



February 5, 2024

Our File: 421067

Township of Woolwich
24 Church Street West,
P.O. Box 158
Elmira, ON N3B 2Z6

Attention: Stephen Dykstra
Lori Fox
Bryan Bishop

Re: Sanitary Sewer Servicing Strategy
Hawkesville Road Lands
Township of Woolwich (St. Jacobs)

In support of the proposed future development of the lands to the north and south of Hawkesville Road in the Township of Woolwich (St. Jacobs), GM BluePlan Engineering Limited (GM BluePlan) have prepared this sanitary sewer servicing strategy to document the various sanitary servicing options investigated and analyzed.

BACKGROUND INFORMATION

The purpose of this sanitary sewer servicing strategy is to ensure a comprehensive and cost-efficient approach that can be implemented to service the lands located along the north and south sides of Hawkesville Road.

The subject properties included in this analysis include the following:

- a) 47 Hawkesville Road – consisting of approximately 0.82-ha of lands on the south side of Hawkesville Road and bordered by Hawkesville Road to the north, existing residential development to the east, and 51-55 Hawkesville Road to the south and west,
- b) 51-55 Hawkesville Road – consisting of approximately 7.19-ha of lands on the south side of Hawkesville Road and bordered by Hawkesville Road to the north, existing residential development and 47 Hawkesville Road to the east, Conestogo River to the south, and Waterloo Central Railway lands to the west.
- c) 52 Hawkesville Road - consisting of approximately 9.67 ha of lands on the north side of Hawkesville Road and bordered by agricultural lands to the north, Calvary United Church to the east, Hawkesville Road to the south and Waterloo Central Railway lands to the west,
- d) 56 Hawkesville Road – consisting of approximately 0.42-ha of lands on the north side of Hawkesville Road and bordered by 52 Hawkesville Road to the north and east, Hawkesville Road to the south and 60 Hawkesville Road to the west;
- e) 60 Hawkesville Road – consisting of approximately 0.76-ha of lands on the north side of Hawkesville Road and bordered by 52 Hawkesville Road to the north, 56 Hawkesville Road to the east, Hawkesville Road to the south and Waterloo Central Railway lands to the west;

The analysis and evaluation of each potential sanitary sewer servicing strategy considered the following criteria:

- i. That it can comprehensively service both properties,
- ii. That the volume of fill material required is minimized,
- iii. That the impact to the adjacent properties is minimized / mitigated,
- iv. That the servicing strategy is cost effective from both an initial capital cost perspective and a long-term operation and maintenance perspective,
- v. That the constructability is feasible, and
- vi. That the requirement for additional property acquisitions and/or easements on adjacent lands is possible/feasible.

SANITARY SEWER SERVICING STRATEGIES

Option #1 – Extension of a gravity sanitary sewer from the existing sanitary sewer on Hawkesville Road

There is an existing 200mm diameter sanitary sewer on Hawkesville Road which was reconstructed by the Region of Waterloo in 2020. It is currently terminated at the easterly limit of the proposed development lands.

Based on our review of the existing sanitary sewer invert elevation and the existing site topography for both the Hawkesville North and Hawkesville South lands, only a portion of the lands can be serviced via a gravity sanitary sewer connection. To service the remainder of the Hawkesville North and South lands via gravity, a significant volume of fill material (i.e., approximately 6-12m) would need to be placed and compacted on the development lands to ensure adequate cover is provided on the gravity sanitary sewer.

On this basis, it is not feasible to service the Hawkesville North and Hawkesville South lands via a gravity connection to the existing sanitary sewer on Hawkesville Road due to the elevation of the existing sanitary sewer and the volume of fill material that would be required.

