesses outlined, there will be a connection to Street 'E' from the Timber Ridge Subdivision Phase 1 draft plan to the 14.55ha parcel of land, that was brought into the settlement boundary by way of OPA 10 that will integrate into the remaining lands subject to this application.

A preliminary concept plan of the subdivision prepared by Siv-ik Planning and Design Inc. has been attached for reference purposes, see Appendix A, demonstrating the access points described and showing a third primary access point directly to Saintsbury Line by way of a road extension north of Timber Ridge Phase 2, creating a future four-way intersection with lands west of Saintsbury Line, north of Gilmour Drive that are within the settlement area boundary and owned by the applicant.

4.0 SUBDIVISION SERVICING

A Conceptual Servicing Plan has been prepared by AGM Engineering to support this application. The plan illustrates the conceptual mainline sewer alignments, watermain locations, connections to existing municipal infrastructure, the location of the planned stormwater management facilities, park blocks, open spaces, woodlots, and existing easements. The Conceptual Servicing Plan has been provided in two formats: a reduced 11 x 17 colour

version in Appendix B and a full size version at 1:2000 scale. Proposed servicing will be discussed in more detail within the following sub-sections of this report.

4.1. WATER SUPPLY & DISTRIBUTION

4.1.1. Water Servicing Strategy

The Town of Lucan is equipped with a watermain network that is fed from a water tower located on Scott's Drive. The proposed Timber Ridge Subdivision, Phase 2 development and future expansion areas are planned to have domestic water supply through connections to the existing municipal watermain network.

The proposed development will be serviced through the following existing and proposed watermain connections:

- 250mm diameter watermain capped at the dead-end of Granite Avenue will be extended north through Timber Ridge phase 2 and east to serve the future lands.
- 250mm diameter watermain capped at the dead-end of Addison Avenue will service the proposed lands.
- A new connection into the existing 200mm diameter watermain underneath Saintsbury Line at Gilmour Drive will extend east through phase 2 to serve the future lands.
- A second connection into the existing 200mm diameter watermain along Saintsbury Line, north of Gilmour Drive will extend east through the subject property to service the future development.

The extension of Granite Avenue and Addison Avenue will eliminate the two (2) existing dead-end conditions, the conceptual layout (Appendix B) shows the looping of the proposed watermain. All watermain installations are shown in standard location at 4.9m from the property line where applicable. The final locations of fire Hydrants and valves will be determined during detailed design and will be located in accordance with City of London's *Water Distribution System*, with a maximum hydrant spacing of 170m, as per clause 7.8.1 (in lieu of local Lucan Standards). All fire hydrant locations will require Engineering and Fire Department approval through the Township of Lucan-Biddulph.

4.1.2. Water System Analysis

AGM retained Peach Fire Consulting Inc. to conduct hydrant flow tests for the surrounding hydrants. It was determined that the static pressure at Saintsbury Line and Kent Avenue was 67 psi (462 kPa). Under fire flow applied to the closest Gilmour drive fire hydrant, the hydrant rating curve suggests that there is an estimate of 1,984 USGPM (125.20 L/s) available in the residual hydrant at 20 psi (140 kPa). The overall development area in question (including Phases 1 and 2) has a theoretical future development population of 2,851 resulting in an average day demand of 8.41 L/s and a max day demand of 29.45 L/s. Based on a per capita consumption of 255 L/capita/day and a max day multiplier of 3.5. See Table 1 for a population breakdown and Table 2 for theoretical demands.

Table 1: Population Breakdown

Lands	Area (ha)	Unit Density (Units/ha)	Lots/Units	Population Density** (People/Unit)	Population
Phase 1	4.08	-	61	2.72	166
OPA 10 Lands (North)	5.33	12.5*	67	2.72	183
Phase 1 Med. Density	3.40	75	255	1.94	495
Phase 2	8.45	-	120	2.72	327
OPA 10 Lands (East)	14.55	12.5*	182	2.72	496
Expansion	34.75***	12.5*	435	2.72	1,184
Total	70.56	-	1,120	-	2,851

*Denotes density taken from Urban Metrics (Timber Ridge Expansion Residential Land Needs Assessment).

**Population density taken from BMROSS Sanitary Sewer Design Updates Memo.

***Excludes woodland area.

Table 2: Theoretical Demand flows (Phase 1, 2, OPA 10 Lands, and Expansion)

Demand Type	Flows (L/s)
Average Day	8.41
Max Day	29.45
Max Hour	65.62

With the existing fire flow available being 125.20 L/s (based on the flow test), there appears to be adequate capacity for the existing system to sustain an additional 29.45 L/s max day demand while providing typical fire flow requirements of 95.75 L/s ($125.20 - 29.45 = 95.75$ L/s). Without considering the effects that the looped system will have, AGM will prepare a water model calibrated to the flow test performances during the detailed design or draft plan application stage to support the sizing of water infrastructure internal to each future phase of development.

4.2. SANITARY SERVICING

4.2.1. Existing Sewer Infrastructure

Addison Avenue is serviced by an existing 300mm diameter sanitary sewer, which discharges into the 375mm diameter Saintsbury Line sanitary sewer system that was extended by the applicant to support Phase 1 of the Timber Ridge Subdivision. The 375mm diameter sanitary sewer along Saintsbury Line ultimately connects to the Kent Avenue sanitary sewer and conveys flows to Campanale Way through a servicing easement and to the Chestnut pumping station. From the pumping station, sanitary sewage is conveyed by way of forcemains to the wastewater treatment facility located north of Fallon Drive for treatment and disposal. A review of Ridge Crossing Phases 1 and 2 sanitary infrastructure determined that the existing system, 200mm diameter sanitary sewer, was not intended to serve lands east of Saintsbury Line. Therefore, cannot be considered a viable connection for the land in question.

Timber Ridge Phase 1 has two (2) capped sanitary sewers along Granite Avenue, and Addison Avenue that are planned to service the future development. The following subsections will discuss sanitary servicing.

4.2.2. Sanitary Design Criteria

The projected population for the greater developed area east of Sainsbury Line including Timber Ridge Subdivision Phase 1, 2, lands previously added to the settlement boundary, and lands proposed for inclusion was estimated using lot counts for draft plan approved lands and 12.5 units per gross hectare for lands proposed to be added or recently added to the settlement area boundary (as per the Urban Metrics Report). The sanitary analysis was carried out in accordance with the following criteria:

- Per Capita Peak Flow of 210 Liters/person/day
- Infiltration Allowance of 0.251 Liters/second/hectare
- Uncertain Development Factor of 1.1
- Peaking Factor calculations as determined by the Harmon Formula
- Population per lot being 2.72
- Population for Medium Density unit being 1.94
- Medium Density unit count being 75 units/hectare

4.2.3. Sanitary Sewer Servicing Strategy

The sanitary sewer infrastructure constructed as part of Timber Ridge Subdivision Phase 1 was designed to accommodate the future development of the lands now proposed for inclusion within the settlement area boundary. The two (2) capped sanitary sewers that were installed with Phase 1 will be utilized to service the future development as follows:

- A connection will be made to the existing 300mm diameter sanitary sewer along Granite Avenue, which will be extended north through Phase 2 and eastward to provide servicing to the future development lands.
- A second connection will be made to the existing 200mm diameter sanitary sewer located beneath Addison Avenue, which will be extended eastward to service the future development area.

All connections will convey sewage through Timber Ridge Phase 1 and down Kent Avenue. All lots will be serviced by the new sanitary sewers that will be installed in standard location (1.5m off of centreline of roadway) within future subdivision rights-of-way. In accordance with City of London Municipal Standards (in lieu of local Lucan standards), sanitary sewers will be a minimum diameter of 200mm with a depth of cover no less than 2.4m. Sanitary PDCs connected to local sewers will also be 100mm in diameter installed at 2% minimum grade for single family residences with cleanouts installed to the surface at property line. A preliminary Drainage Area Plan, complete with sewer sizing calculations, and downstream capacity analysis has been prepared to determine whether the existing infrastructure can support the future development.

4.2.4. Drainage Area Plan & Design Flow Calculations

As previously noted, AGM has prepared a preliminary Sanitary Drainage Area Plan with design flow calculations for the complete buildout of the future residential development (post settlement boundary expansion). The downstream capacity analysis that was completed along side the drainage area plan was conducted using the downstream pipe size and slope information presented in the Municipal Servicing Master Plan prepared by BMROSS. Based on the gross density of 12.5 units per hectare for future development. Peak flow calculations confirm that the existing sanitary sewers within Phase 1 of the Timber Ridge Subdivision and along Saintsbury Line are adequately sized to serve the future development needs. Initial calculations show that the peak design flow for the subject development and external areas up to the Kent Avenue connection is **45.10 litres/second** based on a 73.42ha service area (excludes woodland area) and estimated 2,886 people. The critical run (sewer with least capacity) is the 375mm diameter sanitary sewer from SA.4 to SA.5 along Saintsbury Line. Table 3 illustrates the findings.

Table 3: Addison Avenue and Saintsbury Line Sanitary Sewer Critical Runs

Upstream MH	Downstream MH	Size (mm)	Slope (%)	Capacity (L/s)	Sewage Flow (L/s)	% of Capacity
SA.6	SA.5	300	0.2	43.25	19.18	44
Cap	SA.5	300	0.17	39.87	26.50	66
SA.5	SA.4	375	0.15	67.91	44.10	65
SA.4	SA.3	375	0.15	67.91	44.43	65

*Manhole numbering and naming from Timber Ridge Phase 1 design.

There is ample capacity in the Phase 1 and downstream Saintsbury line sanitary sewer to support a density that exceeds 12.5 units per gross hectare. See Appendix D for the Sanitary Capacity Analysis.

