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Legend	
	Study Area
	Soil Boundary
	Soil Sample Location
Soil Symbol	
Soil Name → <u>ALL</u>	Soil Name → <u>DHU<sup>70</sup> &gt; BDO<sup>30</sup></u> ← Percent
<u>b</u> ← Slope	<u>C &gt; B</u> ← Slope
Soil Series	
<b>DHU</b>	Dalhousie: imperfectly drained and consists of soils developed in fine-textured, modified marine materials.
<b>BDO</b>	Brandon: poorly drained and found in combination with Dalhousie series, on level to very gently sloping topography.
<b>CLA</b>	Carlsbad: well drained member of the Uplands association and developed from marine and estuarine deposition medium to fine grained sands.
<b>RSL</b>	Ramsayville: imperfectly drained and developed from marine and estuarine deposition medium to fine grained sands. Soils has a higher groundwater table found in upper metre of soil.
<b>ALL</b>	Allendale sandy loam: poor drainage and consists of water-laid sand over clay.
<b>ALU</b>	Alluvial: variable drainage and soil textures and consist of finer textured sediments.

**Figure 3-46 Refined Soil Series Mapping**

Scale 1:28,000

**SLOPE CLASSES(%)**

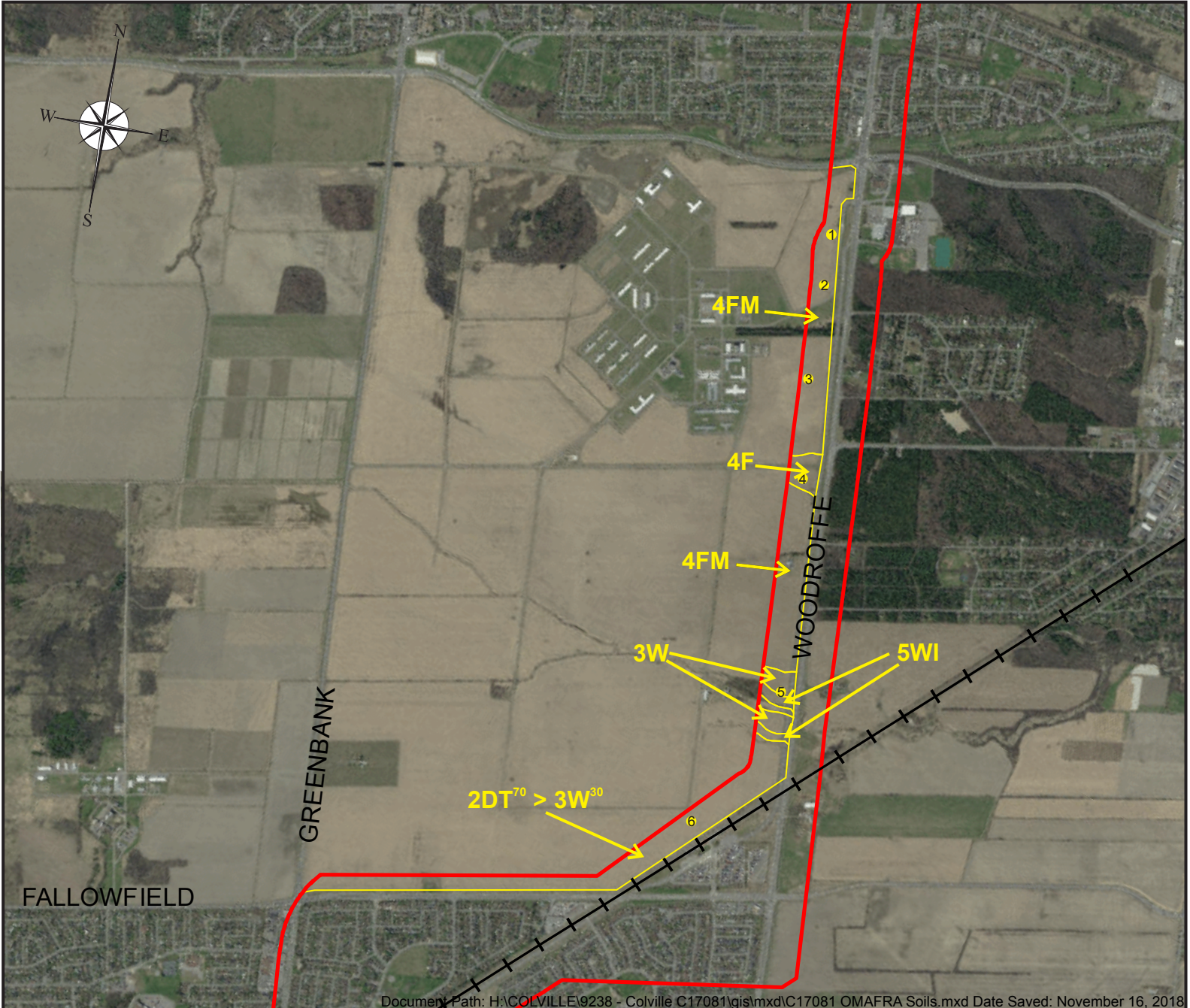
A a	Level slopes (0.0 - 0.5%)
B b	Nearly level slopes (0.5 - 2.0%)
C c	Very Gentle slopes (2.0 - 5.0%)
D d	Gentle slopes (5 - 9%)
E e	Moderate slopes (9 - 15%)
F f	Strong slopes (15 - 30%)
Gg	Steep slopes (30 - 45%)

Simple Slopes (uniform, lengths > 50 metres) denoted in upper case  
 Complex Slopes (short, irregular slopes) denoted in lower case

Prepared for: **PARSONS**

Prepared by: **COLVILLE CONSULTING INC.**





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**Legend**

**Soil Classification**

- CLI Class 2** - Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.
- CLI Class 3** - Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.
- CLI Class 4** - Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.
- CLI Class 5** - Soils have very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.

**Soil Classification Subclass**

- W** Excess Water - limitations for agriculture due to poor drainage; improvements not feasible.
- T** Topography - limitations from both the percent of slope and the pattern or frequency of slopes in different directions.
- F** Low Fertility - soils having low fertility; limitations may be due to lack of plant nutrients.
- M** Moisture Limitations - this consists of soils where crops are affected by drought owing to inherent soil characteristics.
- D** Undesirable soil structure and/or low permeability.
- I** Inundation by streams or lakes; soils subjected to inundation.

**Figure 3-47**

**Refined Soil Series CLI Mapping**

Scale 1:28,000  

 Metres

**Soil Symbol**

Soil  $\rightarrow$  **4T**  $\leftarrow$  Subclassification  
 Classification

- Primary Study Area
- Soil Boundary
- Soil Sample Location

Prepared for: **PARSONS**

Prepared by: **COLVILLE CONSULTING INC.**

### 3.5.2 SUBSURFACE CONDITIONS

A geotechnical report was undertaken to characterize the subsurface conditions for the Study Area. The full report is included in **Appendix B**. More detailed geotechnical investigations are described in **Section 5.2**.

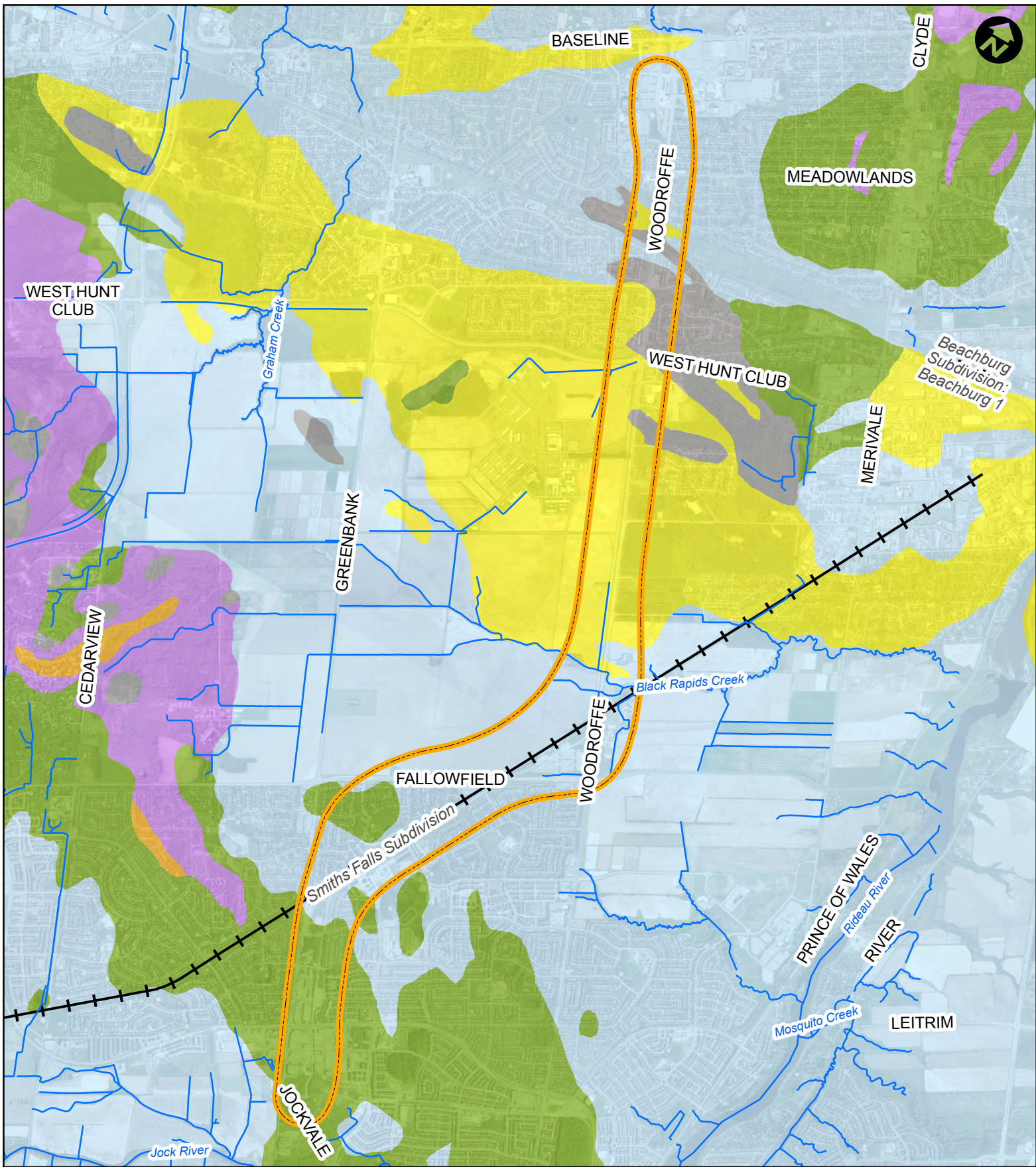
The general stratigraphic sequence in the Study Area typically consists of fill or topsoil, overlying sensitive marine clays, underlain by sands and silts, glacial till, and bedrock. Not all of these deposits are present at all locations, but all units are mapped within the Study Area.