Option #2 – Extension of a gravity sanitary sewer from the existing sanitary sewer at the intersection of Northside Drive / Eby Street / King Street North (parallel with Conestogo River)

The extension of a gravity sanitary sewer from the existing 250mm diameter sanitary sewer on Northside Drive was also investigated. This included a connection to the existing sanitary sewer at the intersection of Northside Drive and Eby Street, and the extension of a sanitary sewer in a westerly direction, parallel with the Conestogo River, to the boundary of the Hawkesville South lands.

Due to the existing topography along this route and the steep slopes adjacent to the Conestogo River (between the Conestogo River and the rear yards of the existing properties along Chris Court), there is insufficient cover for a gravity sanitary sewer.

The constructability of a gravity sanitary sewer along this alignment was also reviewed and is not recommended due to the steep slopes, the potential impact to the existing steep slopes (i.e., failure of the slope), the existing vegetation in this area that would require removal, and access to the site for construction and future maintenance activities. In addition to this, a gravity sanitary sewer along this alignment would require the installation of structures within (or in close proximity to) the Conestogo River floodplain, which may result in long-term operation and maintenance concerns with respect to inflow and infiltration.

Based on the above, the sanitary sewer servicing of the Hawkesville North and Hawkesville South lands via a gravity connection to the existing sanitary sewer at the intersection of Northside Drive / Eby Street / King Street North (parallel with Conestogo River) is not recommended.

Option #3 – Extension of gravity sanitary sewer from the existing sanitary sewer on Chris Court

The potential extension of a gravity sanitary sewer from the existing sanitary sewer on Chris Court was also reviewed and investigated. Through this investigation, it was determined that the existing sanitary sewer located in the Chris Court cul-de-sac has sufficient depth to provide a gravity sanitary outlet for both the Hawkesville North and Hawkesville South lands, provided that earthworks (cut/fill) operations occur on both sites to provide sufficient cover on the sanitary sewer.

Since Chris Court is fully developed with established residential properties, the provision of a gravity sanitary sewer would require the extension of a sewer on easement through private property. Based on the depth of the existing sanitary sewer on Chris Court and the depth of the sanitary sewer that would be extended on easement through private property to the Hawkesville South lands, it is anticipated that construction activities would require shoring to maintain and protect the existing residences adjacent to the easement. The provision of access to all residential properties during construction of the works will also be challenging given the depth of the existing sanitary sewer on Chris Court.

Based on the above and the impact/disturbance to the existing residents on Chris Court, the sanitary sewer servicing of the Hawkesville North and Hawkesville South lands via a gravity connection to the existing sanitary sewer on Chris Court is not recommended as Chris Court is fully developed with established residential properties. This option would also require the acquisition of another property (including demolition of an existing single family home) and/or the provision of a significant easement across an established residential property to permit the construction and long-term inspection, operation and maintenance of the gravity sanitary sewer.

Option #4 – Extension of a gravity sanitary sewer from the existing sanitary sewer on Northside Drive (north of the Northside Drive / Hawkesville Road intersection)

The potential extension of a gravity sanitary sewer from the existing sanitary sewer on Northside Drive (approximately 450m north of the Northside Drive / Hawkesville Road intersection) was also reviewed.

Based on our review of the existing sanitary sewer invert elevation and the existing site topography for the Hawkesville North lands, a significant volume of fill material (i.e., approximately 5m) would need to be placed and compacted on the development lands to ensure adequate cover is provided on the gravity sanitary sewer.

The extension of a gravity sanitary sewer from the existing sanitary sewer on Northside Drive (north of the Northside Drive / Hawkesville Road intersection) does not allow for the sanitary sewer of the Hawkesville South lands.

On this basis, Option #4 does not provide a comprehensive servicing strategy for both the lands to the north and south of Hawkesville Road. Option #4 does not permit the Hawkesville South lands to be serviced and is not recommended.

