



**FUNCTIONAL SERVICING REPORT**

1467 Wharncliffe Road

July 2023

Prepared for:  
Nabataeans Homes Inc.  
127-4056 Meadowbrook Drive  
London, ON N6L 0G1

Prepared by:  
Stantec Consulting Ltd.

Project Number:  
1614-14349

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Signature

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## Acronyms / Abbreviations

FSR	Functional Servicing Report
SWM	Storm Water Management
SWMF	Storm Water Management Facility
WWTP	Wastewater Treatment Plant
IDF	Intensity Duration Frequency
ROW	Right of Way
STM	Storm (referring to stormwater infrastructure)
SAN	Sanitary (referring to sanitary infrastructure)
PDC	Private Drain Connection
PPS	Private Permanent System
OGS	Oil/Grit Separator
AMSL	Average Mean Sea-Level (referring to elevation above)

## **1.0 INTRODUCTION**

### **1.1 Project Description**

Stantec has been retained by Nabataeans Homes Inc. to prepare a Functional Servicing Report (FSR) for the site plan concept for the subject lands located at 1467 Wharncliffe Road South in London, Ontario, herein referred to as the 'site'. This report will outline the Functional Servicing strategy for the proposed development and will supplement the previously submitted Preliminary Servicing Brief (**See Appendix C**).

The proposed development consists of twenty (20) 3.5 storey, residential stacked townhouse units (**see Figure 5 – Site Plan**), providing live-work opportunities near the growing Central Longwoods commercial area. The subject site consists of a 0.264ha parcel of land located on the northwest corner of Wharncliffe Road and Morgan Avenue (**see Figure 1 – Site Plan Location**). The site is legally defined as: Lot 35, Concession 2 in the geographic township of Westminster. The site limits on the boundary of Plan 33M-661, known as Andover Trails Subdivision.

The subject site is currently designated as Auto-Oriented Commercial Corridor (AAOC) as per the City of London 1989 Official Plan and zoned as UR-4 (low-density residential). The site is planned to be redesignated as Multi-Family Medium Density Residential (MFMDR) under zoning R8-4. Further details in the ZBA/OPA applications and Record of Pre-Consultation attached in **Appendix D**.

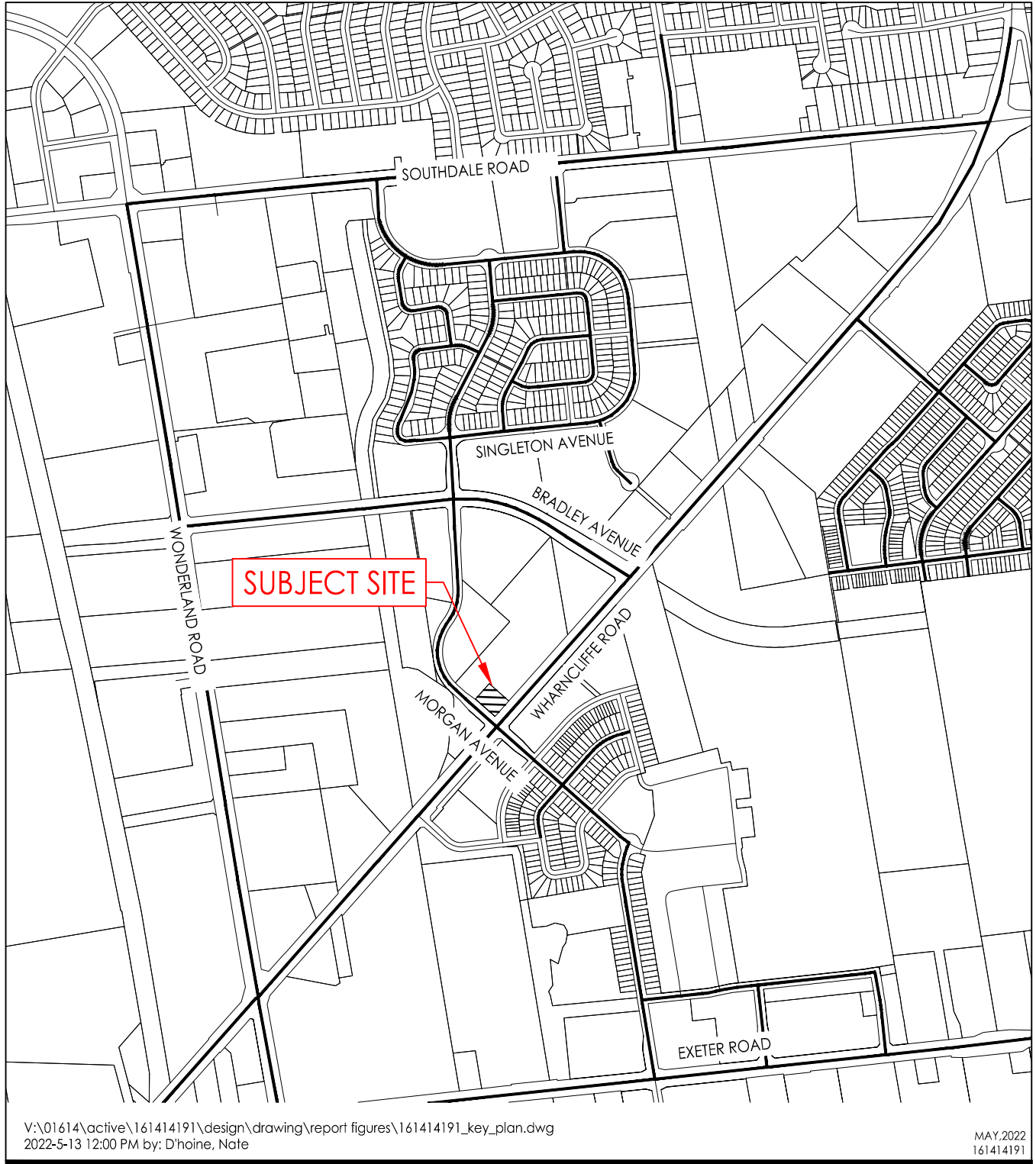
The adjacent Andover Trails South Phase 1 Subdivision is owned by Sifton Properties and is currently being developed under the engineering guidance of Stantec Consulting. The owner is urged to develop a working relationship with the Andover developer to encourage cost-sharing and reduce capital costs.