The 375mm diameter Saintsbury Line sanitary sewer outlets to the 200mm diameter Kent Avenue sewer. The Kent Avenue sewer lacks capacity at this time; however, there is a planned municipal driven upgrade to this section of sanitary sewer which is expected to facilitate the conveyance of the increased flows from Phase 2, lands brought in to the settlement area boundary by way of OPA 10 and the lands proposed for inclusion in the settlement area boundary. It is expected that the planned upgrades will extend along Kent Avenue to the new 675mm diameter easement sanitary sewer that is under construction at the time of authoring this report.

4.3. STORM DRAINAGE

The proposed development will increase the imperviousness of the subject property resulting in higher peak flows and the need for stormwater management controls.

4.3.1. Pre Development Drainage

To better establish an understanding of the naturally occurring drainage patterns the subject property in its entirety was reviewed prior to the Phase 1 construction. The property was primarily used for agricultural purposes with a woodlot located along the east boundary and had a split drainage pattern. A portion of the site and external lands (31.75ha) drained overland southwesterly toward what is now the Timber Ridge Subdivision Phase 1 land, while another section (52.98ha) of the site drained overland northwest to the Saintsbury Line ditch, which outlets to the Hardy Engel Municipal Drain by way of a ditch inlet catchbasin west of the subject property. Flows exceeding the capacity of the municipal drain cross Saintsbury Line at an existing culvert and are conveyed west through an agricultural property also owned by the applicant.

In addition, a portion of the northeast corner of the site (7.14ha) conveys runoff in the northeasterly direction to the Heenan Municipal Drain. There is an additional 249.08ha external area that relies on the northeast corner of the subject property for pass through conveyance, ultimately discharging to the north as determined by topographic survey for the subject lands and approximated by open source information (Lidar information and Urban Municipal Servicing Master Plan by BMROSS for the lands outside the property limits). The extent and characteristics of these external drainage areas will be further evaluated during the detailed design stage. See Figure 3 for a visual representation of the catchment areas described above.

4.3.2. Allowable Discharge

As mentioned, a portion of the subject property was accounted for in the Timber Ridge Phase 1 design. This includes a portion of the wooded area, as well as future residential development land estimated to be a combined 26.50ha (taken from Dillon Consulting Stormwater Management report, dated June 2025). Timber Ridge Phase 1 was designed with an interim stormwater management (SWM) facility that was sized solely for Phase 1 and excluded this external area. Ultimately, Phase 1 and the future development will drain through lands owned by others just south of the property to a new stormwater management pond located northeast of the existing SWM facility and the Whitfield Municipal Drain. See Figure 4 for a visual representation of the lands permitted to drain, south to the planned regional stormwater management facility.

4.3.3. Proposed Drainage

The proposed lands identified for inclusion within the growth boundary are intended for future development, which will introduce impervious areas resulting in a significant increase in peak runoff toward the Hardy Engel Municipal Drain, requiring stormwater management controls. The stormwater drainage strategy is to utilize the major and minor system outlets to Phase 1 to the extent allowed while introducing a second stormwater management facility servicing the minor and major system for the remainder of the land. The new SWM facility will be located east of Saintsbury Line in the northwest corner of the property (Figure 5). The SWM facility will discharge to the existing Hardy Engel Municipal Drain currently servicing the property. The SWM facility is planned to be a wet pond servicing an estimated 52.26ha area for both

quantity and quality control. The extended detention outlet will release directly to the Hardy Engel Municipal Drain and a secondary outlet is expected to convey runoff to the Saintsbury Line ditch. A new culvert will replace the existing culvert crossing Saintsbury Line and runoff will continue to enter the agricultural property owned by the applicant north of Gilmour Drive. North of Gilmour Drive, west of Saintsbury Line, external flows will be redirected to a ditch that will be constructed on a separate piece of land immediately north of the existing Gilmour Drive lots, already owned by the Township to avoid a conflict with future developments west of Saintsbury Line.

The future ditch in conjunction with the Hardy Engel Municipal Drain, will convey restricted runoff directly to the Benn Municipal Drain. Figure 6 shows the planned/existing stormwater management and conveyance features for the area. The planned stormwater management facility will be sized as part of the future draft plan application, utilizing the current design criteria, stipulated at this time by the MOE Stormwater Management Planning and Design Manual (2003).

As identified in the existing drainage section, a portion of the northeast corner of the site currently drains northward toward a separate Municipal Drain. Furthermore, lands located to the east of the subject property (approximately 249.08ha) currently rely on the existing drainage pathway that traverses through the northeast corner of the property. Given the extent of the external area that relies on this flow path an open space block is anticipated to provide a wide enough flow path such that external flows do not adversely impact future lots. The impacts of the proposed development on these external drainage areas will be further evaluated during detailed design to ensure that existing drainage patterns are maintained and that no adverse impacts occur to adjacent properties.

4.3.4. Storm Sewer Servicing Strategy

Minor storm event flows (5 year storm) from Phase 2, the OPA 10 lands and the addition lands to be added to the settlement area boundary will be collected by roadway catchbasins connected to a local storm sewer system constructed as part of the proposed development. Storm sewer flows will be directed to the SWM facility located north of Phase 2 lands, for quantity control and treatment (quality control) prior to outletting to either the Hardy Engel Municipal Drain or the Saintsbury Line ditch. All local storm sewer installations are shown to be in standard location 1.5m off centreline. Catchbasins will be located at all roadway sumps and will be spaced no greater than 90m, as per CLIECA Requirements. Individual lots will be serviced by 150mm storm sewer PDCs to be used for sump pump discharge.

During the detail design phase, a Drainage Area Plan and a stormwater management report, complete with sewer and pond sizing calculations, will be prepared to support the Subdivision approval.

5.0 SUMMARY

There is existing or planned upgrades to water and sanitary infrastructure that should be capable of supporting the future development of the additional lands east of Timber Ridge Phases 1 and 2. Stormwater can be addressed by the approved facility south of Phase 1 and a future facility north of Phase 2. All engineering design and construction will be completed in accordance with the requirements and guidelines of the City of London (in lieu of Lucan-Biddulph standards), the Ausable Bayfield Conservation Authority and the Ministry of the Environment, Conservation and Parks, and Ontario Provincial Standards. Surrounding properties are not adversely impacted by the proposed development, and the servicing as presented within this report is consistent with existing municipal infrastructure and natural outlets.

Prepared By:
Archibald Gray & McKay Engineering Ltd.