Option #5 – Provision of a Sewage Pumping Station on Hawkesville South Lands ultimately discharging via a forcemain to the existing sanitary sewer on Hawkesville Road

The provision of a municipally owned and operated sewage pumping station within the limits of the Hawkesville South development lands would allow for the servicing of both the Hawkesville South and Hawkesville North lands. Sanitary sewers within the limits of both the Hawkesville North and Hawkesville South lands would convey sanitary flows via gravity to the sewage pumping station. Discharge from the sewage pumping station would then be conveyed via a forcemain to the existing sanitary sewer on Hawkesville Road.

This option reduces the volume of fill material required for the development of both the Hawkesville North and Hawkesville South lands. Option #5 also provides a long-term permanent solution for the servicing of these lands, as well as potential future growth in the northwest quadrant of St. Jacobs. The use of the recently construction sanitary sewer on Hawkesville Road as an outlet for the sewage pumping station discharge, will also improve the flow and maintenance activities in this sewer due to low flow rates and velocities.

EVALUATION

	OPTION #1	OPTION #2	OPTION #3	OPTION #4	OPTION #5
i. That it can comprehensively service both properties	X	✓	✓	X	✓
ii. That the volume of fill material required is minimized	X (6-12m)	✓	✓	X (1-4m)	✓
iii. That the impact to the adjacent properties is minimized / mitigated	X	X	X	✓	✓
iv. That the servicing strategy is cost effective from both an initial capital cost perspective and a long-term operation and maintenance perspective	X	X	X	X	✓
v. That the constructability is feasible	✓	X	X	✓	✓
vi. That the requirement for additional property acquisitions and/or easements on adjacent lands is possible/feasible	N/A	X (GRCA lands)	X (Private Property)	N/A	N/A

CONCLUSIONS

Based on the above sanitary servicing strategies, and in consideration of the various constraints, which include the following:

- Conestoga River floodplain,
- Steep slopes,
- Earthworks (cut/fill) required to provide sufficient cover,
- Comprehensively servicing the lands located to the south and north of Hawkesville Road,
- Discussions with Region of Waterloo and Township of Woolwich Staff, and,
- The potential impact to the existing residential properties on Chris Court,

Our recommended sanitary servicing strategy is a municipally owned and operated sewage pumping station (Option #5 as described above).

Option #5 provides a comprehensive, efficient, and cost-effective servicing approach, that is also constructable and mitigates the potential for impacts to the natural environment (i.e., the Conestoga River floodplain and adjacent steep slopes) and the adjacent residents.

Option #5 is a single servicing option that supports the development of all of the lands located to the south and north of Hawkesville Road.



We trust this is the information you require at this time. If you have any questions or require additional information, please do not hesitate to call.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED

A handwritten signature in blue ink, appearing to read 'AKroetsch'.

Angela Kroetsch, P.Eng.

AK/pw

Encl.

cc: Jeremy Vink, Township of Woolwich
Deanne Friess, Township of Woolwich
Mike Puopolo, Polocorp

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FILE W:\Kitchen\421-2021\421067 - St Jacobs Hawkesville Northside Road\Drawings\421067 - Servicing Options Figures.dwg LAYOUT: Servicing Option 1
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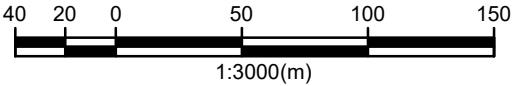


421067
SANITARY SEWER SERVICING
STRATEGY
HAWKESVILLE ROAD LANDS
TOWNSHIP OF WOOLWICH
(ST JACOBS)



- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
- EXISTING SANITARY SEWER AND MAINTENANCE HOLES
- PROPOSED SANITARY FORCEMAIN