Surficial geology in the Study Area is shown in **Figure 3-48**. Surficial geology maps indicate the occasional presence of organic deposits, like peat, between Norice Street and Vaan Drive. However, organic deposits have not been encountered in boreholes put down in this area as completed for different projects, with the exception of surficial topsoil or thin layers of topsoil beneath fill. Large portions of the Study Area are also underlain by deposits of offshore marine clay. The upper few metres of the clay deposit is typically weathered to form a stiff to very stiff crust. The underlying unweathered grey clay is typically of firm consistency, but is occasionally soft, very sensitive to disturbance, and is highly compressible. Throughout the Study Area, deposits of glacial till exist beneath the sands, silts, and clays, or near the ground surface between Berrigan Drive and Jockvale Road. The glacial till typically consists of a heterogeneous mixture of gravel, cobbles, and boulders in a matrix of silty sand or sandy silt. Lenses and layers of more permeable sand and gravel outwash deposits can be found within the glacial till. Cobbles and boulders are also frequently encountered within the glacial till deposit.










Bedrock Geology in the Study Area is shown in **Figure 3-49**. The bedrock throughout most of the Study Area consists of sedimentary sequences of sandstone, dolostone, and limestone of Rockcliffe, Oxford, and March Formations.

The thickness of the overburden varies over the Study Area as shown in **Figure 3-50**. The depth to bedrock varies significantly throughout the Study Area. Geological mapping indicates that the bedrock depth varies from about 10 to 25m between Navaho Drive and VIA Rail, and decreases to about 3 to 10m between VIA Rail and Strandherd Drive. South of Strandherd Drive, the bedrock depth is indicated to increase again and range from about 10 to 25m. The depth to bedrock encountered in boreholes is generally consistent with the published geological mapping. However, between Elm Park Avenue and Berrigan Drive, completed for a different project, it was learned that auger refusal was encountered as shallow as 0.4m below ground surface, and rock outcrops are visible at ground surface.





**Legend**


-  Study Area
-  Paleozoic Bedrock
-  Watercourse
-  Clay
-  Rail Lines
-  Diamicton
-  Gravel
-  Organic deposits
-  Sand

**Barrhaven Light Rail Transit  
(Baseline Station to Barrhaven Town Centre)**

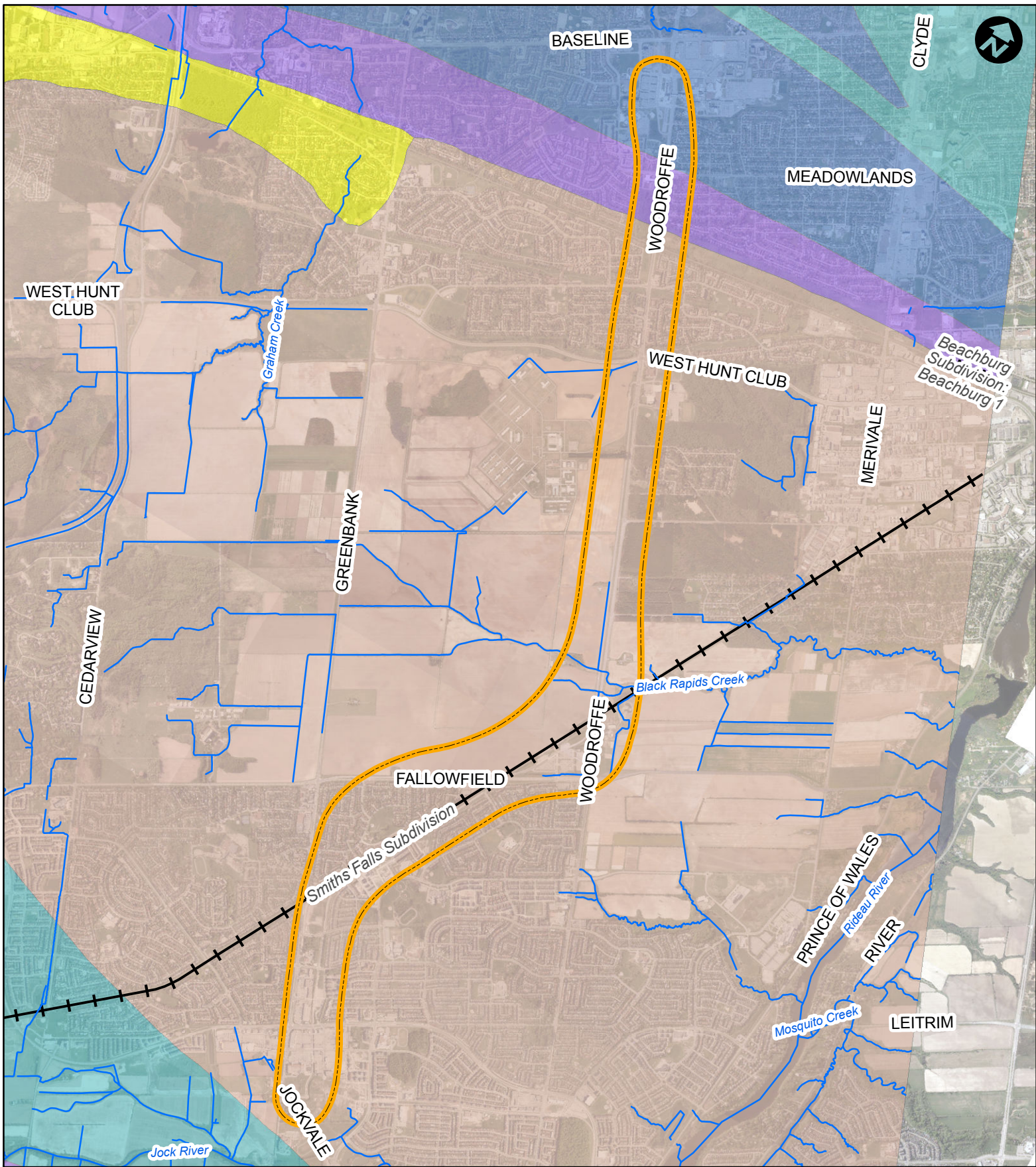
**Planning and Environmental Assessment Study**