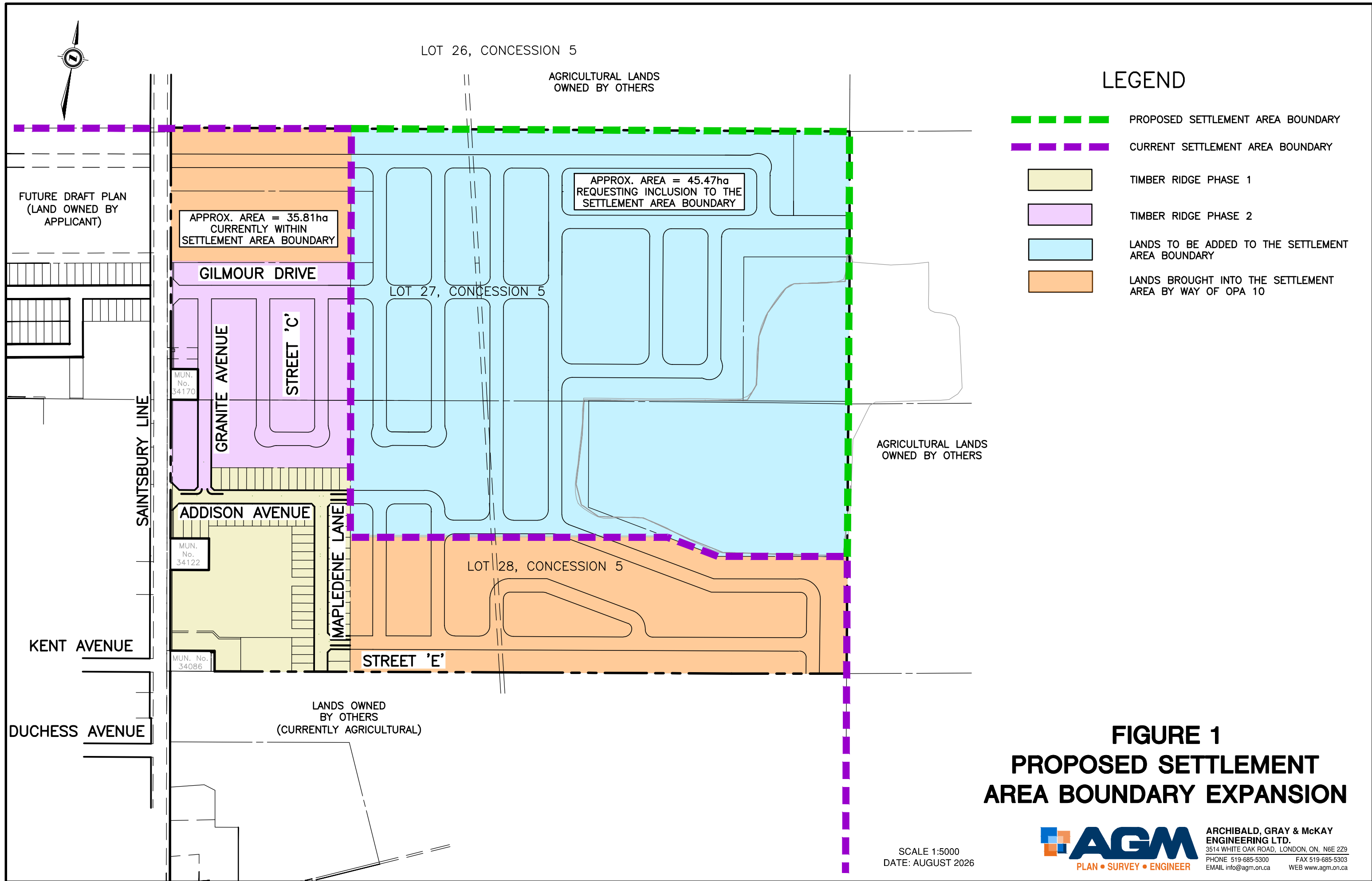
Alex Castellano
Engineer-in-Training



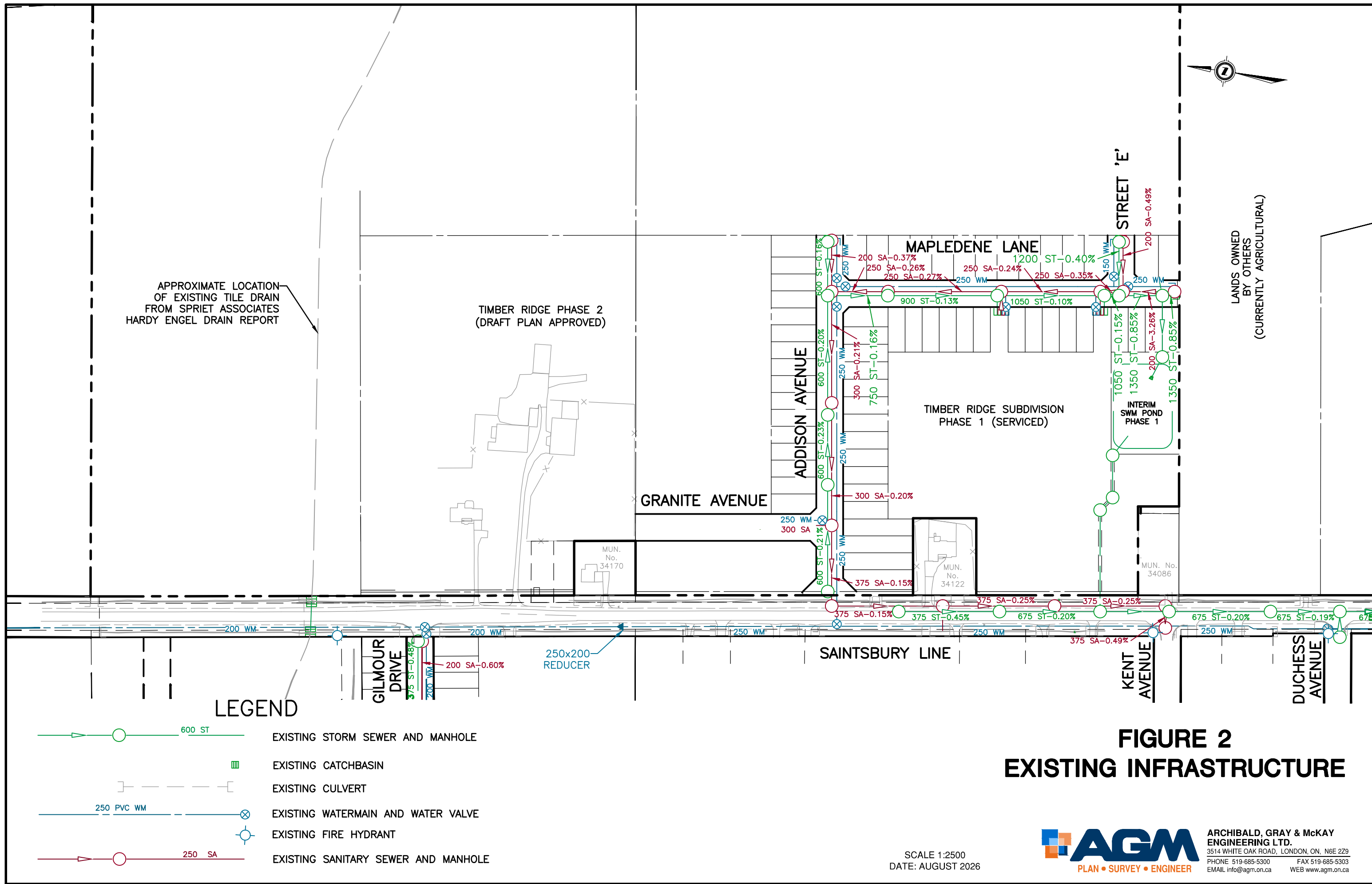
Lukas Grabowski, P. Eng.
Project Manager