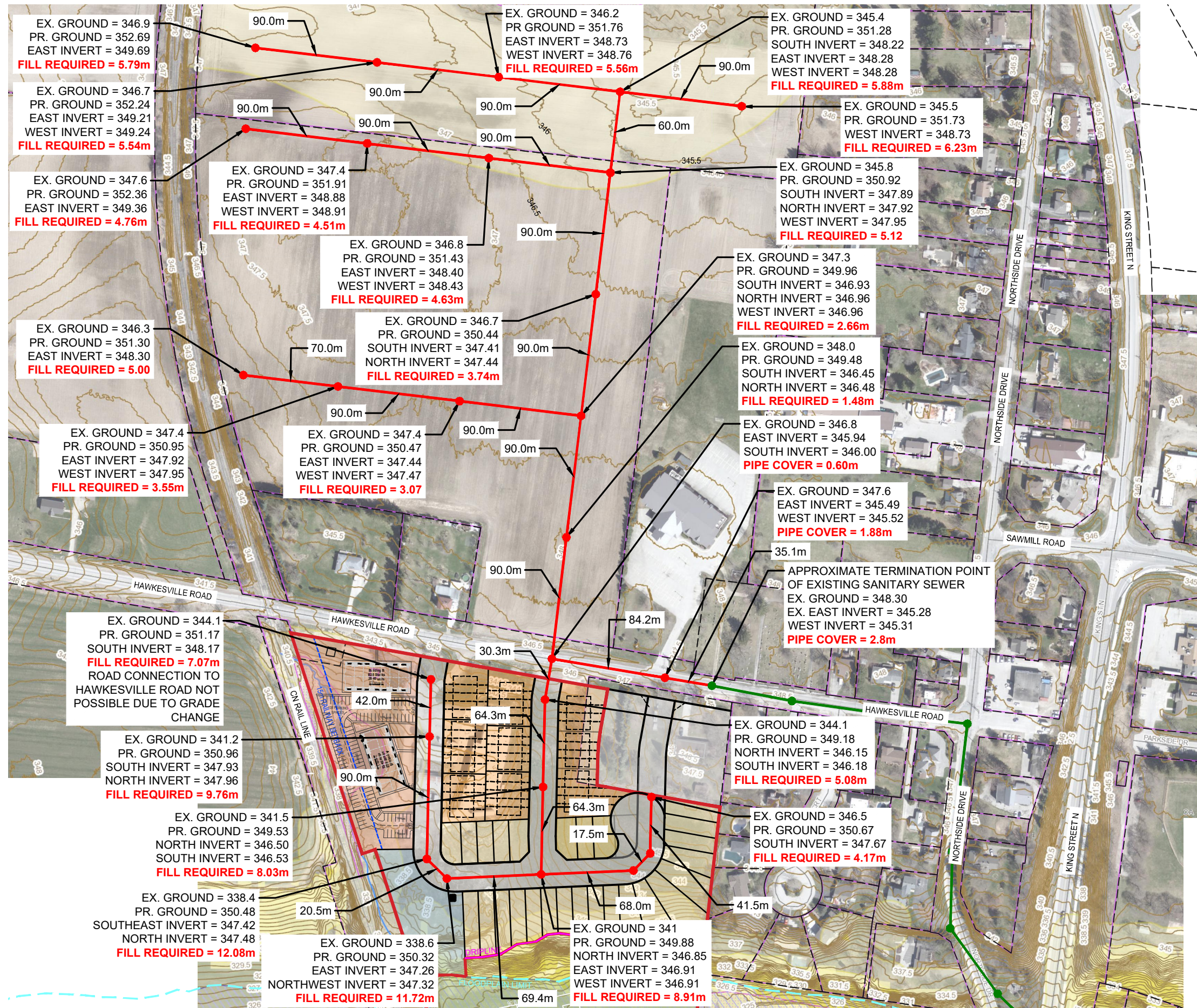
- NOTES:
- COVER IS MEASURED TO PIPE OBVERT.
 - TOWNSHIP OF WOOLWICH AND REGION OF WATERLOO MINIMUM PIPE DEPTH (MEASURED TO PIPE OBVERT) FOR GRAVITY SANITARY SEWER IS 2.8m. (DGSSMS B.3.1.10)
 - ASSUMES 200mm Ø SANITARY SEWER AT 0.50% SLOPE, UNLESS OTHERWISE STATED.
 - FILL REQUIRED IS CALCULATED TO ACHIEVE A MINIMUM OF 2.80m OF COVER FOR THE SANITARY SEWER. (MEASURED TO PIPE OBVERT)