### **1.2 Purpose of the Report**

The purpose of this Functional Servicing Report is to generally outline the municipal servicing, area grading, Stormwater Management (SWM) and utilities strategies for the Subdivision in support of Application for Draft Plan approval.

This report documents the servicing requirements, including sanitary servicing, water distribution, storm drainage as well as area grading, SWM, and utility requirements for the proposed development. This report demonstrates that the subject lands can be developed with full municipal servicing, SWM, and utilities to the requirements of the various approval agencies.

The servicing strategies presented in this report are conceptual. Detailed engineering drawings will be submitted as part of the detailed engineering design process once the proposed Site Plan Concept has received City of London approval.



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MAY 2022  
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600-171 Queens Avenue  
 London ON N6A 5J7  
 Tel. 519-645-2007

NOT TO SCALE

Figure No.	1.0
Title	KEY MAP

### **1.3 Referenced Documents**

The information presented in this report is based on the review of the following information:

- Preliminary Servicing Analysis brief for 1467 Wharnccliffe Road, prepared by Stantec Consulting (January 2022);
- Record of Pre-Consultation for 1467 Wharnccliffe Road by The City of London (March 2022)
- Andover Trails Functional Servicing Report by Stantec Consulting (April 2022);
- Site Plan Concept by Stantec Consulting (December 2021);
- Preliminary Hydrogeology Assessment prepared by EXP Services Inc. (2022);
- Sanitary Drainage Area Plan (Andover Trails Phase 4) prepared by Stantec Consulting (2017);
- Andover Trails Phase 4 Subdivision Plans (39T-07510) prepared by Stantec Consulting (2015);
- Pincombe Drain Storm Drainage, Stormwater Management, and Drain Restoration Schedule "B" Municipal Class EA Summary Report prepared by Stantec Consulting (2011);
- Andover Trails Subdivision Functional SWM Report by Stantec Consulting (March 2007);
- Andover Trails Phases 3 & 4 Functional SWM Report prepared by Stantec Consulting (2012);
- Andover Trails Subdivision Phase 4 – Functional SWM Report Addendum by Stantec Consulting (Feb 2013);
- Schedule 'A' City of London Official Plan – Land use, Map No.8 (2022).



## **2.0 EXISTING CONDITIONS**

### **2.1 Topographical Information**

Existing topographic information for the subject site was obtained from Ontario Base Maps (OBM). Perimeter grades have been obtained during a topographical survey conducted by Stantec Consulting for Andover Trails on April 5, 2022. Note that no topographical survey has been conducted on the subject site to date.

The subject site exists in a local low point for the surrounding area, including Wharncliffe Road, Morgan Avenue and the adjacent Andover Trails Subdivision. There are measures currently in place to protect the subject site from surface runoff from surrounding sites. These measures include temporary siltation fence, flow diversion swales and temporary berms. Significant fill is expected to be needed for this site, more details in **Section 3.0 Grading and Drainage**.

The existing topography slopes from a high point on the east corner abutting Wharncliffe Road (~268.5m masl) towards the west corner (~266.5m masl). The difference in elevation from east to west is approximately 2.0m over a span of 72.0 m. The average slope of the site under existing conditions is approximately 2-3%. OBM topographic mapping and existing contour elevations suggest that the site has a single catchment area that drains towards Springers Creek Drain (formerly known as Pincombe Drain) SWM facility #2. Surface runoff generally follows site topography, flowing to Morgan Avenue ROW via the northwest property corner to (**See Existing Storm Drainage Figure 2.0**).

## **2.2 Geotechnical Information\***

*\*Disclaimer: Geotechnical information noted herein was obtained for the adjacent Andover Trails Subdivision and does not specifically represent site-specific information. Information is provided for informational purposes only and should not be used in lieu of a geotechnical engineer. Site-specific information may be requested if deemed necessary.*

In 2022, EXP carried out a hydrogeological investigation for the adjacent Andover Trails Subdivision. In addition, EXP has completed several Geotechnical Investigations and Hydrogeological Assessments of neighbouring lands in 2007 (adjacent to subject site), the relevant findings of these reports have been included in the 2022 report. The fieldwork for the investigation involved water well survey, drilling, and installation of 6 groundwater monitors in 6 locations across the site, sampling, and analysis of groundwater in the installed monitoring wells, and monitoring of water level elevations in the wells. For further information, the Preliminary Hydrogeological Assessment completed by EXP can be found in **Appendix D**.

## **2.3 Surficial Geology\***

Based on the results of EXP preliminary hydrogeological investigation, the stratigraphy at the adjacent site is relatively homogenous with clayey silt till at surface overlying silty sand and sand that is up to 4.3m thick.

EXP had reviewed the surficial geological mapping by the Ontario Geological Survey (OGS, 2010). The survey shows that the adjacent site is mapped as having modern alluvial deposits of clay, silt, sand, and gravel with minor organic remains which are associated with the natural formation of Springers Creek Drain.

## **2.4 Groundwater Levels and Flow\***

Manual water levels in the monitoring wells have been collected monthly starting in December 2021 and are currently ongoing until June 2022. Groundwater encountered at depths ranging from 3.57-5.93 m, which excludes results from some boreholes which may have still been recovering at the time of measurement. The elevation of the encountered groundwater ranged from 265.11-265.13 m. Based on the groundwater elevations, it is determined that shallow groundwater is generally flowing in a southwest direction. Further evaluation of seasonal trends and precipitation impacts will be discussed in the final hydrogeological report when more data is available (**see Report in Appendix D**). Note that no groundwater monitoring wells have been installed on the subject site and local groundwater levels may differ from the above stated.