FIGURES

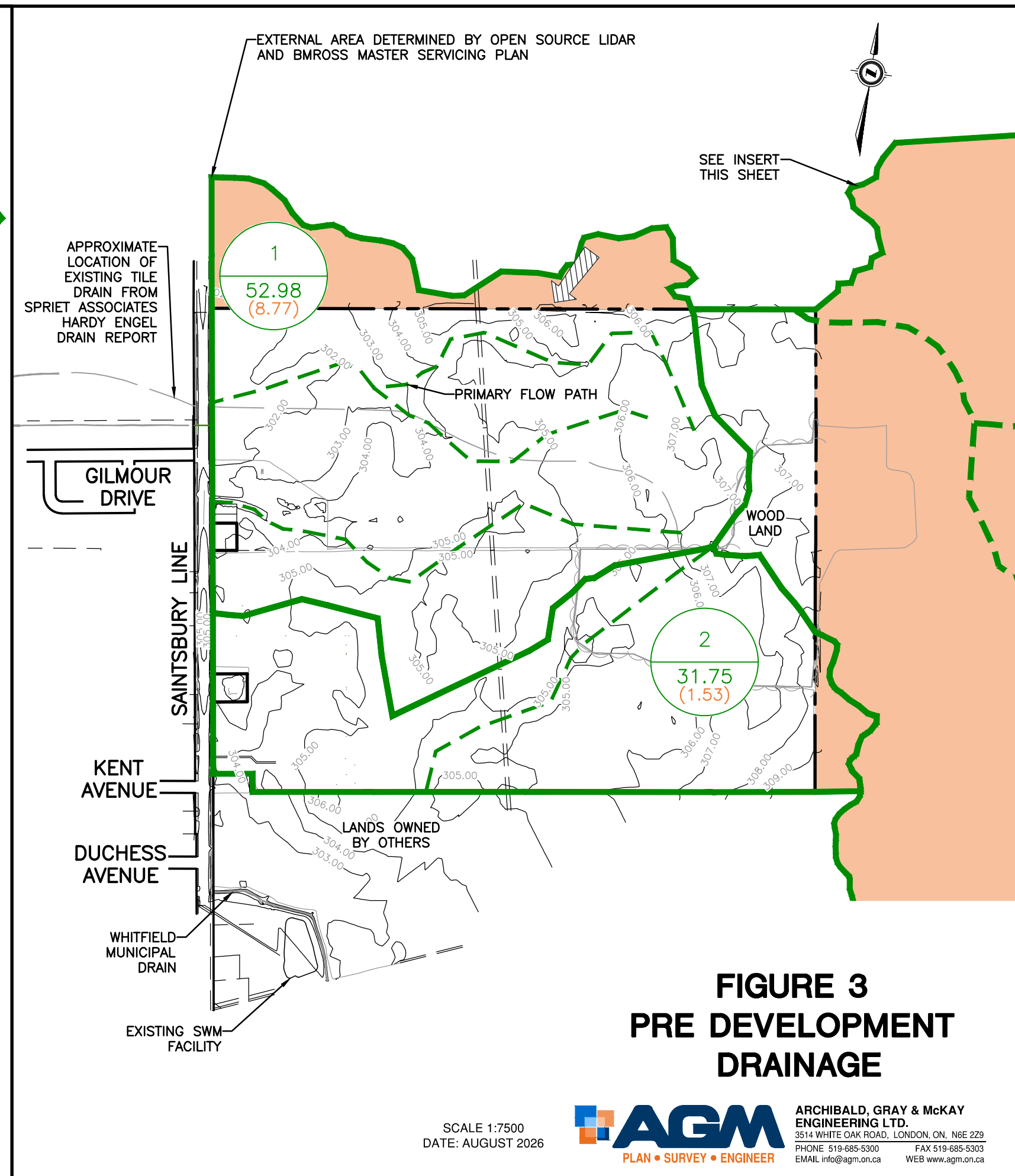
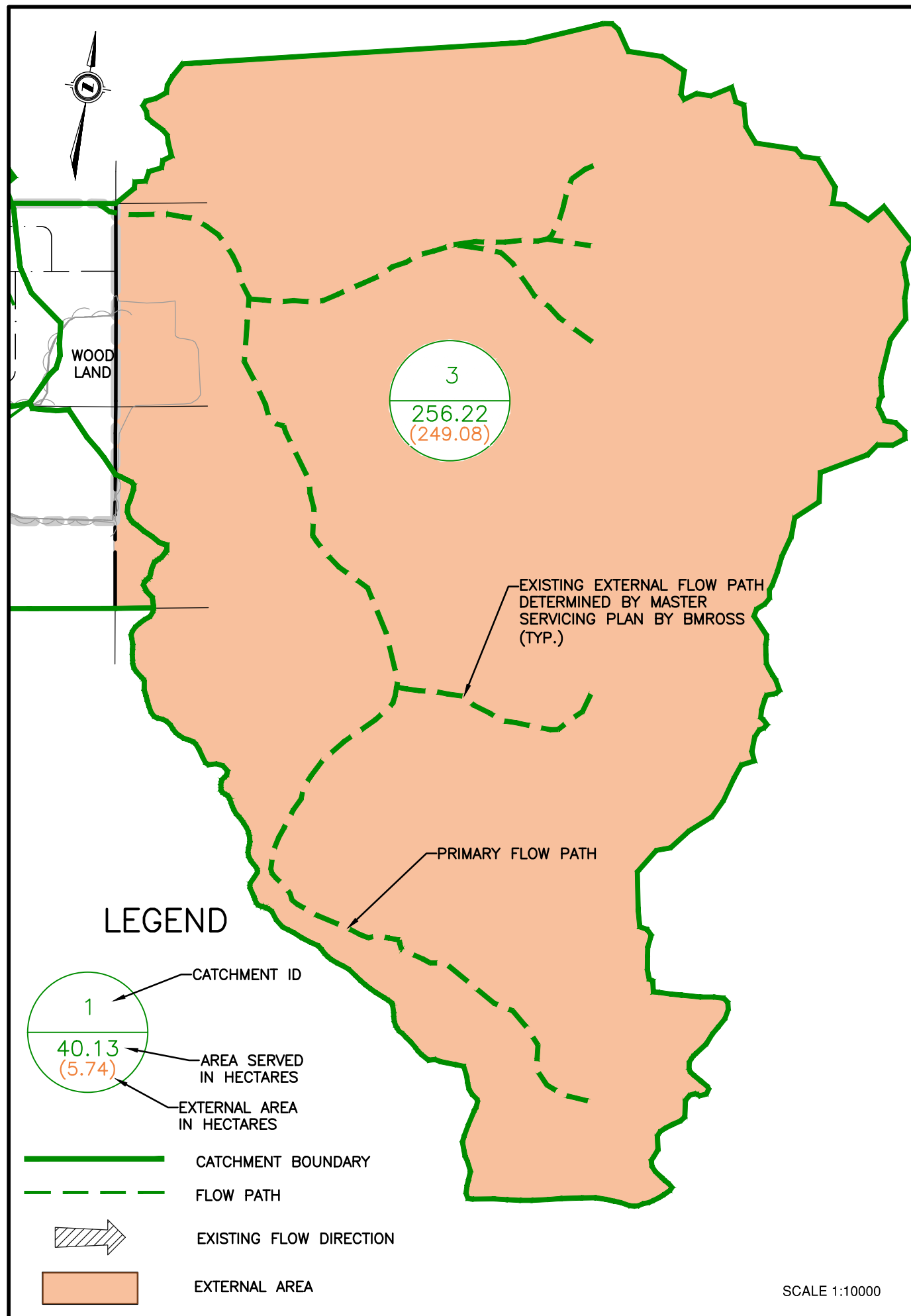
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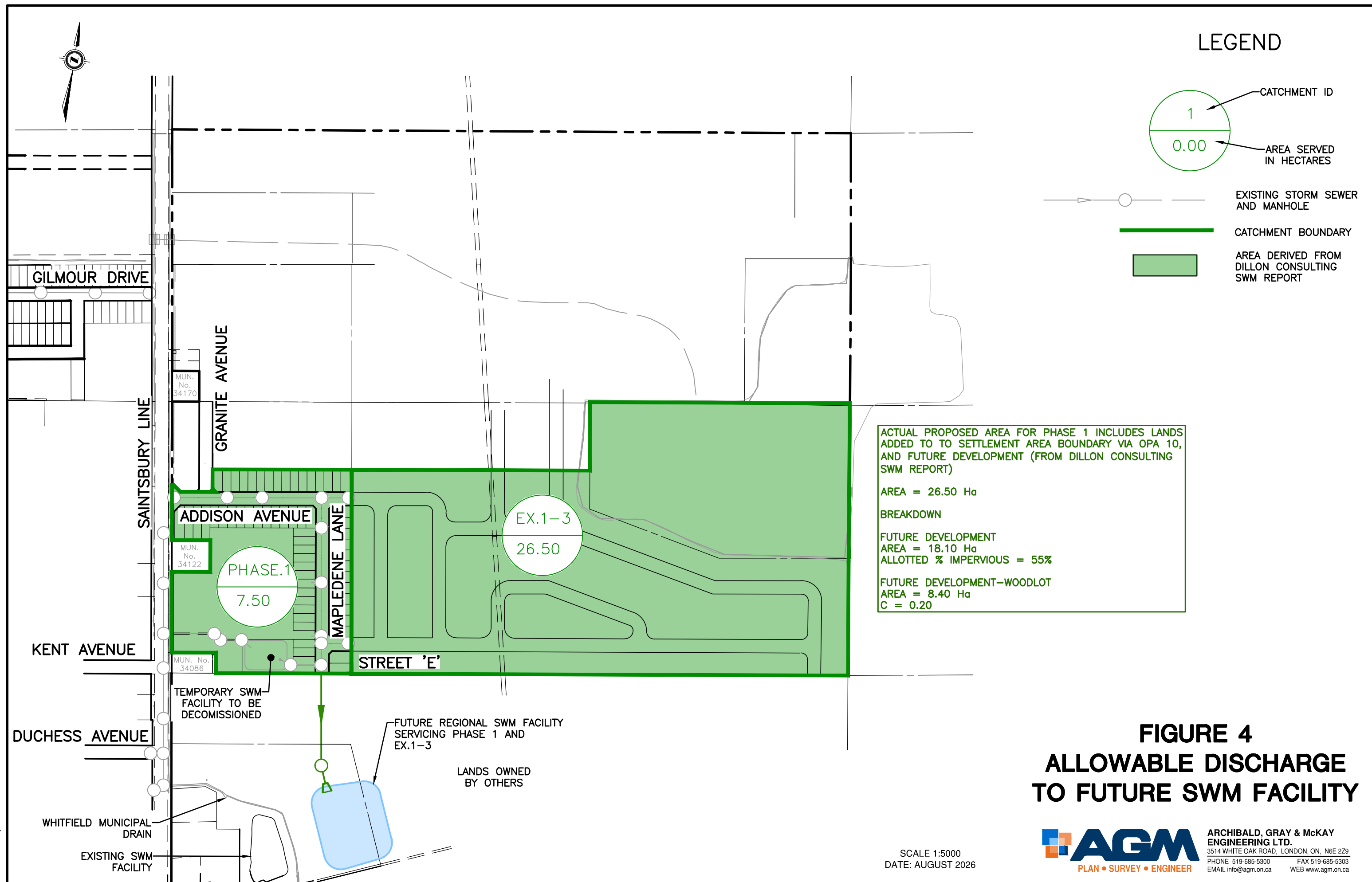