EXISTING CONDITIONS
Figure No. 1



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421067 SANITARY SEWER SERVICING STRATEGY HAWKSVILLE ROAD LANDS TOWNSHIP OF WOOLWICH (ST JACOBS)

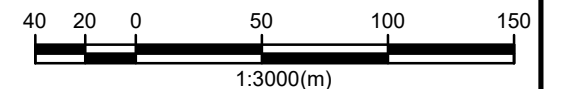


LEGEND

- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
- EXISTING SANITARY SEWER AND MAINTENANCE HOLES
- PROPOSED SANITARY FORCEMAIN

NOTES:

- COVER IS MEASURED TO PIPE OBVERT.
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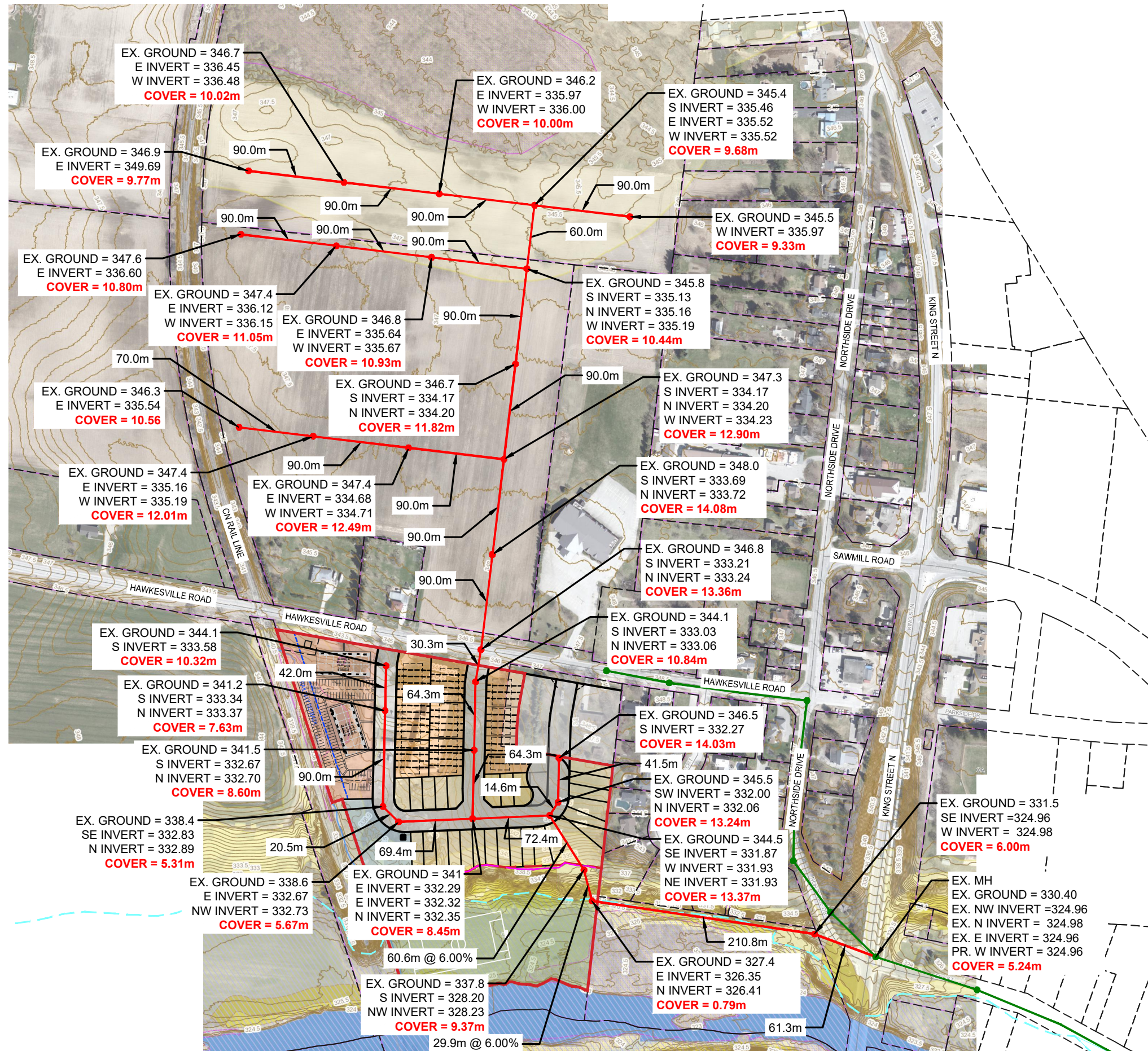