0    0.5    1    2 Km

**Surficial Geology**



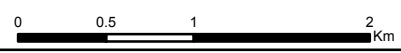




**Legend**

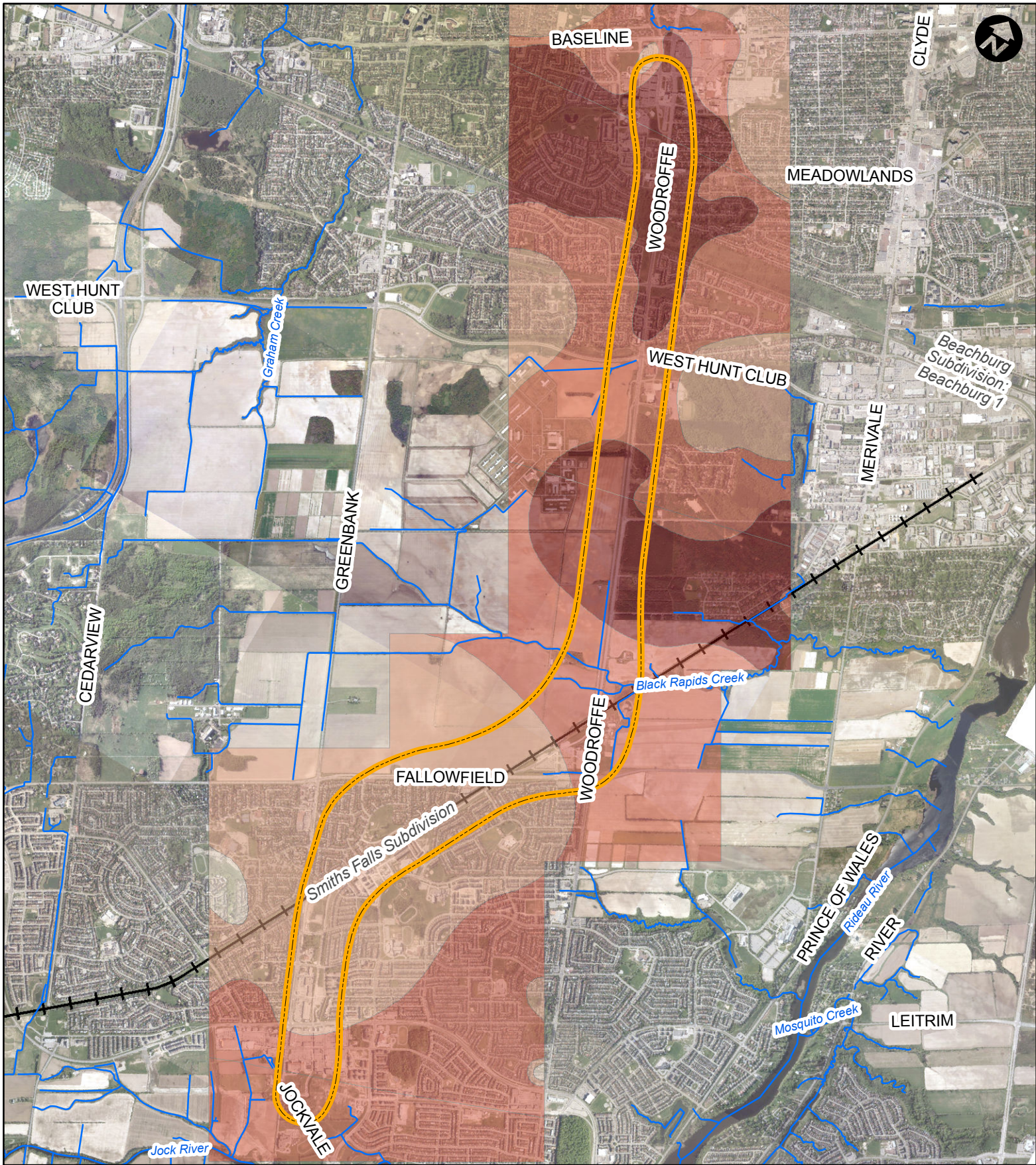
	Study Area		Dolomite
	Watercourse		Limestone & Dolomite interbeds
	Rail Lines		Sandstone
			Sandstone & Dolomite interbeds
			Shale







**Barrhaven Light Rail Transit**  
 (Baseline Station to Barrhaven Town Centre)  
**Planning and Environmental Assessment Study**



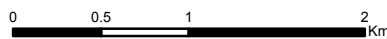
**Bedrock Geology**





Legend	
	Study Area
	Watercourse
	Less than 1 m
	1 m to 8 m
	8 m to 15 m
	Greater than 15 m

**Barrhaven Light Rail Transit**  
 (Baseline Station to Barrhaven Town Centre)  
**Planning and Environmental Assessment Study**



Drift Thickness



### 3.5.3 FLUVIAL GEOMORPHOLOGY

Fluvial Geomorphic and Hydrologic existing conditions were characterized for the Study Area. The full report is included in **Appendix B**. More detailed geotechnical investigations are described in **Section 5.3**.

There are six (6) watercourse or drainage features within the Study Area. The channels of four of these features cross the existing Southwest Transitway, while the channels of the two others will traverse in close proximity (referred to as ‘proximity watercourses’). The features are described in **Table 3-9** and shown in **Figure 3-51** and **Figure 3-52**.

Figure 3-51 Overview of Watercourse and Drainage Feature Crossings

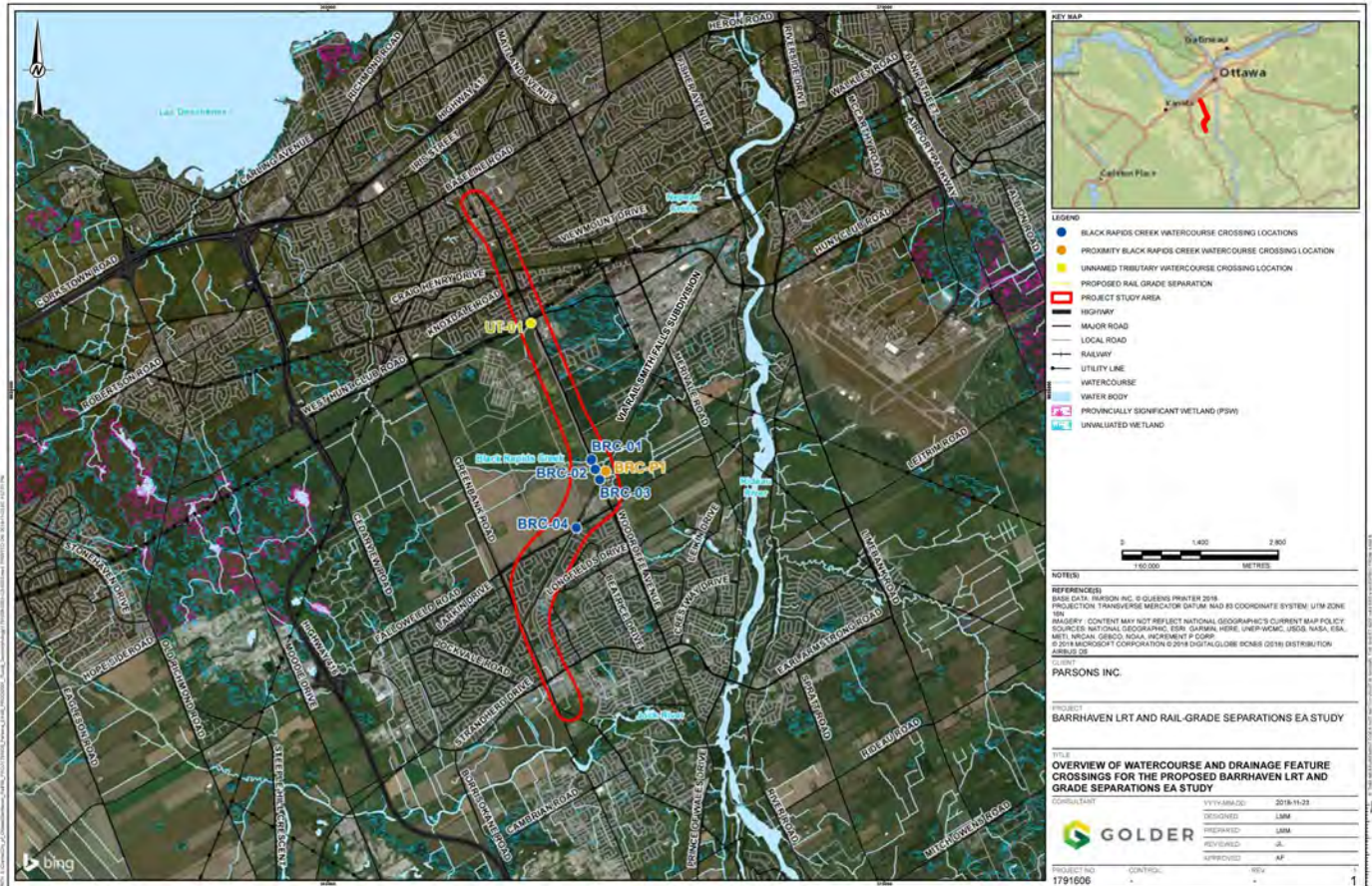
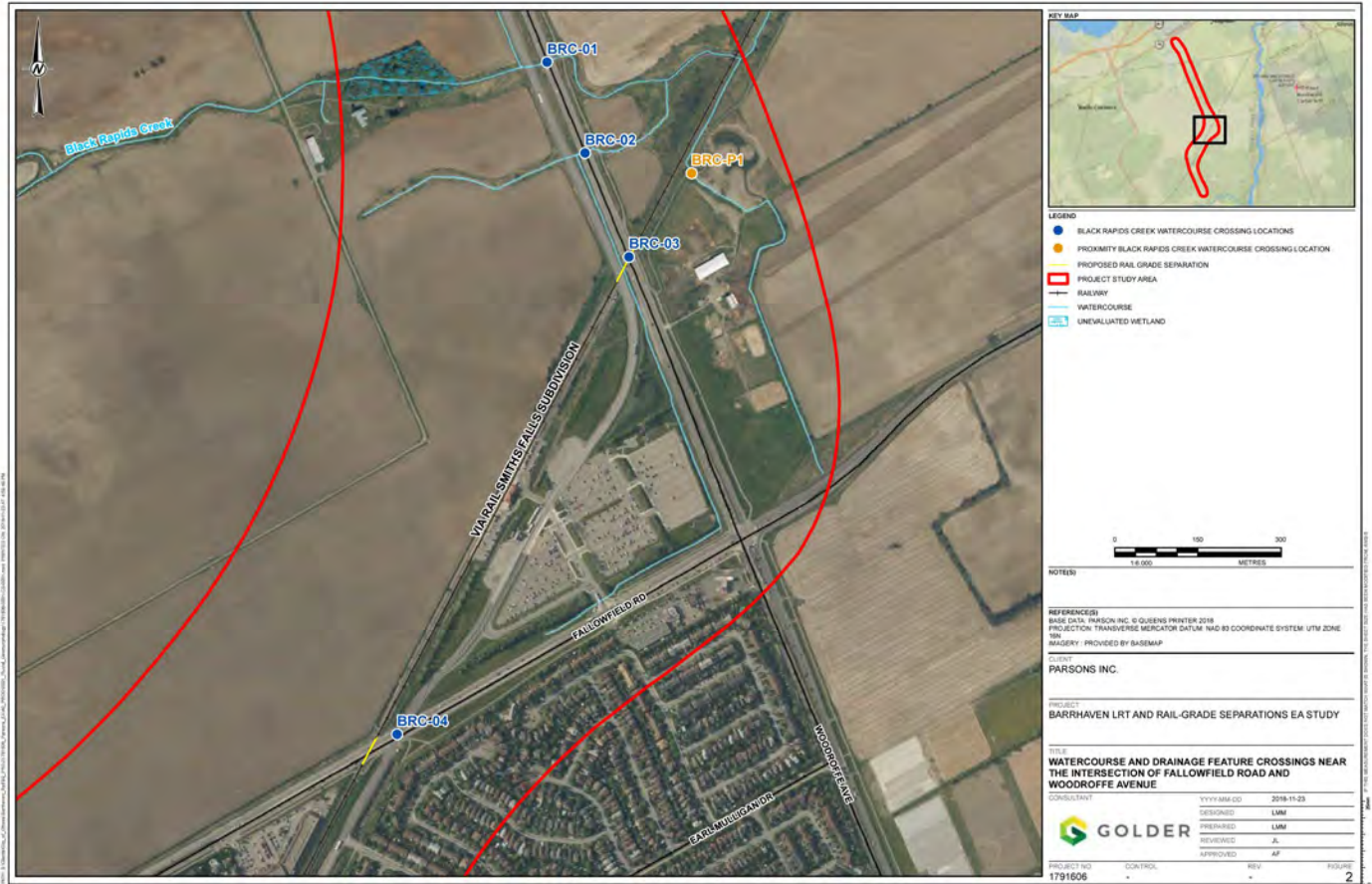