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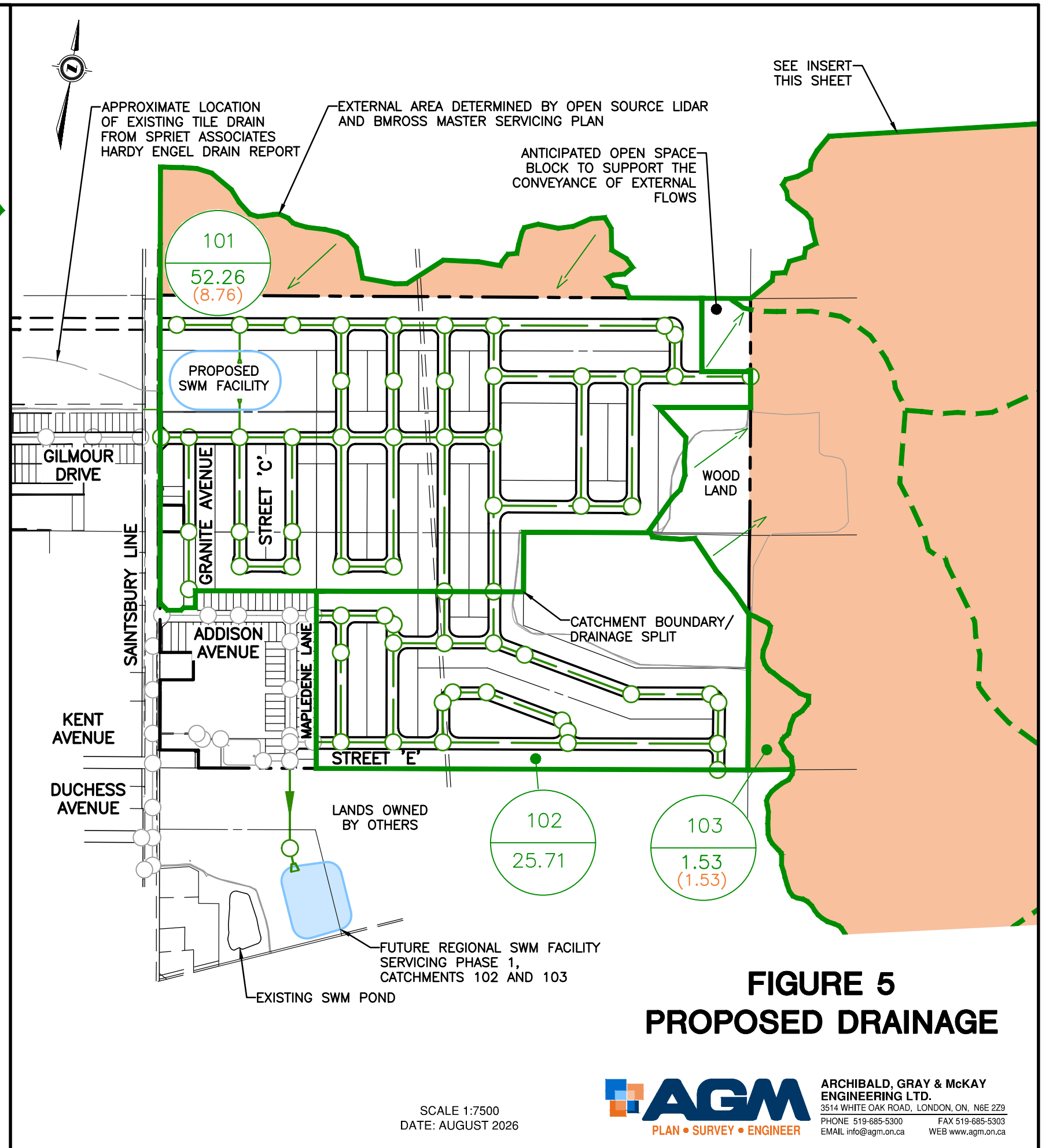
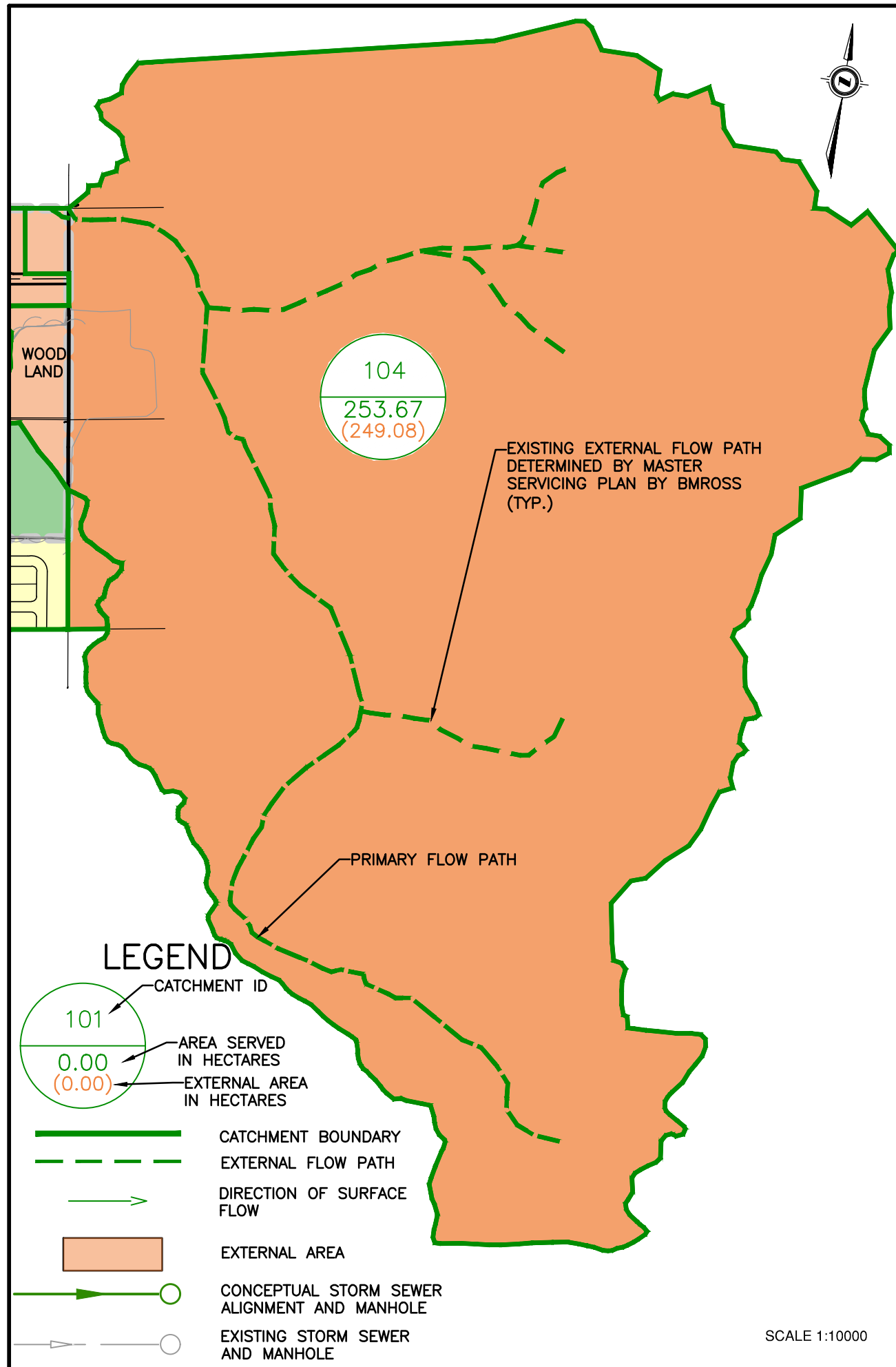
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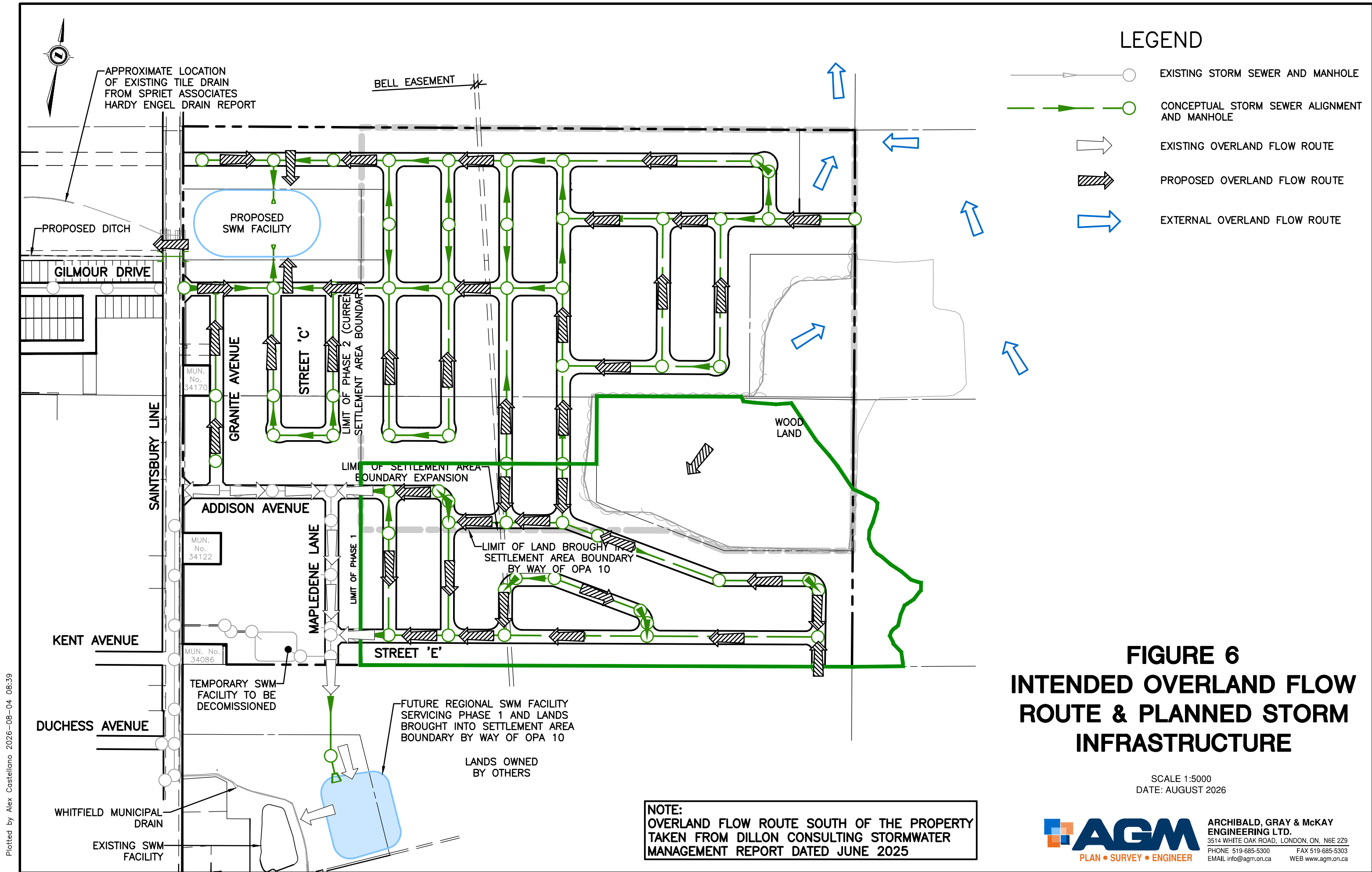