SANITARY SEWER SERVICING STRATEGIES OPTION #1

Figure No. 2



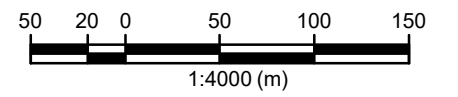
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421067 SANITARY SEWER SERVICING STRATEGY HAWKSVILLE ROAD LANDS TOWNSHIP OF WOOLWICH (ST JACOBS)



- LEGEND**
- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
 - EXISTING SANITARY SEWER AND MAINTENANCE HOLES
 - PROPOSED SANITARY FORCEMAIN
- NOTES:**
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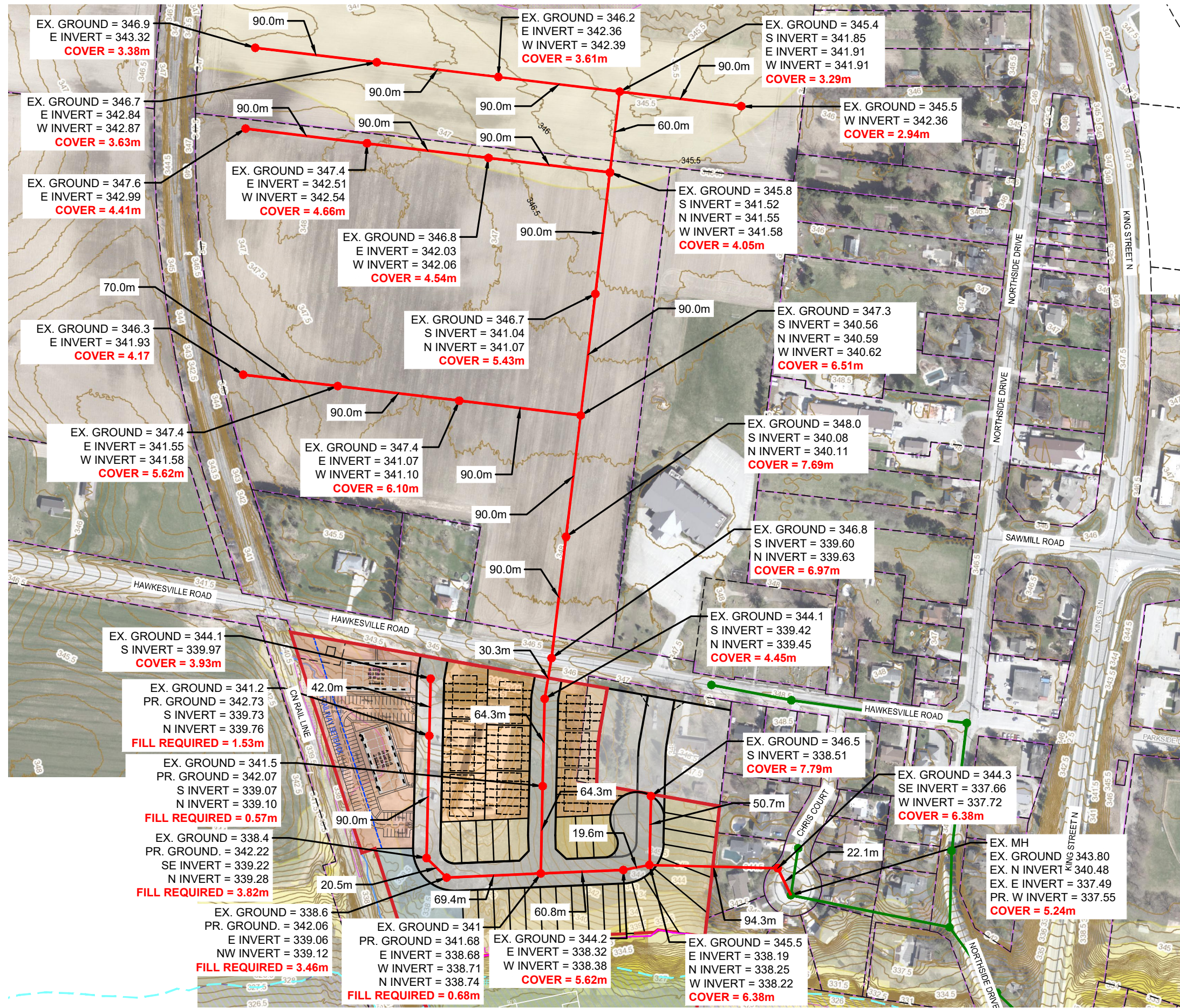