Figure 3-52 Watercourse and Drainage Feature Crossings Near the Intersection of Fallowfield Road and Woodroffe Avenue





General Location	Crossing	General Description of Channel Morphology and/or Water Feature Conditions	Presence or Absence of Crossing Structures Along Channel Reach	*Estimated Bankfull Width (m)	Riparian Conditions	Estimated Drainage Area (hectares)	**Mean Annual Flow (m <sup>3</sup> /s)
West Hunt Club & Woodroffe	UT-01	Small unnamed watercourse or drainage feature (potential tributary of Nepean Creek) that supports ephemeral to intermittent flows and altered/engineered channel form (e.g., ditch feature of low sinuosity) Channel inferred to include poorly-defined bed and banks Channel expected to be crossed by the Project Anticipated to drain in a north-easterly direction	Possible Corrugated Steel Pipe (CSP) culvert under roads	2	Dense cover of grasses with instances of shrubs and small trees	60	0.01
Woodroffe Rail Crossing	BRC-01	Black Rapids Creek (tributary of Rideau River) Small to medium sized watercourse that supports perennial flows and a combination of natural and altered/engineered channel form Channel inferred to include well defined bed and banks and alluvial controls Channel expected to be crossed by the Project	Concrete box culverts under Woodroffe Avenue and pedestrian/cycling bridge at Greenbelt Pathway	10	Dense cover of grasses, shrubs and small trees, with instances of riprap armouring	Up to 800	0.098
	BRC-02	Small watercourse or drainage feature (tributary of Black Rapids Creek) that supports perennial flows and a combination of natural and altered/engineered channel form (e.g., agricultural ditch of low sinuosity) Channel inferred to include poor to moderately defined bed and banks and alluvial controls Channel expected to be crossed by the Project	Concrete box culverts under Woodroffe Avenue and pedestrian/cycling bridge at Greenbelt Pathway	10	Dense cover of grasses, shrubs and small trees, with instances of riprap armouring	230	0.027
	BRC-03	Small watercourse or drainage feature (tributary of Black Rapids Creek) that supports intermittent flows and altered/engineered channel form (e.g., roadside ditch of low sinuosity) Channel inferred to include poorly-defined bed and banks Channel is currently crossed by the VIA Rail and is expected to be in close proximity to the Project Anticipated to drain generally south to north	Possible Corrugated Steel Pipe (CSP) culvert under the VIA Rail	2	Dense cover of grasses with instances of gravel and/or paved areas	80	0.01
	BRC-P1	Small watercourse or drainage feature (potential of Black Rapids Creek) that supports intermittent flows and a combination of natural and altered/engineered channel form (i.e., channel upstream of the crossing appears to have been straightened) Channel inferred to include poor to moderately defined bed and banks and alluvial controls Channel expected to be in close proximity to the Project Anticipated to drain generally south to north	CSP culvert under pedestrian/cycling bridge at Greenbelt Pathway	5	Dense cover of grasses, shrubs and small trees, with instances of rip rap armouring	100	0.013



Fallowfield VIA Rail Crossing	BRC-04	<p>Small watercourse or drainage feature (tributary of Black Rapids Creek) that supports intermittent flows and altered/engineered channel form (e.g., ditch feature of low sinuosity)</p> <p>Channel inferred to include poorly-defined bed and banks</p> <p>Channel is currently crossed by the VIA Rail and is expected to be crossed by the Project</p> <p>Anticipated to drain generally south to north</p>	Concrete box culvert under Fallowfield Road	5	Dense cover of grasses with some shrubs and trees at locations upstream of the crossing	Up to 100	Up to 0.013
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BRC = Black Rapids Creek; UT = Unnamed Tributary; m<sup>3</sup>/s = cubic metres per second.  
 \* Bankfull width estimated based on aerial imagery  
 \*\* Annual Mean Flow derived using the Ministry of Natural Resources and Forestry (MNRF) Ontario Flow Assessment Tool (OFAT)



### 3.5.4 HYDROGEOLOGY

Groundwater in the area of the Southwest Transitway and Woodroffe Avenue VIA Rail crossing is approximately 4 to 5 metres below surface (McCormick Rankin, 1997). Groundwater between Baseline Station and West Hunt Club ranges between 2-6m below ground surface.