## **3.0 GRADING AND DRAINAGE**

### **3.1 Design Constraints and Procedures**

Constraints in lot grading are as follows:

- Match existing grades around the perimeter of the site to tie into the proposed grades of the adjacent land development.
- Allow for tie-in to existing storm and sanitary infrastructure provided by Andover Subdivision developers.
- Match existing grades on east (Wharncliffe Road) and south (Morgan Avenue), where possible, to minimize grading and cut/fill quantities and minimize changes to the surface hydrology and hydrogeology of the area.
- Satisfy the City of London guidelines for minimum and maximum parking lot, boulevard, and swale grades where possible.
- Provide a major overland flow route for flows in excess of the storm sewer capacity towards adjacent Morgan Avenue right-of-way.
- Maintain adequate cover over storm sewers, sanitary sewers, and watermains.

### **3.2 Existing Roads**

Two roads are adjacent to this site which include:

- Wharncliffe Road South, which runs along the southeast limit of the site.
- Morgan Avenue, which generally runs along the southwest limit of the site.
- \*A private, unnamed window street northwest of the site in the Andover Trails Subdivision development.

*\*Proposed design, expected to be existing at the time of project construction.*

### **3.3 Overall Site Grading**

A high-level grading exercise has been carried out to help understand the grading requirements to meet the constraints in **Section 3.1**.

Existing grade along the west property line is approximately 266.5m, proposed grades (for adjacent proposed development) are maintained along the property line with a proposed retaining wall approximately 2 metres west of the property line at a top of wall elevation ranging from approximately 268.40 to 270.15 masl. According to a preliminary grading exercise, fill matching into the proposed grading of the adjacent Andover Trails subdivision will be required to properly convey flow to Morgan Avenue, this will be determined during the detailed design of the subject site. Given the sudden change in elevation, a temporary retaining wall would need to be constructed along much of the property line fronting Andover Trails. The interim retaining wall would be fully or partly eliminated if the owner allows grading onto the site, or imports fill along the west and north property lines to match existing proposed grades during the development of Phase 1 Andover Trails. It is expected that ultimate grading will match the proposed grades of Andover Trails and a permanent retaining wall will not be required. The owner is advised to allow the Andover developer to install a 3:1 slope onto the subject site as it reduces overall fill requirements and incurs no additional cost. This would require a formal agreement between developers before any grading could be conducted on neighbouring lands.

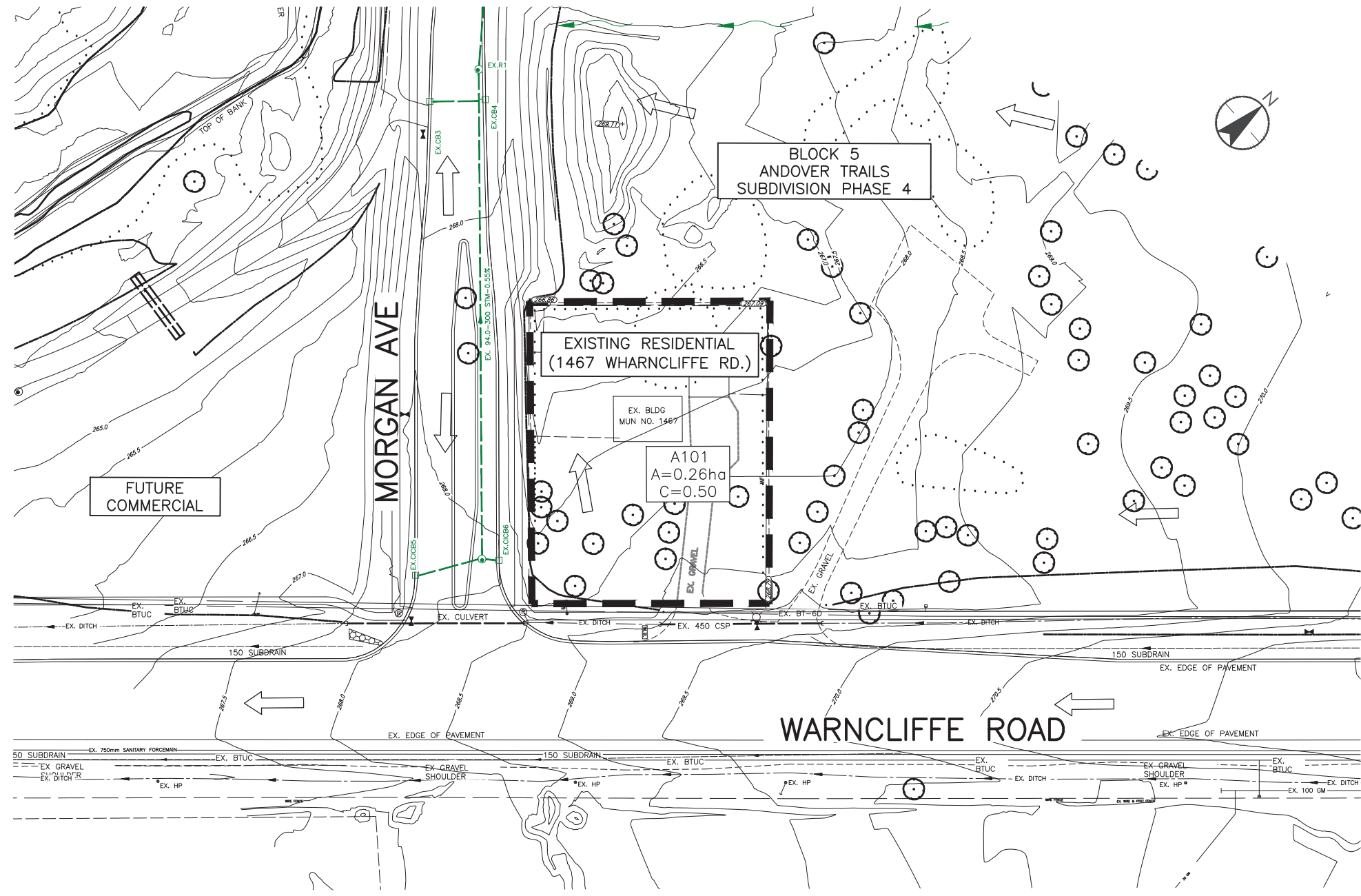
Estimated building elevations are based on ultimate elevations on Wharnccliffe Road and expected to be approximately 270.2m. The entire site will drain toward Morgan Avenue via the amenity area (**See Figure 5 – Site Plan** for location of amenity area). Swales and LID features may be required as part of the SWM design to convey runoff (quality control not required, discussed further in **Section 5.0 Storm Servicing**).