SANITARY SEWER SERVICING STRATEGIES OPTION #2

Figure No. 3



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421067 SANITARY SEWER SERVICING STRATEGY HAWKSVILLE ROAD LANDS TOWNSHIP OF WOOLWICH (ST JACOBS)

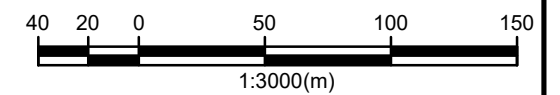


LEGEND

- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
- EXISTING SANITARY SEWER AND MAINTENANCE HOLES
- PROPOSED SANITARY FORCEMAIN

NOTES:

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SANITARY SEWER SERVICING STRATEGIES OPTION #3

Figure No. 4



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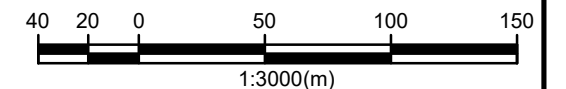


421067
SANITARY SEWER SERVICING
STRATEGY
HAWKESVILLE ROAD LANDS
TOWNSHIP OF WOOLWICH
(ST JACOBS)



- LEGEND**
- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
 - EXISTING SANITARY SEWER AND MAINTENANCE HOLES
 - PROPOSED SANITARY FORCEMAIN