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APPENDIX A

**Preliminary Concept Plan of Subdivision by
Siv-ik Planning and Design Inc.**

PRELIMINARY CONCEPT PLAN

PROJECT SITE

Timber Ridge Expansion, Lucan ON



Land Use Breakdown		
USE	Ha.	%
Low Density Residential	22.71	49.95
Park	173	3.80
Open Space	10.72	23.58
Stormwater Management	1.40	3.08
Right of Way	8.91	19.59
TOTAL	45.47	100

N

Client:

Gilrad Developments

Date:

07.06.2026

Drawn By:

C. Taylor

Plan Scale:

mts

File No:

Timber Ridge Expansion

Version:

5.0

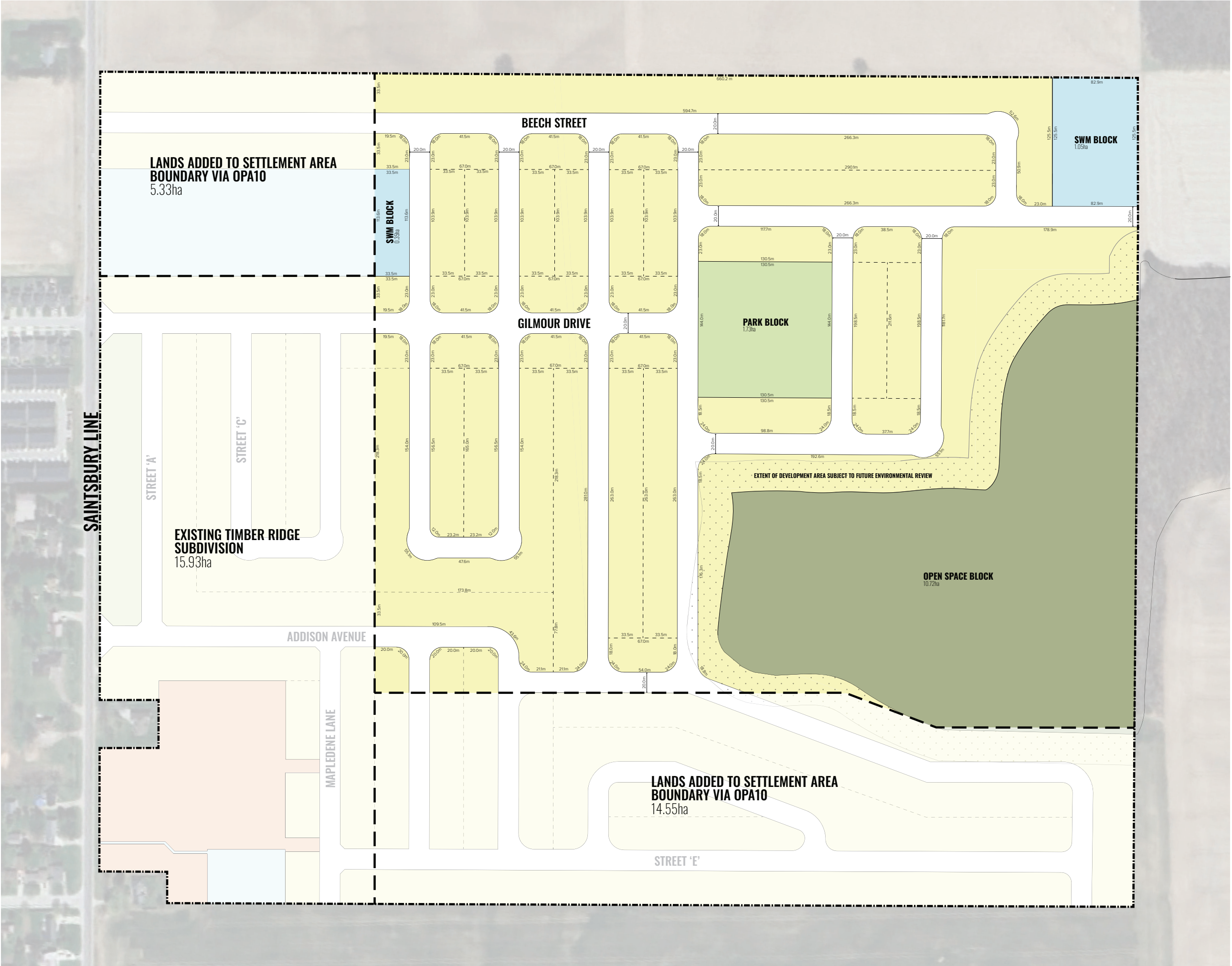
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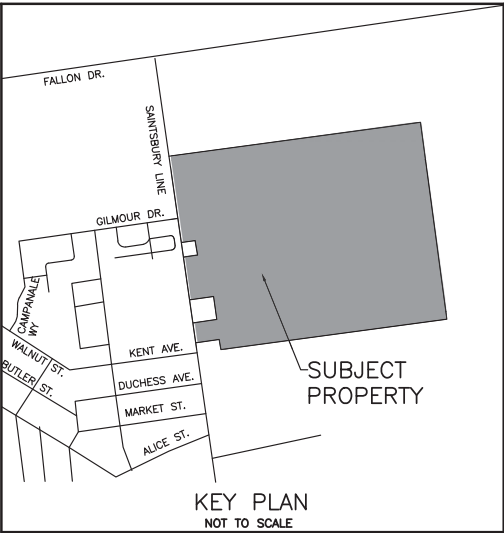
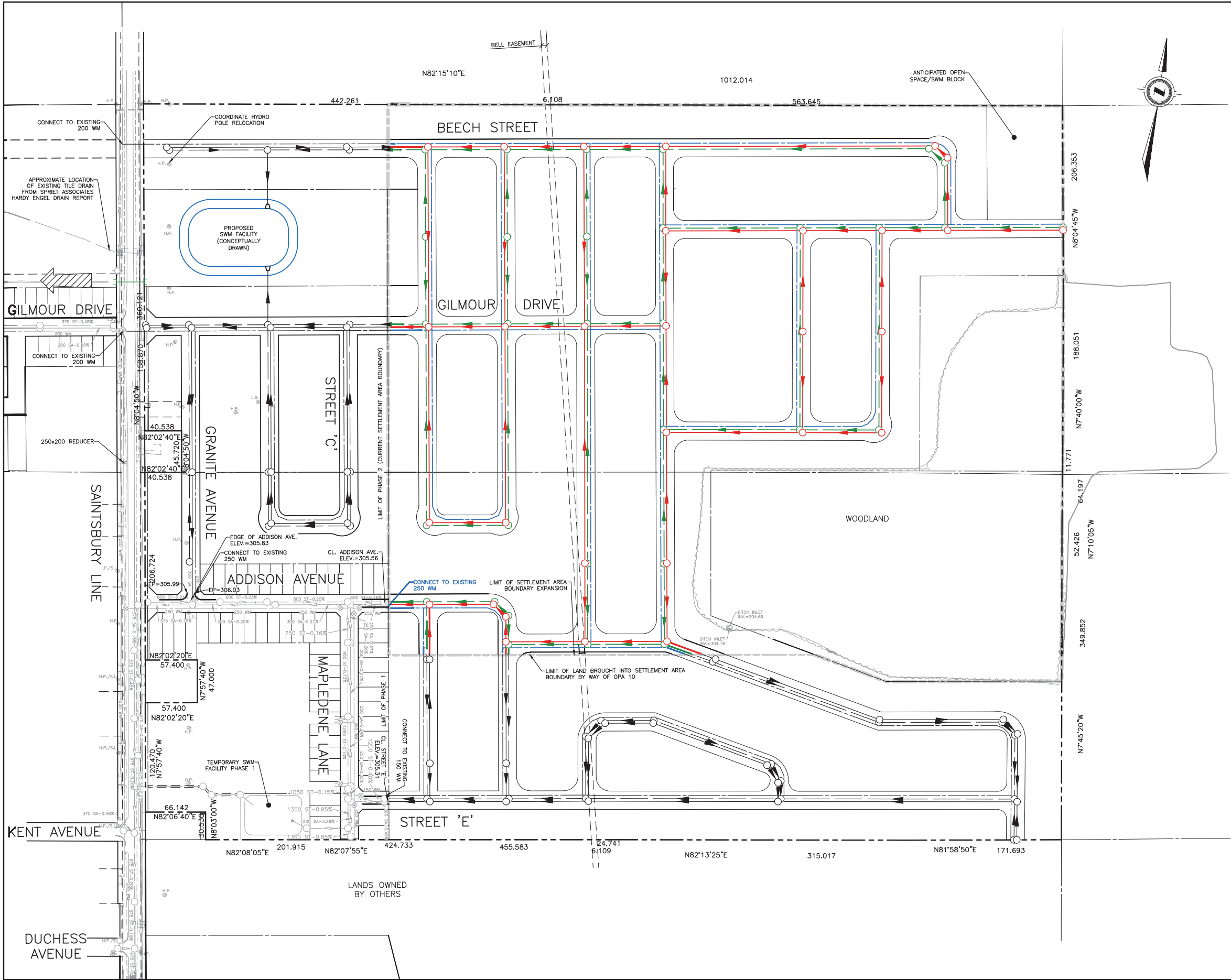
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APPENDIX B
Conceptual Servicing Plan by
AGM Engineering Ltd. (Reduced Size)



- LEGEND**
- 200 SA EXISTING SANITARY SEWER AND MANHOLE
 - 300 ST PROPOSED SANITARY SEWER AND MANHOLE (OUTSIDE OF CURRENT SETTLEMENT BOUNDARY)
 - 150 WM EXISTING STORM SEWER AND MANHOLE
 - 150 WM PROPOSED STORM SEWER AND MANHOLE (OUTSIDE OF CURRENT SETTLEMENT BOUNDARY)
 - EXISTING WATERMAIN AND WATER VALVE
 - EXISTING FIRE HYDRANT AND VALVE
 - PROPOSED WATERMAIN (OUTSIDE OF CURRENT SETTLEMENT BOUNDARY)
 - OVERLAND FLOW ROUTE
 - EXISTING CULVERT
 - PROPOSED CULVERT
 - PROPOSED SANITARY SEWER AND MANHOLE (WITHIN CURRENT SETTLEMENT BOUNDARY)
 - PROPOSED STORM SEWER AND MANHOLE (WITHIN CURRENT SETTLEMENT BOUNDARY)
 - PROPOSED WATERMAIN (WITHIN CURRENT SETTLEMENT BOUNDARY)
 - LIMIT OF PROPOSED SETTLEMENT AREA EXPANSION

AS CONSTRUCTED SERVICES				COMPLETION		DESIGN		No.		REVISIONS		DATE		BY		CONSULTANT OR DIVISION		ENGINEER'S STAMP		SCALE		TITLE		PROJECT No.	
						DRAWN		1.		ISSUED FOR FIRST SUBMISSION		AUG. 05, 2026		AGM		ARCHIBALD, GRAY & MCKAY ENGINEERING LTD.				SCALE - 1 : 2000		TIMBER RIDGE SUBDIVISION SETTLEMENT AREA EXPANSION		1598-2	
						CHECKED										3514 WHITE OAK ROAD, LONDON, ON, N6E 2Z9				20 0 40m		CONCEPTUAL SERVICING PLAN		01	
						APPROVED										PHONE: 519-885-5300 FAX: 519-885-5303								PLAN FILE No.	
						DATE										EMAIL: info@agm.on.ca WEB: www.agm.on.ca									