Overland flow must be directed to the existing Springers Creek Drain SWM Facility #2 as intended by the original subdivision drainage master plans. Since no overland flow can be directed west into the proposed Andover Trails Subdivision, overland flow must follow the original topography and be routed to the adjacent Morgan Avenue Corridor via the west property corner. The road profile on Morgan Avenue suggests that any water not directed to the west corner will not be conveyed to the SWMF. The local highpoint on Morgan Avenue is located about 3m east of the west property corner at a centreline elevation of 268.42m, any flow directed to the west of the highpoint will flow down Morgan Avenue and follow designated flow routes into the SWMF, as intended. Therefore, the site shall be graded such that overland flows from the entire site can be directed towards the west property corner to allow for quantity control.

Where possible, topsoil will be used as fill within green spaces (i.e., amenity areas, boulevards, and rear yards) to minimize importing of fill material. Grading will be designed to minimize the requirement for importing of material. It is not expected for this site to generate any export material, except where unsuitable native material cannot be used as backfill.

**Refer to Figure 2 below for more information about the existing conditions of the site.**

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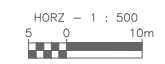
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Legend	
<span style="border: 1px dashed green; padding: 2px;">A101 A=0.58ha. C=0.70</span>	AREA ID
<span style="border: 1px solid black; padding: 2px;">A101 A=0.58ha. C=0.70</span>	AREA RUNOFF COEFFICIENT
<span style="border-top: 2px dashed black; width: 50px; display: inline-block;"></span>	DRAINAGE AREA BOUNDARY
<span style="border-top: 2px dashed green; width: 50px; display: inline-block;"></span>	EXISTING STORM SEWER

- ← EXISTING DRAINAGE SWALE
- EXISTING OVERLAND FLOW ROUTE



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 London, ON

Figure No.  
 1

Title  
 EXISTING STORM  
 DRAINAGE FIGURE

## 4.0 SANITARY SERVICING

### 4.1 Sanitary Servicing Background

The site is within the Bostwick/Dingman Creek Pumping Station area and Greenway WWTP sanitary sewershed. Sanitary flows are directed towards the Bostwick Pumping Station tributary to the municipal 750mm diameter sanitary force main south of the centerline on Wharncliffe Road. The Bostwick Pumping Station is slated to be decommissioned upon full build-out of Andover Phase 4 Subdivision (tentatively 2026, based on phasing information provided by Sifton Properties). Decommissioning of the pumping station is not anticipated to have any impact on the subject site.

Andover Trails Servicing Letter (dated June 15, 2017) prepared by Stantec, addresses the updated sanitary area plan which reflects changes made for the revised block limits. This letter states that sufficient downstream capacity is available based on proposed land use changes. The subject site is to be serviced through future sewers installed by others, on a private easement which passes through Andover Trails Subdivision (specifically Block 5, see Servicing Letter) ultimately outletting to S84 on Morgan Avenue.

### 4.2 Proposed Sanitary Servicing

The preferred servicing route would be made via a future sewer stub provided by the developers of Block 5, Andover Trails Subdivision. The 200mm sanitary stub has a proposed invert elevation of 266.29m and an existing ground elevation of approximately 266.7m. Therefore, significant fill volume (approximately 3.0m) is needed at the stub location to maintain minimum pipe cover (minimum 2.4m from pipe obvert to finished ground elevation). It is anticipated that this connection will provide adequate grade to service the site via gravity.

The total sewage flow allocated for the site is 0.63L/s and was calculated using a 230 Litre per Capita per Day. Contributing population based on the most current site plan is 48 people with a total sewage output of 0.63L/s. Any alteration to site population must be made known to the owner's engineer.

**Medium Density: 2.4 People/Unit x 20 Units = 48 People**

**Table 1 – Allocated areas and populations**

Block No.	Area	Areas (ha)	Population	Sanitary Connection
Block 5	A101	0.26	48	S15

**Refer to Figure 3 for the proposed sanitary sewer.**



## 5.0 STORM SERVICING

### 5.1 Storm Servicing Background

The subject site is in the Dingman Creek Watershed, any recommendations made herein will be in made in conjunction with the Dingman EA Stage 1 (**provided in Appendix C**). Stantec has prepared a Stormwater Management (SWM) report for Andover Trails Subdivision to address the stormwater strategy for the proposed site while being compatible with the approved Andover Trails Subdivision Drainage Area Plans.

Major storms of up to 100-Year design storm, are accounted for in the existing downstream SWMF 2 for the subject site. The quantity control for the minor flows on site were accounted for in the downstream system design. For more information, refer to **Appendix C** for the Functional SWM report (March 2007), Functional SWM Addendum (Feb 2013), and grading and servicing plans for Andover Trails Subdivision Phase 1 prepared by Stantec Consulting.

A servicing letter and a storm drainage area plan was prepared by Stantec Consulting Ltd. dated June 2017, which show the storm servicing strategy for the site. Refer to **Appendix C** for the letter and storm drainage area plan prepared by Stantec. The letter and the plan show that the site is accounted for in the SWM system. Table 2 below summarizes the accounted for areas and runoff coefficients from the subject site, noting that no external areas are accounted for in the storm design.