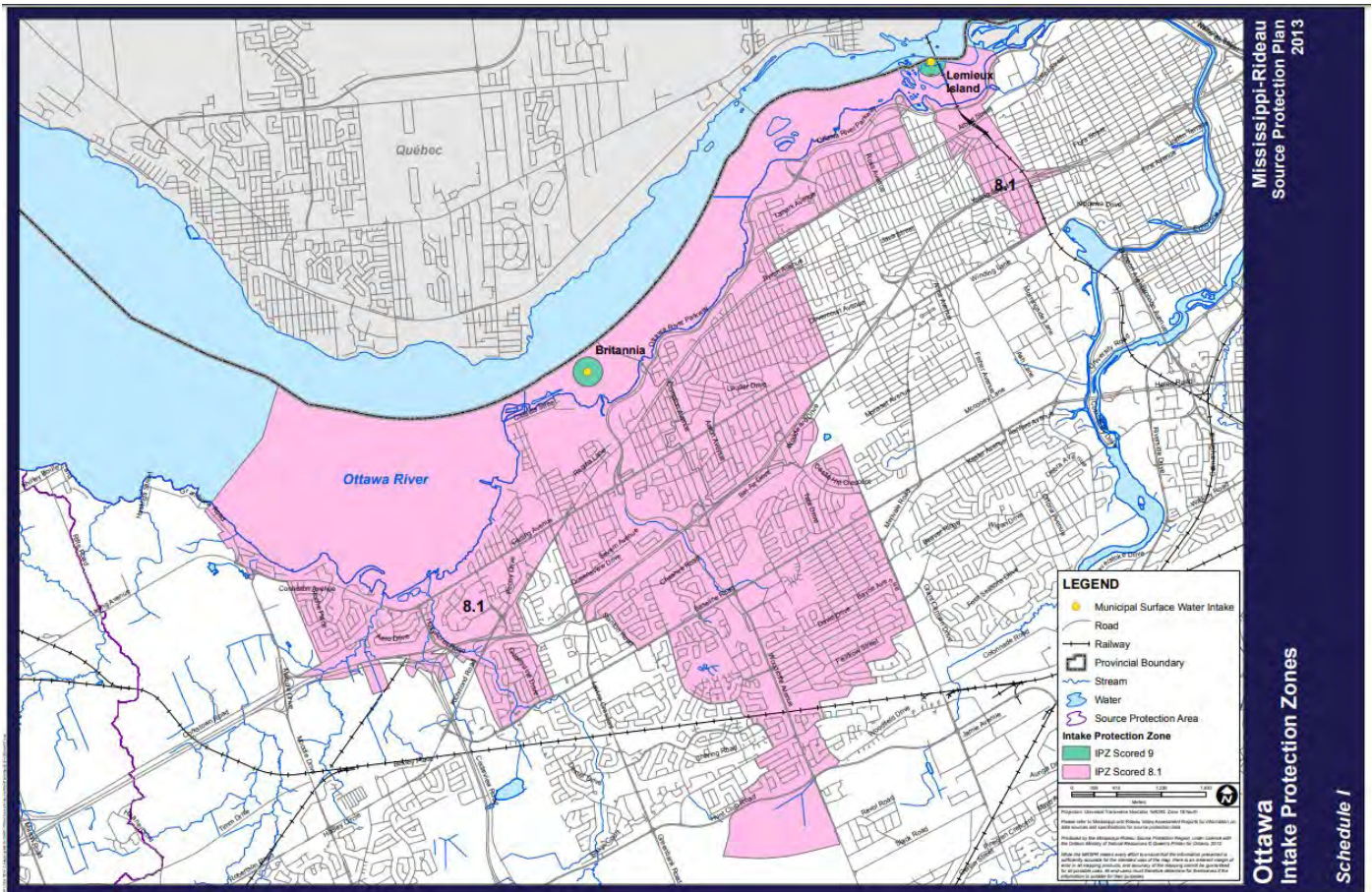
### 3.5.5 SOURCE PROTECTION AREA

The *Clean Water Act*, 2006 provides the legislative framework for Source Protection in Ontario. The Study Area for the corridor falls within the Rideau Valley Source Protection Area, as described in the Mississippi-Rideau Source Protection Plan (2020). The Rideau Valley Source Protection Region is 8,500 square km. Source protection plans exist to protect drinking water across municipal boundaries. The Source Protection plan identifies four vulnerable areas: Intake Protection Zones, Wellhead Protection Areas, Highly Vulnerable Aquifers, and Significant Groundwater Recharge Areas.

#### 3.5.5.1 Intake Protection Area

The Study Area intersects with Intake Protection Zones (IPZ) 2 and 3 with a vulnerability score of 8.1. The northern limits of the Study Area to West Hunt Club is within IPZ-2 (**Figure 3-53**). IPZ-2 extends on the west side of Woodroffe Avenue to just south of Vaan Drive. Areas with an IPZ of 1 and 2 are sensitive and contaminants could reach a drinking water intake pipe at the water treatment plant within, or less than two hours. The vulnerability scoring for these areas is above 8 which means that surface waters in the IPZ-2 areas are more vulnerable to contamination than areas scoring less than 8. Activities that pose a risk to sources of drinking water are prescribed as drinking water threats by Ontario Regulation 287/07 made under the *Clean Water Act*, 2006 and source protection plan policies may apply.

Figure 3-53 IPZ-2 Area for Ottawa (From Mississippi-Rideau Source Protection Plan, 2020)





### 3.5.5.2 Wellhead Protection Area

The Study Area is not located in a Wellhead Protection Zone.

### 3.5.5.3 Groundwater Recharge and Vulnerable Aquifers

Portions of the Study Area contain Significant Groundwater Recharge Areas and Highly Vulnerable Aquifers, which are more vulnerable to surface contaminants. Black Rapids Creek is included in both of these areas. Most of the Rideau Valley region contains aquifers of similar vulnerability. No policies apply within Significant Groundwater Recharge Areas or Highly Vulnerable Aquifers.

## 3.5.6 CONTAMINATION AND HAZARDOUS MATERIALS

A limited Phase I ESA was completed to support the study. The full report can be found in **Appendix B**.

The primary objective of the limited Phase I ESA is to identify, based on available information and without an intrusive investigation, actual or potential issues of environmental concern which may impact the soil and/or groundwater related to former activities within the Study Area and to identify the need for further ESA activities (i.e., Phase II ESA). The ESA consisted of the following tasks:

- provide a general description of the Study Area consisting of: legal description, ownership, zoning, and land use;
- conduct a review of various records pertaining to the Site and surrounding properties;
- conduct a site reconnaissance to make specific observations of the Study Area and the surrounding properties from publicly accessible areas;
- review of historical aerial photographs; and,
- a review of the Ecolog Environmental Risk Information Services (ERIS) report.

Based on the information obtained, 28 individual issues of potential environmental concern related to potential impacts to soil and/or groundwater have been identified within the Study Area and are illustrated in **Figure 3-54, Figure 3-55, Figure 3-56 and Figure 3-57**.



Figure 3-53

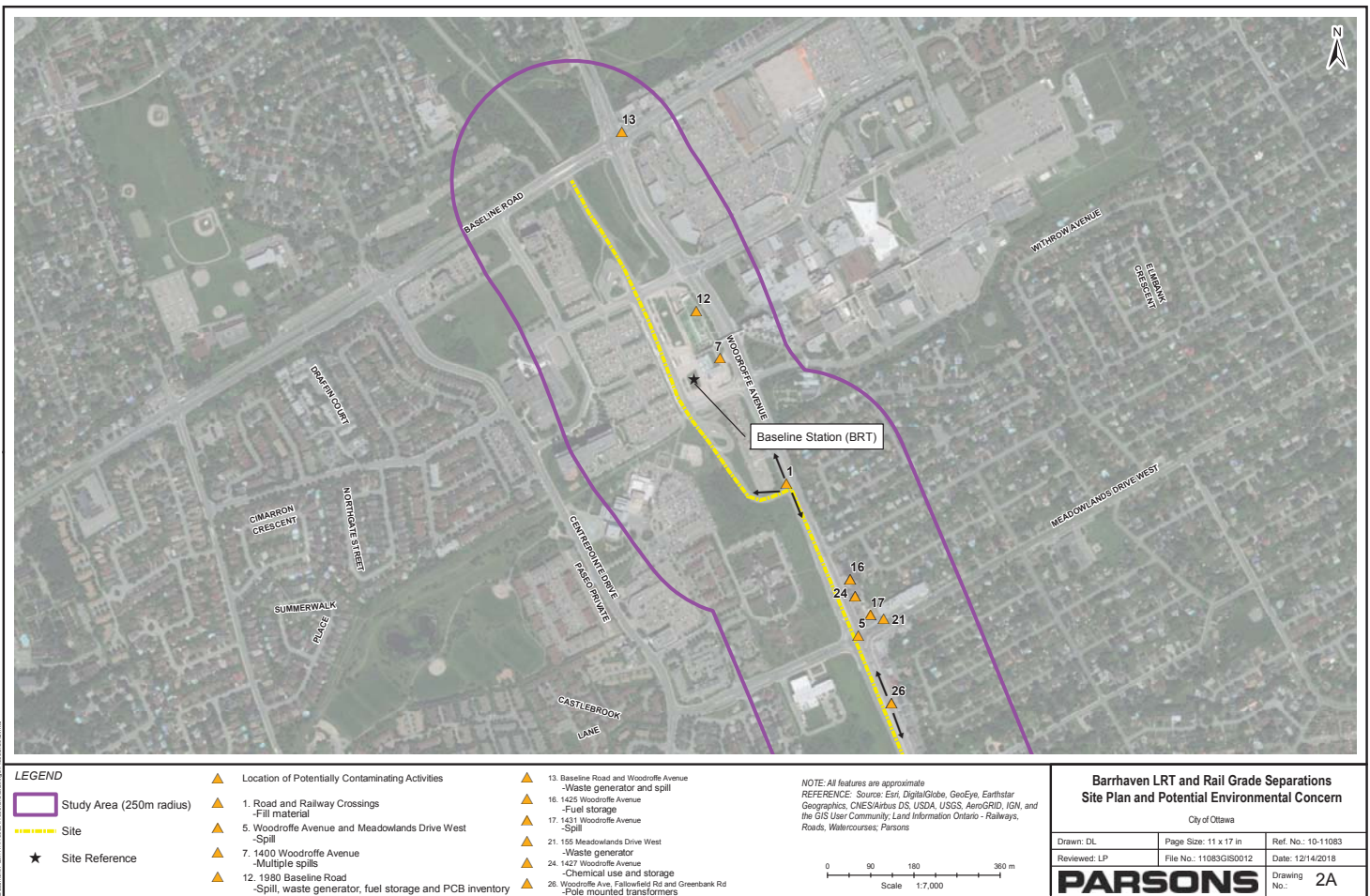
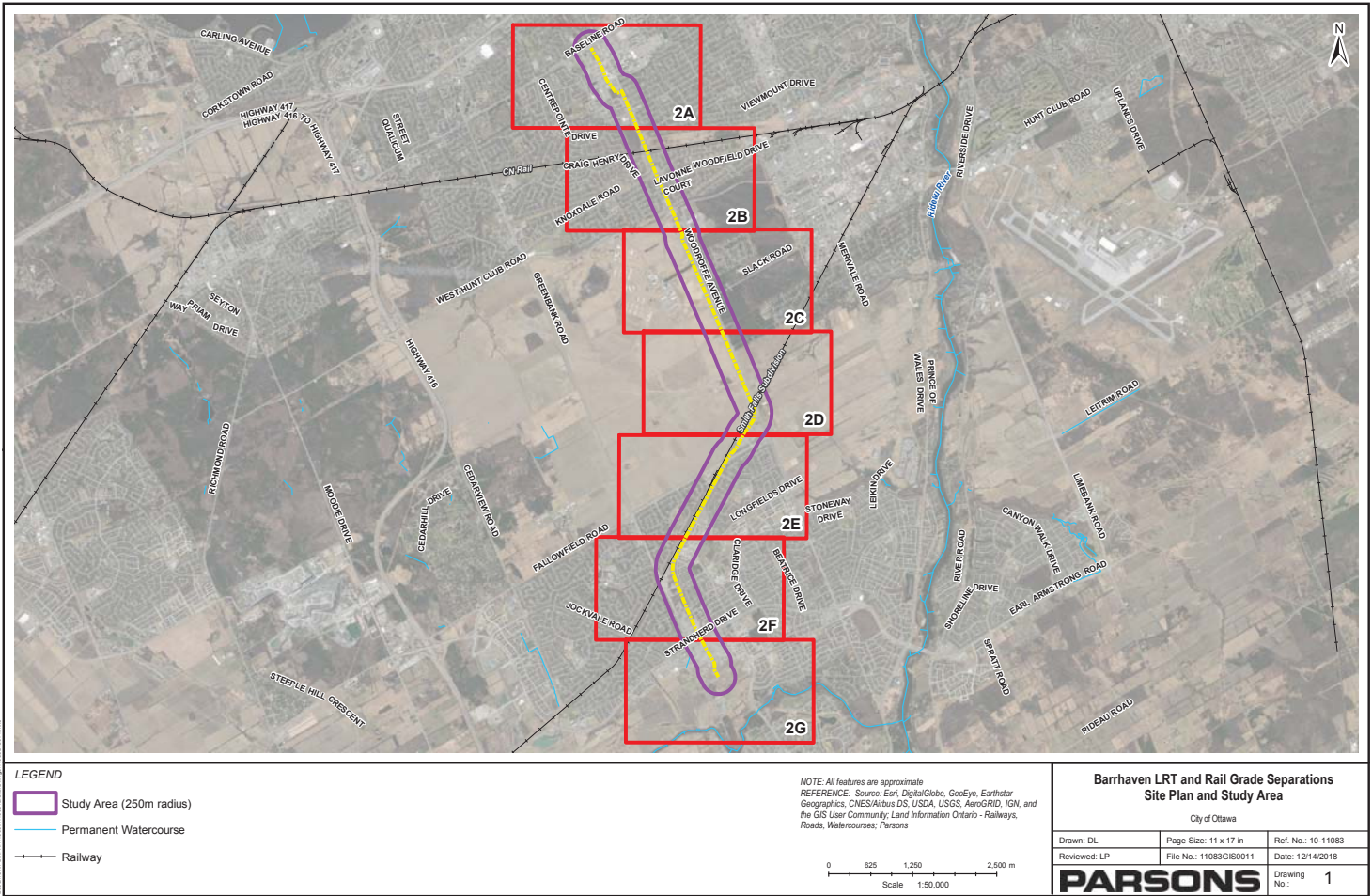