APPENDIX C

Hydrant Flow Tests and Demand Calculations

WATERMAIN DEMANDS - Timber Ridge Subdivision Settlement Area Boundary Expansion

DEMAND = 255 L/cap/day
5-Aug-26

MAX DAY FACTOR = 3.5
MAX HOUR FACTOR = 7.8

LOW DENSITY = 2.72 PEOPLE PER UNIT
MED. DENSITY = 1.94 PEOPLE PER UNIT

ID	LOCATION	LOTS	UNITS		POPULATION	AVG. DAY L/s	MAX HOUR L/s	MAX DAY L/s
			MED	HI				
1	Timber Ridge Subdivision Phase 1	61	255		661	1.950	15.21	6.83
2	<i>OPA 10 Lands (North)</i>	67			183	0.540	4.21	1.89
3	Timber Ridge Subdivision Phase 2	120			327	0.965	7.53	3.38
4	<i>OPA 10 Lands (East)</i>	182			496	1.464	11.42	5.12
5	<i>Proposed Settlement Area Boundary Expansion</i>	435			1184	3.494	27.25	12.23
Total		865	255		2851	8.41	65.62	29.45

ITALICS - DENOTES LOT COUNTS CALCULATED BASED ON 12.5 Units/Gross Ha AS PER TIMBER RIDGE EXPANSION RESIDENTIAL LAND NEEDS
ASSESSMENT BY URBAN METRICS



PEACH FIRE
CONSULTING INC.

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180 WOODWORTH AVENUE
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PHONE: (519) 476-7721
DESIGN@PEACHFIRECONSULTING.COM

HYDRANT FLOW TEST REPORT

PFC-FORM-003

REV DATE: 2025-10-16

PROJECT INFORMATION

PROJECT NAME:	Saintsbury Line & Gilmour Drive Flow Tests	PROJECT #:	26-080
SITE ADDRESS:	100 Gilmour Drive, Lucan, ON	SCHEDULED DATE & TIME:	2026-06-10
CITY CONTACT:	Julie Overholt ext. 3131	PHONE #:	519-227-4491

FLOW TEST MAP



TEST DETAILS

WATER MAIN SIZE:	Saintsbury 250mm (10"), Gilmour 200 mm (8")	MINIMUM FLOW:	N/A
HYDRANTS USED:	City Hydrants	TEST DATE & TIME:	2026-06-10
TEST CONDUCTED BY:	L. Foote		

EQUIPMENT USED

☐ POLLARD DIFFUSER ELBOWS	☐ HAND-HELD PITOT GAUGE
☒ HOSE MONSTERS (WITH BUILT-IN PITOT)	☐ OTHER: _____



PEACH FIRE
CONSULTING INC.

PEACH FIRE CONSULTING INC.
180 WOODWORTH AVENUE
ST. THOMAS, ON N5P 3K7
PHONE: (519) 476-7721
DESIGN@PEACHFIRECONSULTING.COM

HYDRANT FLOW TEST REPORT

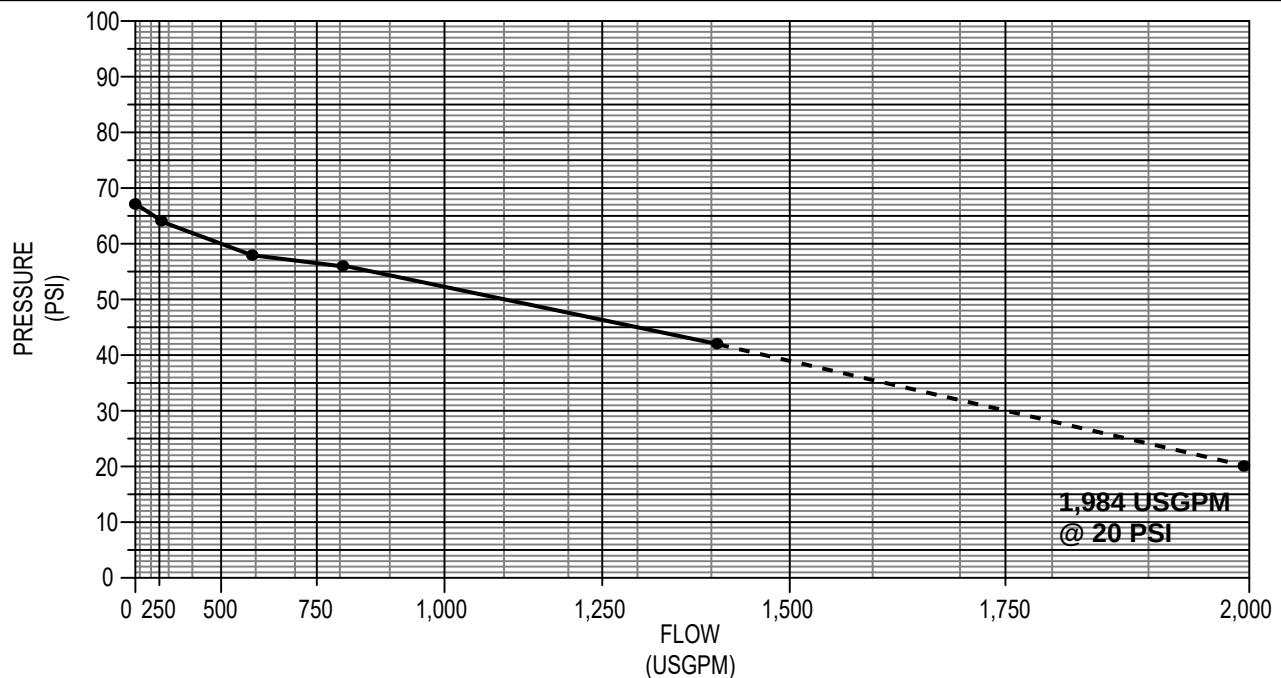
PFC-FORM-003

REV DATE: 2025-10-16

FLOW TEST RESULTS

TEST #	# OF OUTLETS	OUTLET DIA.	HYD. COEFFICIENT	PITOT (PSI)	FLOW (GPM)	STATIC / RESIDUAL (PSI)
STATIC	-	-	-	-	-	67
1	1	1-1/8"	0.9	61	262	64
2	1	1-3/4"	0.9	45	597	58
3	1	2-1/2"	0.9	23	809	56
4	2	2-1/2"	0.9	18, 17	1411	42
RE-CHECK	-	-	-	-	-	

FLOW TEST GRAPH



STAMP

ENGINEER'S NOTES

Residual Hydrant Out of Service, switch to hydrant at Kent Ave

APPENDIX D
Sanitary Capacity Analysis by
AGM Engineering Ltd.