**Table 2 – Allocated areas and runoff coefficients**

Block No.	Drainage Area	Areas (ha)	Runoff Coefficient	Storm Sewer Connection	A x C
Block 5	A101	0.28	0.90	CBMH2	0.243

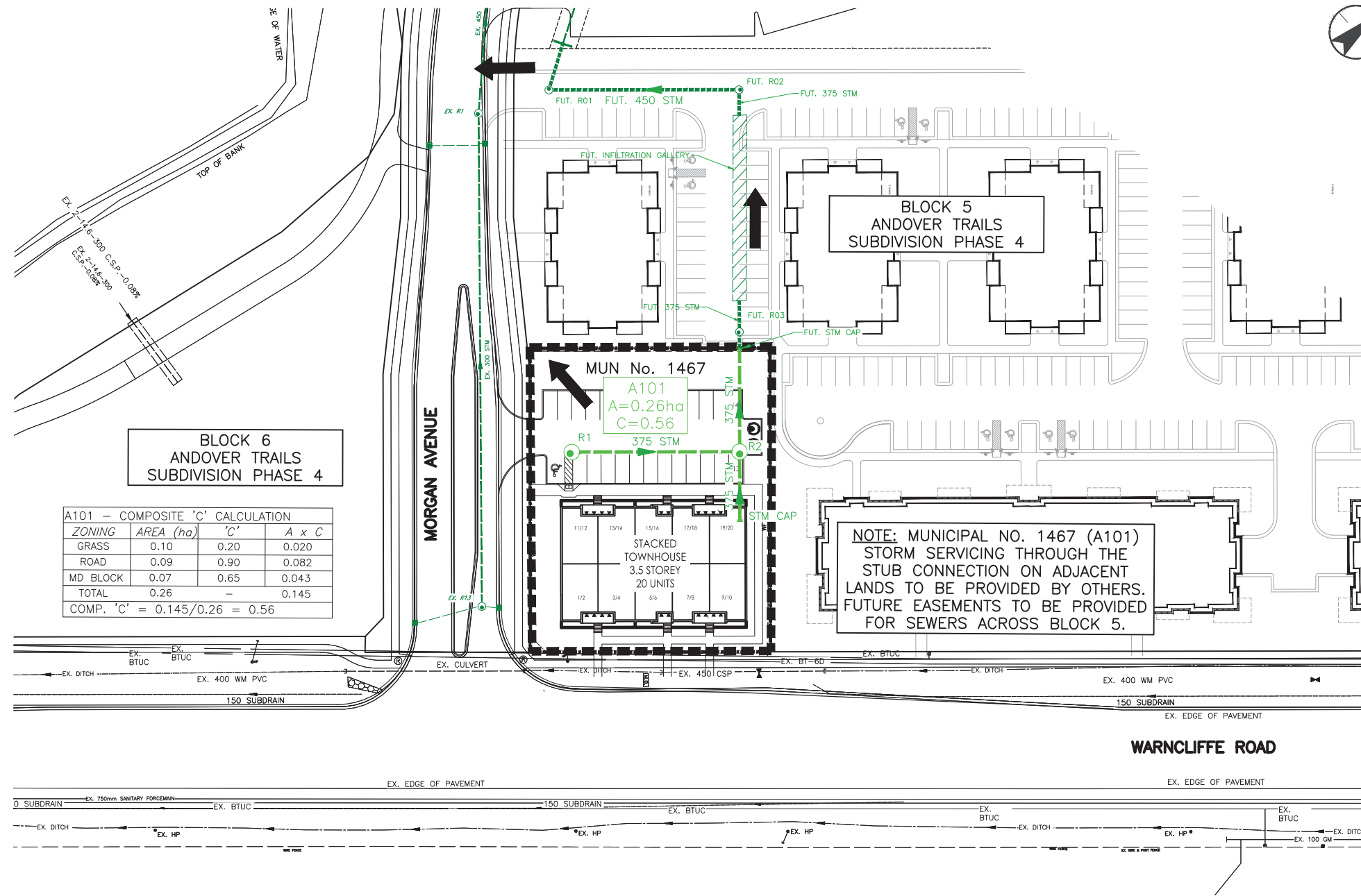
The storm sewer servicing the subject site discharges directly into the main cell of Springers Creek Drain SWMF 2, by-passing the sediment forebay. According to City of London Design Requirements 6.2.1.3 a), water quality is not required for residential sites with less than 30 parking spaces. Therefore, no OGS unit is needed on the subject site given the number of allocated parking lot spaces does not exceed 29.

The accounted for areas and minor storm runoff allocations in the existing storm sewer connections were designed as per the City of London minor storm events corresponding to the 5-year storm event. Refer to **Appendix C** for the existing storm sewer design sheet included in the servicing letter.

**Refer to Figure 4 below for the proposed storm sewer and storm area plan.**



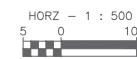
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**Legend**

- A1  
A=0.58ha.  
C=0.70 AREA ID
- AREA RUNOFF COEFFICIENT
- DRAINAGE AREA BOUNDARY
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FUTURE STORM SEWER

- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE



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Figure No.  
2

Title  
**STORM ROUTING FIGURE**



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## **5.2 Storm Servicing of Subject Site**

The preferred servicing route will be made via a future sewer stub provided by the developer of Block 5, Andover Trails Subdivision. The proposed 375mm storm stub has a proposed invert elevation of 266.61m. Fill is required at the stub location to maintain minimum pipe cover (minimum 1.5m from pipe invert to finished ground elevation), fill requirements discussed in **Section 3.3 Overall Site Grading**. Note that minimum pipe elevations can be violated, if necessary, given that insulation is provided as per City of London W-CS-68. It is anticipated that the stub will provide sufficient grade to gravity service the site.

The proposed storm sewers within the site will be designed to convey all minor storm events (up to and including 5-year storms) as per the City of London 2022 design parameters. The major storm events (greater than 5-year storms) will be directed towards the existing SWM facility via the designated major overland flow routes.