Figure 3- 54

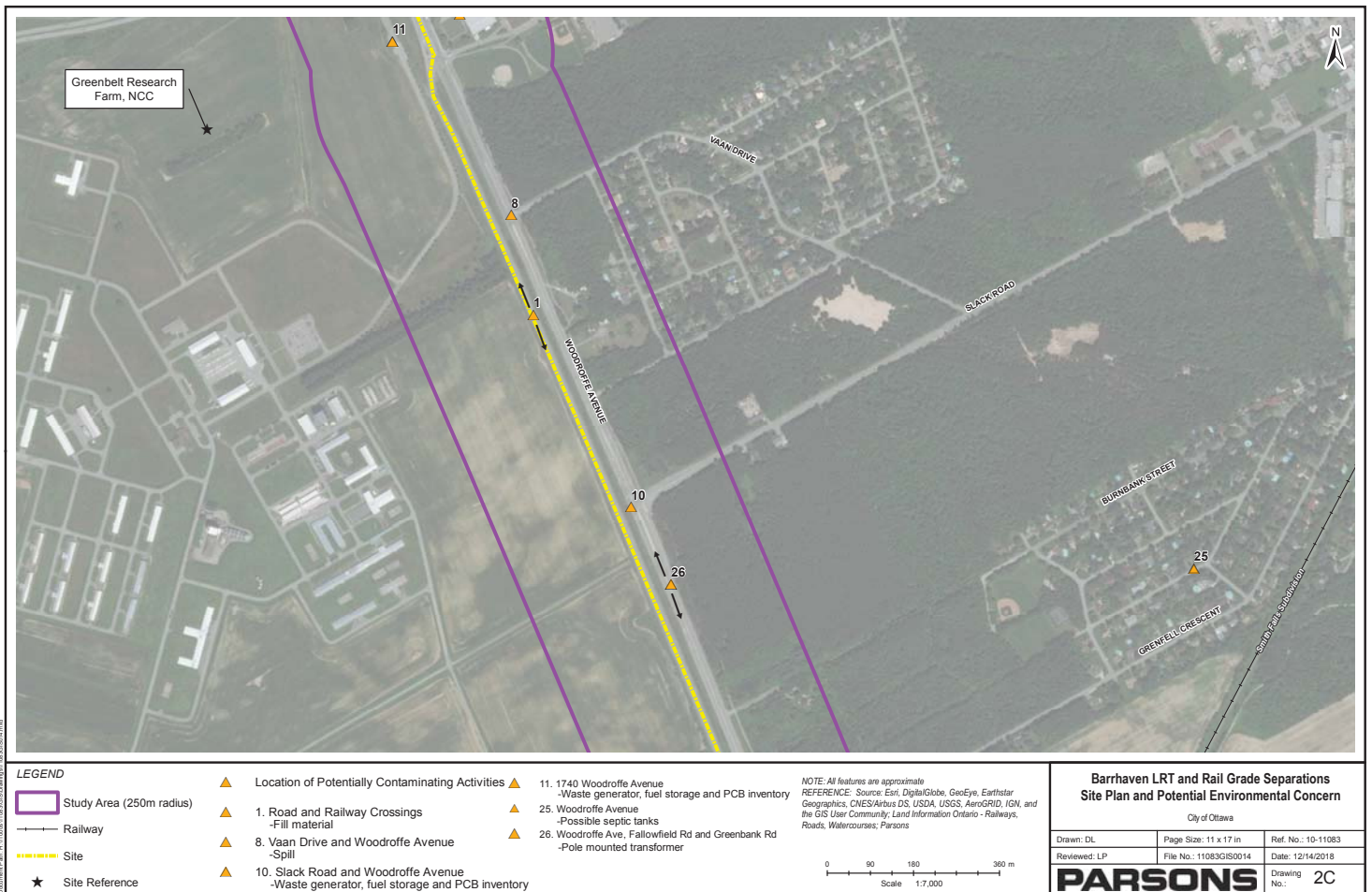
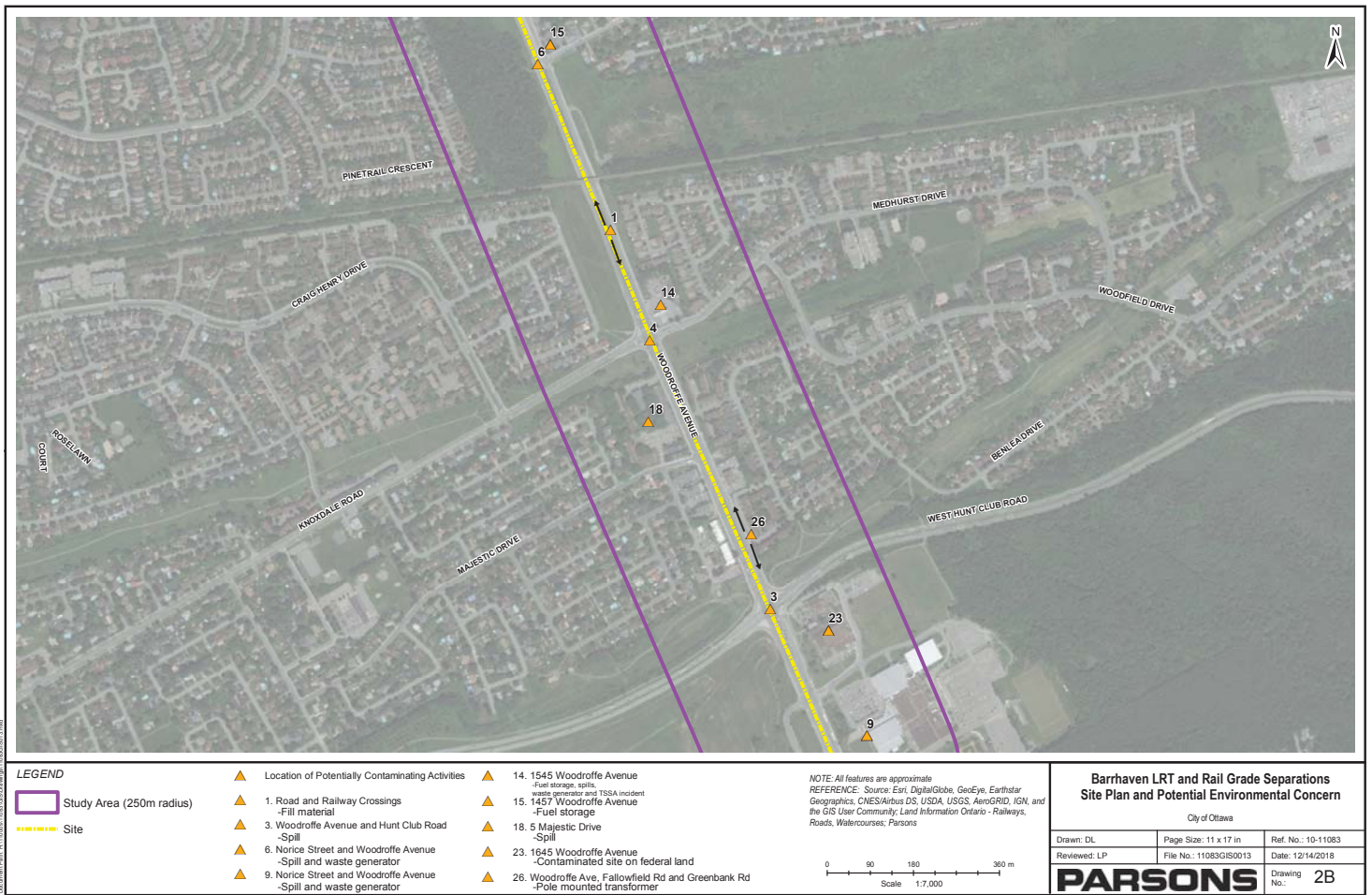