POPULATION DENSITIES

LOT BASIS

Single Family
Medium Density
High Density

2.72 Persons per Lot
1.94 Persons per Unit
1.6 Persons per Unit

AREA BASIS

Low Density
Medium Density
High Density
Commercial

12.5 Units per Ha
75 units per Ha
150-350 Persons per Ha
71 Persons per Ha

FLOW CRITERIA

Q = 210 Litres/Capita/day

I = 0.251 Litres/second/Ha

TOWNSHIP OF LUCAN-BIDDULPH
SANITARY SEWER DESIGN SHEET

SANITARY CAPACITY ANALYSIS

2219260 ONTARIO INC.

TIMBER RIDGE SUBDIVISION EXPANSION

AGM

PLAN • SURVEY • ENGINEER

TOTAL FLOW INCLUDES UNCERTAIN DEVELOPMENT FACTOR
TOTAL = (SEWAGE *1.1) + INFILT

PROJECT No.: 1598-2
DESIGNED BY: AC
DATE: AUGUST 2026

CHECKED: LRG
APPROVED: LRG

LOCATION				AREA			POPULATION					SEWAGE FLOW							SEWER DESIGN							PROFILE		
AREA No.	STREET	FROM MH	TO MH	GROSS	NET	TOTAL ha	PER HA	PER LOT / UNIT	# of LOTS / UNITS	SUM POP	TOTAL POP	PEAKING FACTOR	INFILT L/s	Q L/cap/day	DELTA SEWAGE FLOW (not peaking)	TOTAL SEWAGE FLOW (not peaking)	SEWAGE L/s	TOTAL L/s	SIZE mm	SLOPE %	CAP L/s	n	VEL m/s	LENGTH m	FALL IN SEWER	DROP IN MANHOLE	UPPER INVERT	LOWER INVERT
1	MAPLEDENE LANE	SA.12	SA.11	0.32		0.32		2.72	5	14	14	4.40	0.08	210	0.03	0.03	0.15	0.24	200	3.26%	59.22	0.013	1.89	38.3				
F1	FUTURE DEVELOPMENT 1		SA.13	8.41		8.41	12.5	2.72	106	289	289	4.09	2.11	210	0.70	0.70	2.87	5.27	200	0.33%	18.84	0.013	0.60					
2	MAPLEDENE LANE	SA.13	SA.11	0.08		8.49		2.72	0	0	289	4.09	2.13	210	0.00	0.70	2.87	5.29	200	0.49%	22.96	0.013	0.73	37.0				
3	MAPLEDENE LANE	SA.11	SA.10	0.07		8.88		2.72	1	3	306	4.07	2.23	210	0.01	0.74	3.03	5.56	250	0.35%	35.18	0.013	0.72	17.0				
MED.1	BLOCK 62 SOUTH PDC	CAP	SA.10	1.70		1.70	75.0	1.94	128	249	249	4.11	0.43	210	0.61	0.61	2.49	3.16	200	0.40%	20.74	0.013	0.66	17.5				
4	MAPLEDENE LANE	SA.10	SA.9	0.63		11.21		2.72	10	28	583	3.94	2.81	210	0.07	1.42	5.58	8.95	250	0.24%	29.13	0.013	0.59	73.7				
MED.2	BLOCK 62 NORTH PDC	CAP	SA.9	1.70		1.70	75.0	1.94	128	249	249	4.11	0.43	210	0.61	0.61	2.49	3.16	200	0.40%	20.74	0.013	0.66	17.5				
5	MAPLEDENE LANE	SA.9	SA.8	0.70		13.61		2.72	11	30	862	3.84	3.42	210	0.07	2.10	8.05	12.27	250	0.27%	30.90	0.013	0.63	84.3				
6	MAPLEDENE LANE	SA.8	SA.7	0.19		13.80		2.72	2	6	868	3.84	3.46	210	0.01	2.11	8.10	12.37	250	0.26%	30.32	0.013	0.62	42.0				
F2	FUTURE DEVELOPMENT 2		SA.14	9.94		9.94	12.5	2.72	125	340	340	4.05	2.49	210	0.83	0.83	3.35	6.18	200	0.33%	18.84	0.013	0.60					
7	ADDISON AVENUE	SA.14	SA.7	0.22		10.16		2.72	3	9	349	4.05	2.55	210	0.02	0.85	3.44	6.33	200	0.37%	19.95	0.013	0.64	38.0				
8	ADDISON AVENUE	SA.7	SA.6	0.68		24.64		2.72	12	33	1250	3.74	6.18	210	0.08	3.04	11.35	18.67	300	0.21%	44.31	0.013	0.63	82.9				
9	ADDISON AVENUE	SA.6	SA.5	0.74		25.38		2.72	13	36	1286	3.73	6.37	210	0.09	3.13	11.65	19.18	300	0.20%	43.25	0.013	0.61	91.2				
F3	FUTURE DEVELOPMENT 3			30.95		30.95	12.5	2.72	387	1053	1053	3.79	7.77	210	2.56	2.56	9.69	18.43	300	0.20%	43.25	0.013	0.61					
P2	TIMBER RIDGE PHASE 2	CAP	SA.5	13.60		44.55		2.72	187	509	1562	3.67	11.18	210	1.24	3.80	13.92	26.50	300	0.17%	39.87	0.013	0.56	11.5				
10	ADDISON AVENUE	SA.5	SA.4	0.40		70.33		2.72	4	11	2859	3.46	17.65	210	0.03	6.95	24.04	44.10	375	0.15%	67.91	0.013	0.61	60.0				
11	SAINTSBURY LINE	SA.4	SA.3	1.02		71.35		2.72	3	9	2868	3.46	17.91	210	0.02	6.97	24.11	44.43	375	0.15%	67.91	0.013	0.61	82.6				
12	SAINTSBURY LINE	SA.3	SA.2	0.99		72.34		2.72	3	9	2877	3.46	18.16	210	0.02	6.99	24.18	44.75	375	0.25%	87.66	0.013	0.79	83.3				
13	SAINTSBURY LINE	SA.2	SA.1	0.67		73.01		2.72	2	6	2883	3.46	18.33	210	0.01	7.01	24.22	44.97	375	0.25%	87.66	0.013	0.79	82.6				
14	SAINTSBURY LINE	SA.1	82	0.41		73.42		2.72	1	3	2886	3.46	18.43	210	0.01	7.01	24.25	45.10	375	0.49%	122.73	0.013	1.11	16.3				
A165	KENT AVENUE	82	3	0.54		73.96		2.72	4	11	2897	3.46	18.56	210	0.03	7.04	24.33	45.33	200	0.31%	18.26	0.013	0.58	65.3				
A166	KENT AVENUE	3	2	0.87		74.83		2.72	4	11	2908	3.45	18.78	210	0.03	7.07	24.41	45.64	200	0.29%	17.66	0.013	0.56	65.1				
A167	KENT AVENUE	2	1	1.99		76.82		2.72	6	17	2925																	
								1.94	19	37	2962	3.45	19.28	210	0.13	7.20	24.82	46.58	200	0.63%	26.03	0.013	0.83	97.1				
A168	KENT AVENUE	1	162	1.07		77.89		2.72	7	20	2982	3.44	19.55	210	0.05	7.25	24.97	47.01	200	0.25%	16.40	0.013	0.52	90.7				
A169	KENT AVENUE	162	161	0.75		78.64		2.72	6	17	2999	3.44	19.74	210	0.04	7.29	25.09	47.34	250	0.25%	29.73	0.013	0.61	87.6				
A170	KENT AVENUE	161	160	1.01		79.65		2.72	9	25	3024	3.44	19.99	210	0.06	7.35	25.28	47.80	250	0.25%	29.73	0.013	0.61	87.8				
A171	KENT AVENUE	160	130	0.57		80.22		2.72	2	6	3030	3.44	20.14	210	0.01	7.36	25.32	47.99	250	0.25%	29.73	0.013	0.61	88.2				

NOTE: TOWNSHIP OF LUCAN BIDDULPH 2021 LUCAN URBAN MUNICIPAL SERVICING MASTER PLAN BY BMROSS USED TO COMPLETE DESIGN SHEET

BOLD INDICATES SEWER TO BE CONSTRUCTED UNDER THIS CONTRACT

Italics INDICATES INFORMATION TAKEN BY WORK COMPLETED AND PROPOSED BY OTHERS



LEGEND

EXISTING SANITARY SEWER AND MANHOLE

CONCEPTUAL SANITARY SEWER ALIGNMENT AND MANHOLE

SANITARY ANALYSIS CRITICAL PATH

DRAINAGE AREA BOUNDARY

AREA NUMBER

SIZE OF AREA IN HECTARES

POPULATION

F3 POPULATION CALCULATION
AREA = 30.95 Ha
LOT DENSITY = 12.5 LOTS/Ha (URBAN METRICS REPORT)
POPULATION DENSITY = 2.72 PERSONS/LOT
LOT = 30.95x12.5
LOT = 387
POPULATION = 387x2.72
POPULATION = 1,053

P2 POPULATION CALCULATION
TOTAL AREA = 13.60 Ha
NORTH OF PHASE 2 = 5.33 Ha
LOT DENSITY NORTH OF PHASE 2 = 12.5 LOTS/Ha (URBAN METRICS REPORT)
NORTH OF PHASE 2 LOTS = 67
PHASE 2 LOTS = 120
TOTAL LOTS = 187
POPULATION DENSITY = 2.72 PERSONS/LOT
POPULATION = 187x2.72
POPULATION = 509

F2 POPULATION CALCULATION
AREA = 9.94 Ha
LOT DENSITY = 12.5 LOTS/Ha (URBAN METRICS REPORT)
POPULATION DENSITY = 2.72 PERSONS/LOT
LOTS = 9.94x12.5
LOTS = 125
POPULATION = 125x2.72
POPULATION = 340

A167 POPULATION CALCULATION
TOTAL AREA = 1.99 Ha
MEDIUM DENSITY = 1.94 PERSONS/UNIT
SINGLE FAMILY = 2.72 PERSONS/LOT
MEDIUM DENSITY RESIDENTIAL POPULATION = 1.94x19
MEDIUM DENSITY RESIDENTIAL POPULATION = 37
SINGLE FAMILY RESIDENTIAL POPULATION = 2.72x6
SINGLE FAMILY RESIDENTIAL POPULATION = 17
COMBINED POPULATION = 54

F1 POPULATION CALCULATION
AREA = 8.41 Ha
LOT DENSITY = 12.5 LOTS/Ha (URBAN METRICS REPORT)
POPULATION DENSITY = 2.72 PERSONS/UNIT
LOTS = 8.41x12.5
LOTS = 106
POPULATION = 106x2.72
POPULATION = 289

MED.1, MED.2 POPULATION CALCULATION
TOTAL AREA = 1.70 Ha
MEDIUM UNIT DENSITY = 75 UNITS/Ha
MEDIUM DENSITY = 1.94 PERSONS/UNIT
MEDIUM DENSITY RESIDENTIAL UNITS = 75x1.70
MEDIUM DENSITY RESIDENTIAL UNITS = 128
MEDIUM DENSITY RESIDENTIAL POPULATION = 1.94x128
MEDIUM DENSITY RESIDENTIAL POPULATION = 249

NOTE:
LOCATION OF ALL UNDERGROUND SERVICES (SANITARY SEWERS) IS BASED ON "AS CONSTRUCTED" INFORMATION PREPARED BY DILLON CONSULTING, "AS CONSTRUCTED" INFORMATION PROVIDED BY THE TOWNSHIP, AND REGIONAL SEWER INFORMATION PRESENTED IN THE 2021 LUCAN URBAN MUNICIPAL SERVICING MASTER PLAN PREPARED BY BMROSS.

AS CONSTRUCTED SERVICES	COMPLETION	No.	REVISIONS	DATE	BY
DESIGN	AC	1.	ISSUED FOR FIRST SUBMISSION	AUG. 05, 2026	AGM
DRAWN	AC				
CHECKED	LRG				
APPROVED	LRG				
DATE	AUGUST 2026				

ARCHIBALD, GRAY & MCKAY
ENGINEERING LTD.
3514 WHITE OAK ROAD, LONDON, ON, N6E 2Z9
PHONE: 519-885-5000 FAX: 519-885-5003
EMAIL: info@agm.on.ca WEB: www.agm.on.ca

PLAN • SURVEY • ENGINEER

ENGINEER'S STAMP

2219260 Ontario Inc.

SCALE

SCALE - 1 : 2500

TITLE

TIMBER RIDGE SUBDIVISION
SETTLEMENT AREA EXPANSION

SANITARY DRAINAGE AREA
PLAN

PROJECT No.

1598-2

SHEET No.

DAP.1

PLAN FILE No.