Based on a review of the external drainage area included in the design of the existing storm sewers within the existing Andover Trails Subdivision, the site area has allocation in the connection at the west site boundary with an A x C of 0.243. The A x C value was used in the existing Andover Trails Subdivision design along with the 5-year IDF parameters currently acceptable by the City of London for the design of minor storm sewer systems.

Given the conservative runoff coefficient of 0.90 designated to the subject site, it is expected that no quantity control measures will be required on-site. All minor flows can be directed towards the existing SWMF without restriction the runoff coefficient does not exceed 0.90. The current estimated runoff coefficient based on the attached site plan is 0.56 (**See A101 Composite 'C' Calculation, Figure 2**).

## 6.0 WATER DISTRIBUTION SYSTEM

### 6.1 Water Servicing Background

Water is available via the low-level system on the 400mm watermain on Wharncliffe Road South or the 250mm high-level watermain on southwest side of Morgan Ave. Both mains are connected through a tapping sleeve and valve located at the southwest corner of Morgan Avenue and Wharncliffe Road South.

The existing 250mm diameter PVC watermain on Morgan Avenue interconnects with the existing Westbury and Bierens Land Subdivisions on the northwest. This connection ultimately leads to the high-level system on Southdale Road with an existing 300mm diameter watermain and a hydraulic grade line of 335.0 m. Additionally, the existing 250mm watermain on Morgan Avenue is looped at the Wharncliffe Road Intersection to the low-level 400mm diameter watermain via a 250mm check valve.

### 6.2 Proposed Water Servicing

There are two options for servicing the site, best options for connection can be revisited after completion of a water analysis of the subject site.

#### **Option 1: Connect to the 250mm watermain on Morgan Avenue.**

This option would require connection to the existing 250mm watermain on the south side of Morgan Avenue with a tapping sleeve and valve. It is anticipated that connection to the high-level system on Morgan Ave. (335.0m HGL) would require the installation of pressure reducing valves as the pressure is likely to exceed 80psi. This option would likely entail the most cost as the watermain will need to cross Morgan Avenue ROW.

#### **Option 2: Connect to the 400mm watermain on Wharncliffe Road.**

This option requires connecting to the 400mm main on the southeast property line fronting Wharncliffe Road with a tapping sleeve and valve. Connection here would reduce the length of required watermain installation. It is expected that this connection will provide adequate pressure for servicing based on preliminary grading elevations. (**See 3.3 Overall Site Grading for details**). This option requires the least length of installed watermain and no road crossings.

Note that a third option was investigated for water servicing through Andover Phase 1 via the provided sanitary and sewer easements. However, the developer has declined to provide such a connection.

A secondary connection for looping is not required as the development contains less than 80 units, and the site is anticipated to be part of one condo corporation (DSRM 7.9.5 b) and c)).



**Liability Note**

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

**Design Data**

Existing Zone:	UR4	
Proposed Zone:	R8-4( ) with special provisions	
Proposed Use:	Stacked Townhouse - 20 Units	
Site Area (m <sup>2</sup> ):	2,647 m <sup>2</sup> / 0,264 ha	
Regulation	Requirement	As Shown on Plan
Lot Area Minimum (m <sup>2</sup> ):	1,000 m <sup>2</sup>	2,647 m <sup>2</sup>
Lot Frontage Minimum (m):	30.0 m	45.72 m
Front Yard Depth (m) minimum:	7.0 m	5.5 m *
Exterior Side Yard Depth (m) minimum:	7.0 m	5.5 m *
Interior Side Yard Depth (m) minimum:	4.8 m	4.8 m
Rear Yard Depth (m) minimum:	4.5 m	30.2 m
Landscaped Open Space (%):	30%	39.4%
Lot Coverage Maximum (%):	40%	27.7%
Height Maximum (m):	13 m	12.6 m
Density - Units per Hectare Maximum:	75 uph	76 uph *
Off-Street Parking:	0.5 per unit = 10	27

\*SPECIAL PROVISIONS REQUIRED

**Notes**

- THIS IS A COMPILED PLAN AND SHOULD NOT BE CONSIDERED A PLAN OF SURVEY.
- ONTARIO BASE MAPPING USED FOR AREAS AND DIMENSIONS. LEGAL PLAN REQUIRED FOR PRECISE CALCULATIONS.