Figure 3-55



**LEGEND**

- Study Area (250m radius)
- Railway
- Site
- ★ Site Reference
- ▲ Location of Potentially Contaminating Activities
- ▲ 1. Road and Railway Crossings  
-Fill material
- ▲ 2. Site  
-Potential spill and railway
- ▲ 22.3355 Fallowfield Road  
-Waste generator
- ▲ 25. Woodroffe Avenue  
-Possible septic tanks
- ▲ 26. Woodroffe Ave, Fallowfield Rd and Greenbank Rd  
-Pole mounted transformer
- ▲ 27. Woodroffe Avenue and Fallowfield Road railway crossing  
-Agricultural properties and pesticides

NOTE: All features are approximate  
REFERENCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Land Information Ontario - Railways, Roads, Watercourses; Parsons

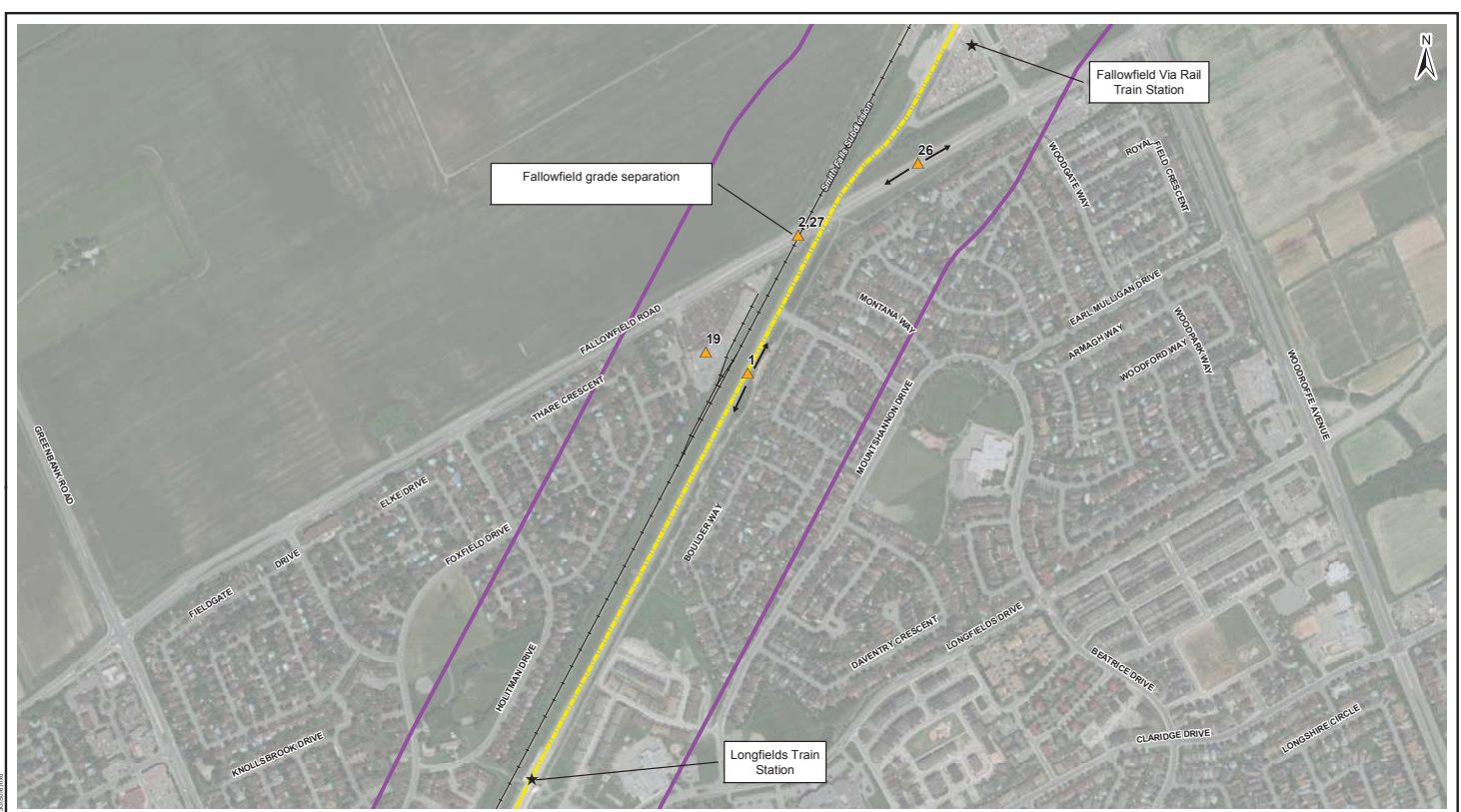
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**Barrhaven LRT and Rail Grade Separations  
Site Plan and Potential Environmental Concern**

City of Ottawa

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<small>Reviewed: LP</small>	<small>File No.: 11083GIS0015</small>	<small>Date: 12/14/2018</small>

**PARSONS** Drawing No.: **2D**



**LEGEND**

- Study Area (250m radius)
- Railway
- Site
- ★ Site Reference
- ▲ Location of Potentially Contaminating Activities
- ▲ 1. Road and Railway Crossings  
-Fill material
- ▲ 2. Railway Tracks  
-Potential spill
- ▲ 19. 3500 Fallowfield Road  
-Spill
- ▲ 26. Woodroffe Ave, Fallowfield Rd and Greenbank Rd  
-Pole mounted transformers
- ▲ 27. Woodroffe Avenue and Fallowfield Road railway crossing  
-Pad mounted transformers

NOTE: All features are approximate  
REFERENCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; Land Information Ontario - Railways, Roads, Watercourses; Parsons

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**Barrhaven LRT and Rail Grade Separations  
Site Plan and Potential Environmental Concern**

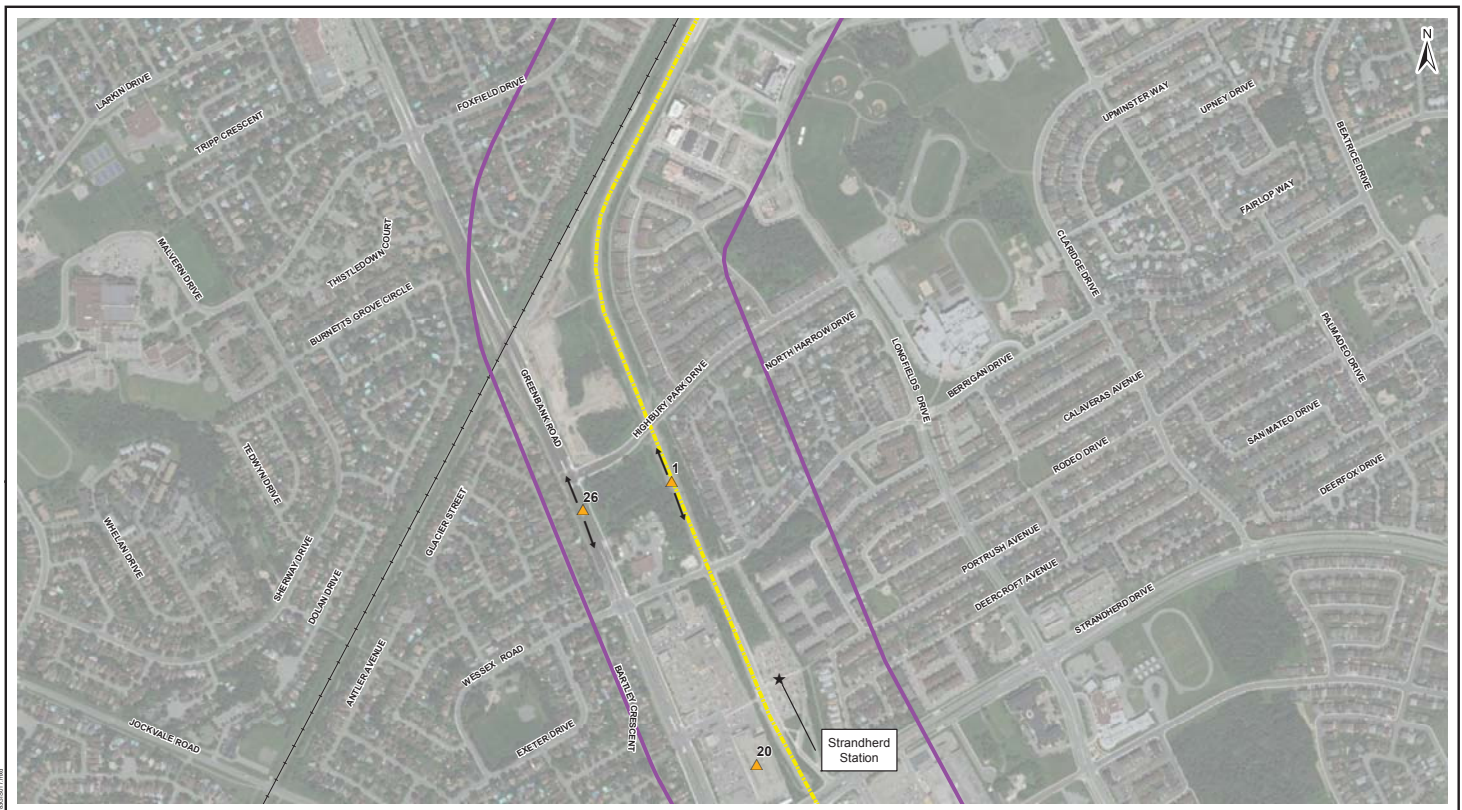
City of Ottawa

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<small>Reviewed: LP</small>	<small>File No.: 11083GIS0016</small>	<small>Date: 12/14/2018</small>