- NOTES:**
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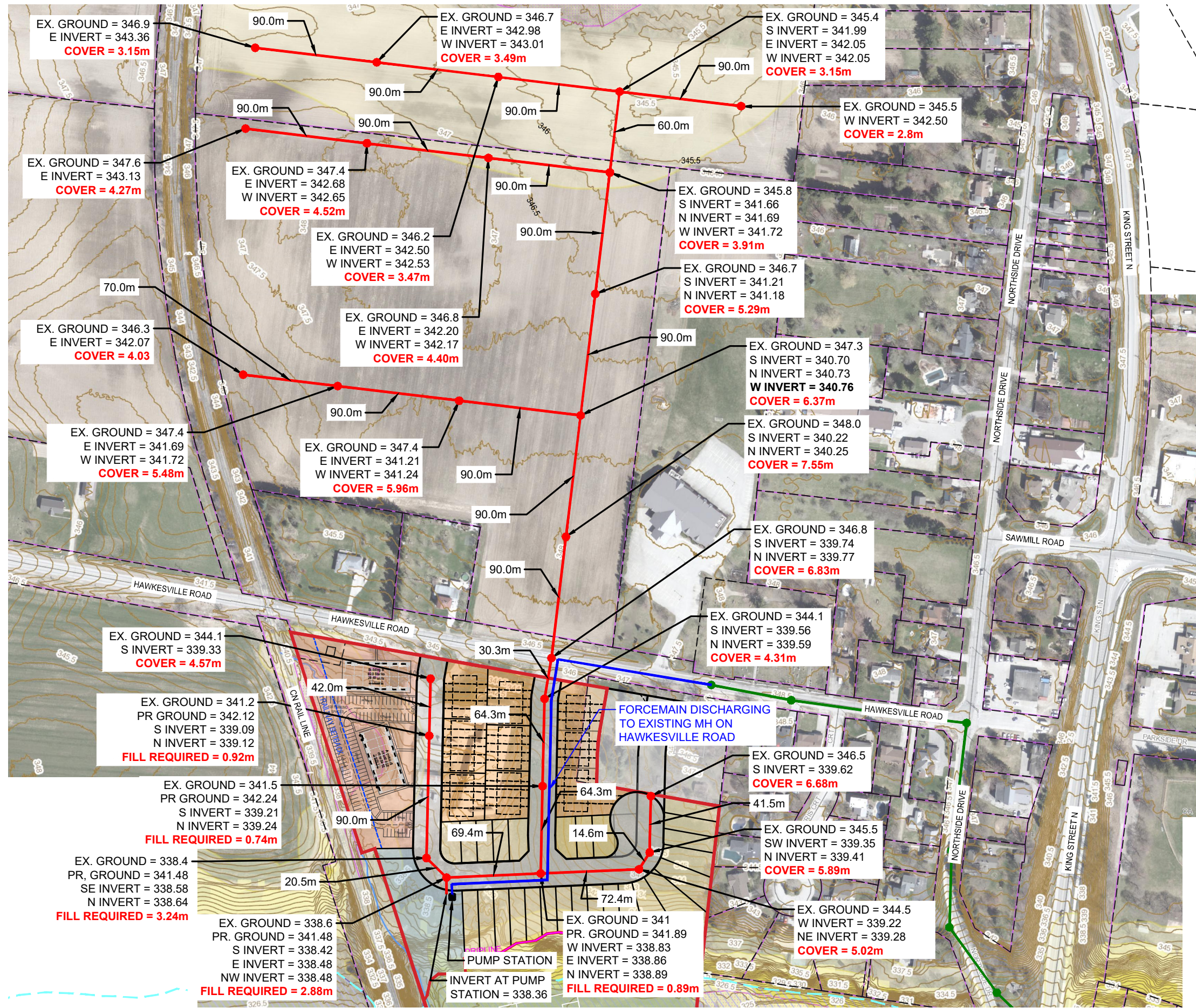


SANITARY SEWER
SERVICING STRATEGIES
OPTION #4

Figure No. 5



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421067
SANITARY SEWER SERVICING
STRATEGY
HAWKESVILLE ROAD LANDS
TOWNSHIP OF WOOLWICH
(ST JACOBS)

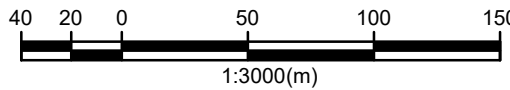


LEGEND

- PROPOSED SANITARY SEWER AND MAINTENANCE HOLES
- EXISTING SANITARY SEWER AND MAINTENANCE HOLES
- PROPOSED SANITARY FORCEMAIN

NOTES:

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SANITARY SEWER
SERVICING STRATEGIES
OPTION #5

Figure No. 6