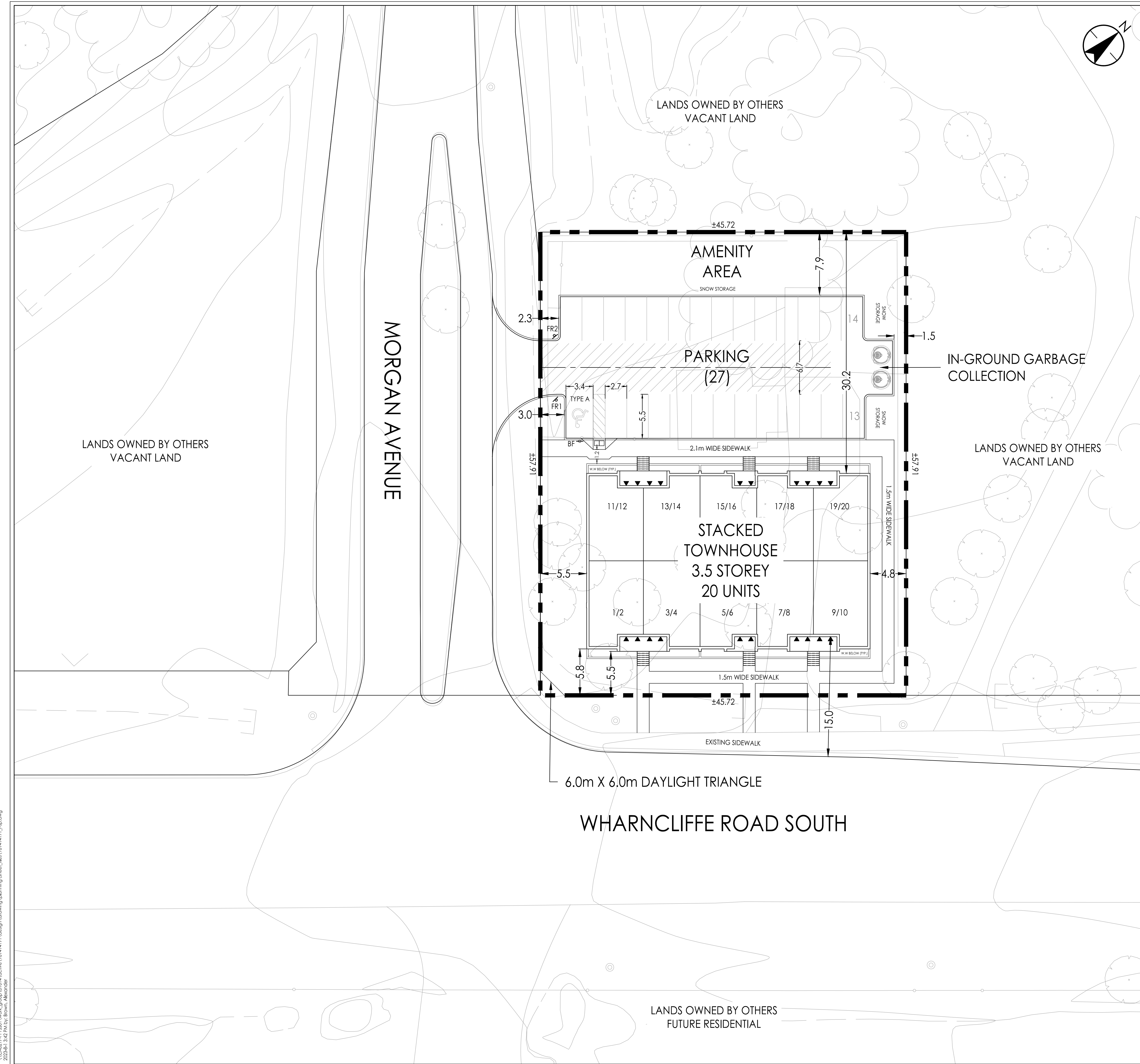
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Revision	By	Appd.	YY.MM.DD
2. FOR ZBA APPROVAL	RT	BB	23.07.26
1. FOR PRE-CONSULTATION	RT	BB	
Issued	By	Appd.	YY.MM.DD
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	Dwn.	Chkd.	Dsgn.
			22.05.25
			YY.MM.DD

**Permit-Seal**

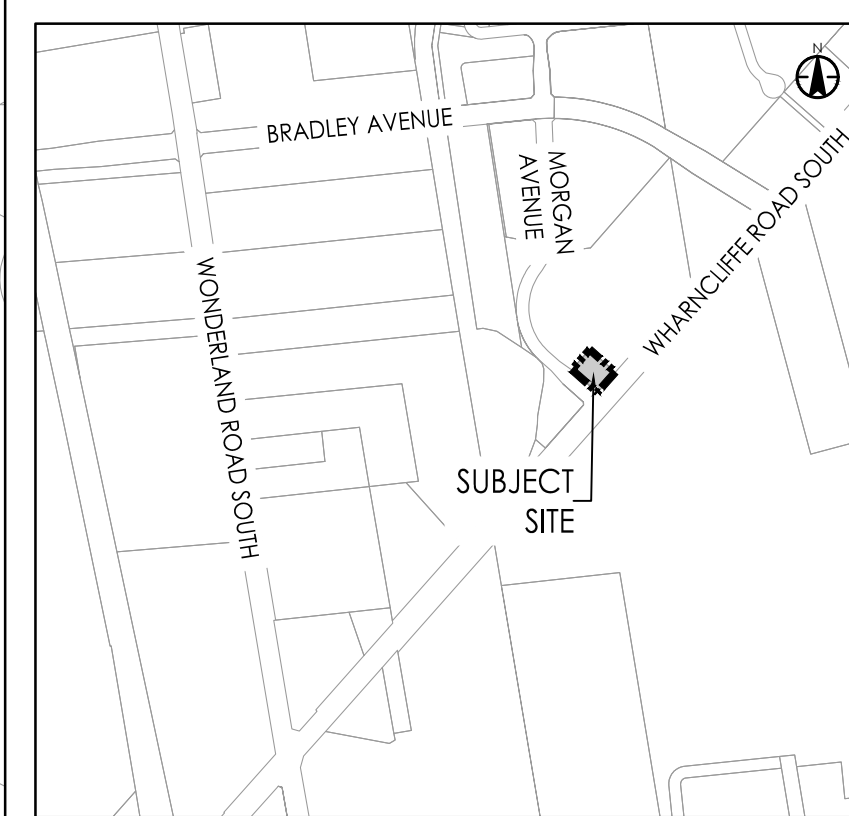
Client/Project  
NABATAEANS HOMES  
  
1467 WHARNCLIFFE ROAD SOUTH  
  
London, ON Canada

Title  
SITE PLAN

Project No.	Scale	HORZ - 1 : 250
161414349	2.5 0 5m	
Drawing No.	Sheet	Revision
1	1 of 1	1



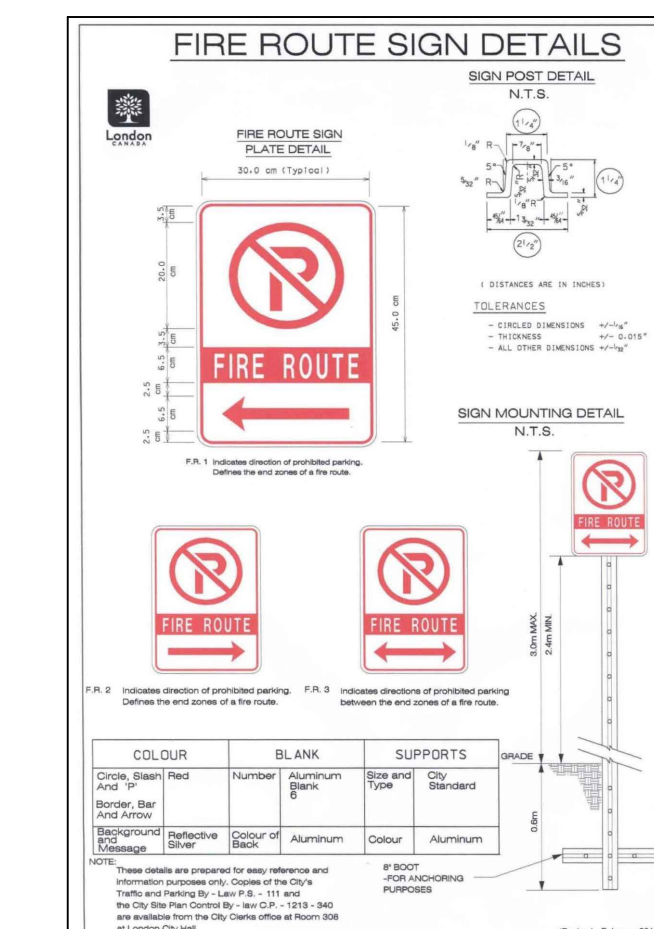
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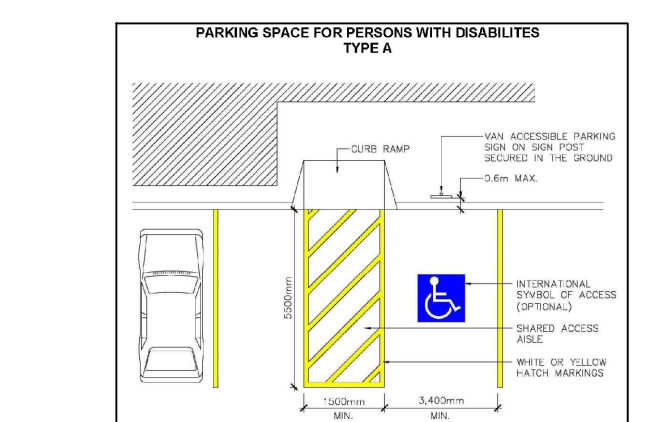
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**Legend**

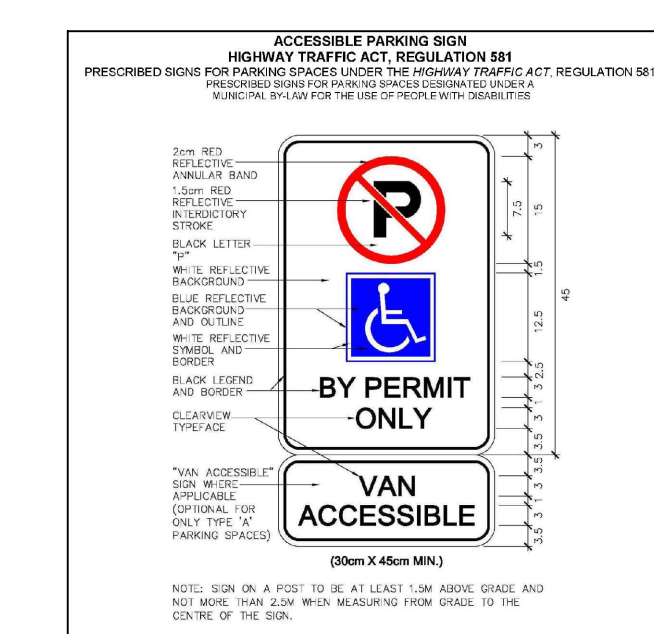
- SITE BOUNDARY
- FIRE ROUTE
- FR1 FIRE ROUTE SIGN
- BF ACCESSIBLE PARKING SIGN
- CONTOUR
- ▲ BUILDING ENTRANCE



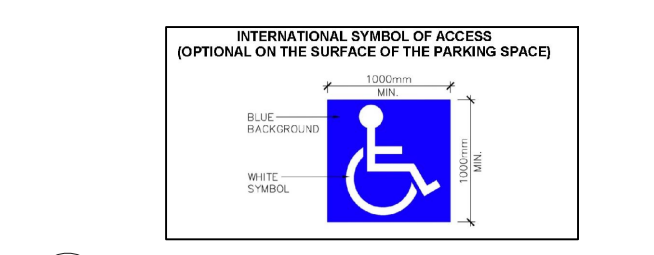
FIRE ROUTE SIGN



ACCESSIBLE PARKING - TYPE A



ACCESSIBLE PARKING SIGN



ACCESSIBLE PARKING SURFACE MARKING

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 2023-07-26 3:42 PM by Brown, Alexander  
 ORIGINAL SHEET - ANS1D

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

This report was prepared to provide an assessment of the existing water, storm, and sanitary servicing infrastructure in support of the approval of the site plan concept for the lands located at the municipal address 1467 Wharncliffe Road. Based on the foregoing analysis, it is concluded that:

- Quantity controls of the stormwater runoff from the minor flows (<5-year design storm) from the proposed site are provided in the existing SWMF 2.
- Quality control not required because on-site parking has less than 30 spaces.
- Overland flow routes will be provided via the right-of-way of the adjacent Morgan Avenue and must be conveyed to the existing SWMF 2 via the west property corner due to topographical constraints presented by the Morgan Avenue profile (spillway location shown on storm figure).
- Water is available to the site via one of two possible connections, depending on owner priorities.
- Given the capacity of the downstream storm and sanitary systems at the provided connection stubs, the proposed site can be adequately serviced by municipal sewage, and storm drainage.

Additional grading, servicing and SWM details will be provided during detailed design.

We trust this meets with your requirements. Should you have any questions, or require further information, please contact the undersigned.

Sincerely,

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