**PARSONS** Drawing No.: **2E**



Figure 3-56



**LEGEND**

- Study Area (250m radius)
- Railway
- Site
- ★ Site Reference
- ▲ Location of Potentially Contaminating Activities
  - ▲ 1. Road and Railway Crossings  
-Fill material
  - ▲ 20. 2501 Greenbank Road  
-Fuel storage, waste generator, spill
  - ▲ 26. Woodroffe Ave, Fallowfield Rd and Greenbank Rd  
-Pole mounted transformers

NOTE: All features are approximate  
 REFERENCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Land Information Ontario - Railways, Roads, Watercourses; Parsons

0 90 180 360 m  
 Scale 1:7,000

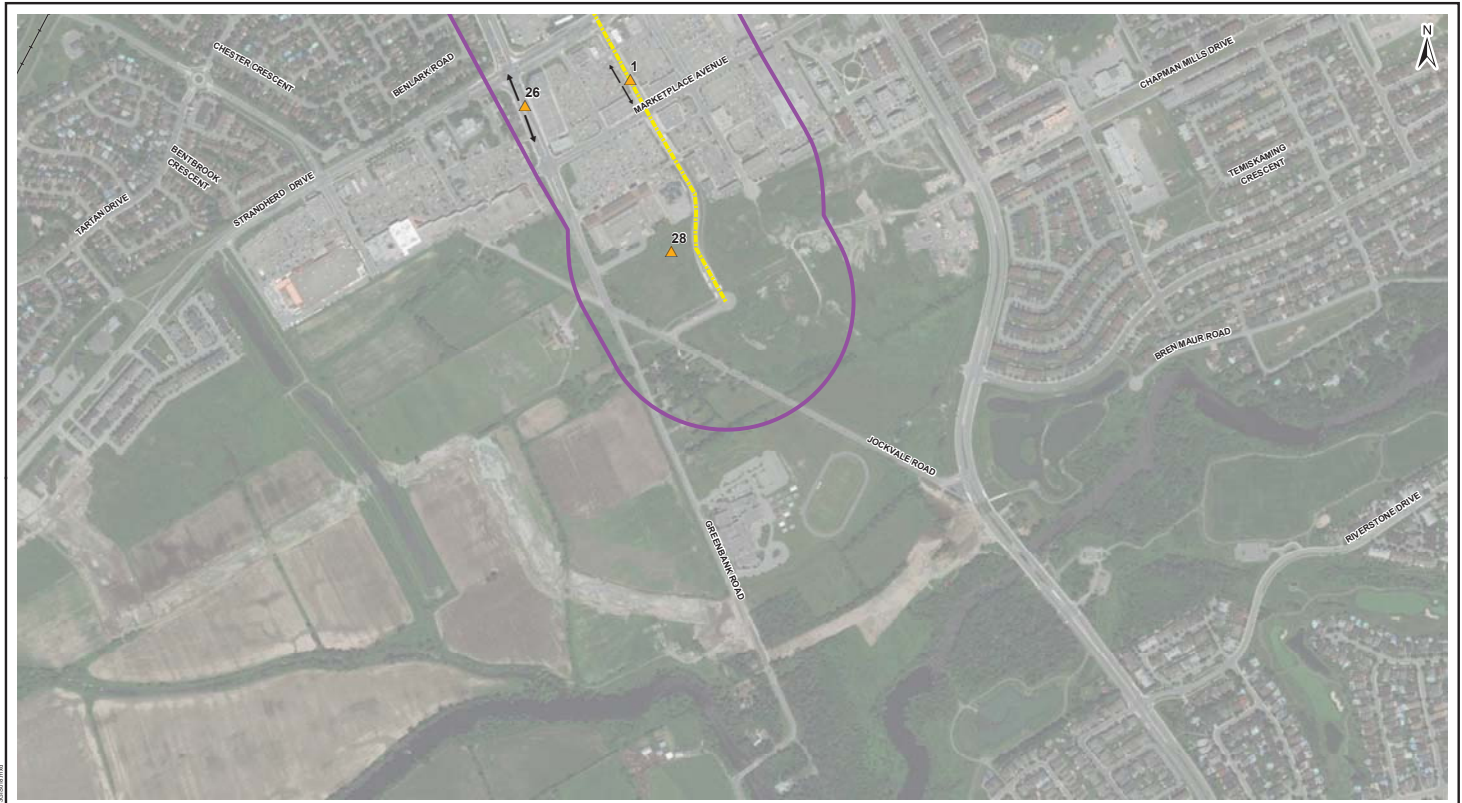
**Barrhaven LRT and Rail Grade Separations  
 Site Plan and Potential Environmental Concern**

City of Ottawa

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Reviewed: LP	File No.: 11083GIS0017	Date: 12/14/2018

PARSONS

Drawing No.: **2F**



**LEGEND**

- Study Area (250m radius)
- Railway
- Site
- ▲ Location of Potentially Contaminating Activities
  - ▲ 1. Road and Railway Crossings  
-Fill material
  - ▲ 26. Woodroffe Ave, Fallowfield Rd and Greenbank Rd  
-Pole mounted transformers
  - ▲ 28. South of Marketplace bus station  
-Mounds of soil

NOTE: All features are approximate  
 REFERENCE: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Land Information Ontario - Railways, Roads, Watercourses; Parsons

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**Barrhaven LRT and Rail Grade Separations  
 Site Plan and Potential Environmental Concern**

City of Ottawa

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PARSONS

Drawing No.: **2G**



### 3.5.7 INFRASTRUCTURE AND UTILITIES

This section summarizes the existing municipal infrastructure and utilities within the Study Area. The documents reviewed to summarize the existing conditions include the City of Ottawa *Utility Coordinating Committee drawings* (UCC) and the (2013) *Infrastructure Master Plan* (IMP). The UCC drawings provide the location and description of existing infrastructure (sanitary sewers, storm sewers, culverts, watermains) and of existing utilities (gas, hydro, telecommunications). The 2013 IMP provides information on future infrastructure works planned within the Study Area.

The Study Area is divided in three sections with respect to infrastructures and utilities. Two of these sections are fully serviced by the infrastructures and public utilities. The first is located between Baseline Road and West Hunt Club Road; the second is located between Fallowfield Road to Jockvale Road. The third section, the Greenbelt located between West Hunt Club Road and Fallowfield Road, is partially serviced.

#### 3.5.7.1 Water Distribution Network

##### 3.5.7.1.1 Existing Water Distribution Network

The water distribution network in the Study Area includes backbone watermains, feeder mains, and local distribution watermains. The Study Area is divided in two pressure zones named 2W2C (formerly 2W) and 3SW (formerly named BARR). The Study Area is fully supplied by the municipal water distribution network except for the Greenbelt area between Pineland Avenue and Fallowfield Road. This includes the communities of Grenfell Glen and Merivale Gardens which are located on private well service.

The backbone watermains are the primary suppliers of water within a pressure zone. In the Study Area, they vary in sizes from 406mm diameter up to 1220mm diameter. They are listed in **Table 3-10** and shown on **Figure 3-58**, **Figure 3-59** and **Figure 3-60** below.

Table 3-10 Backbone Watermains in the Study Area

Location/Intersection	Parallel/Perpendicular	Diameter (mm)	Material	Year Installed
Woodroffe Avenue, from Baseline Road to South of Fallowfield Road	Parallel (perpendicular in some areas)	1220	Concrete	1978
Woodroffe Avenue/David Street	Perpendicular	600	Concrete	1974
Woodroffe Avenue/West Hunt Club Road	Perpendicular	600	Concrete	2011
Transitway/ Fallowfield Road	Perpendicular	762	Concrete	1978
Fallowfield Road, from Woodroffe Avenue to Greenbank Road	Parallel	762	Concrete	1978
Transitway/South of Longfields Station	Perpendicular	600	Concrete	2014
Jockvale Road/Transitway (1)	Perpendicular	406	Concrete	1993
Jockvale Road/Transitway (2)	Perpendicular	406	Concrete	2001

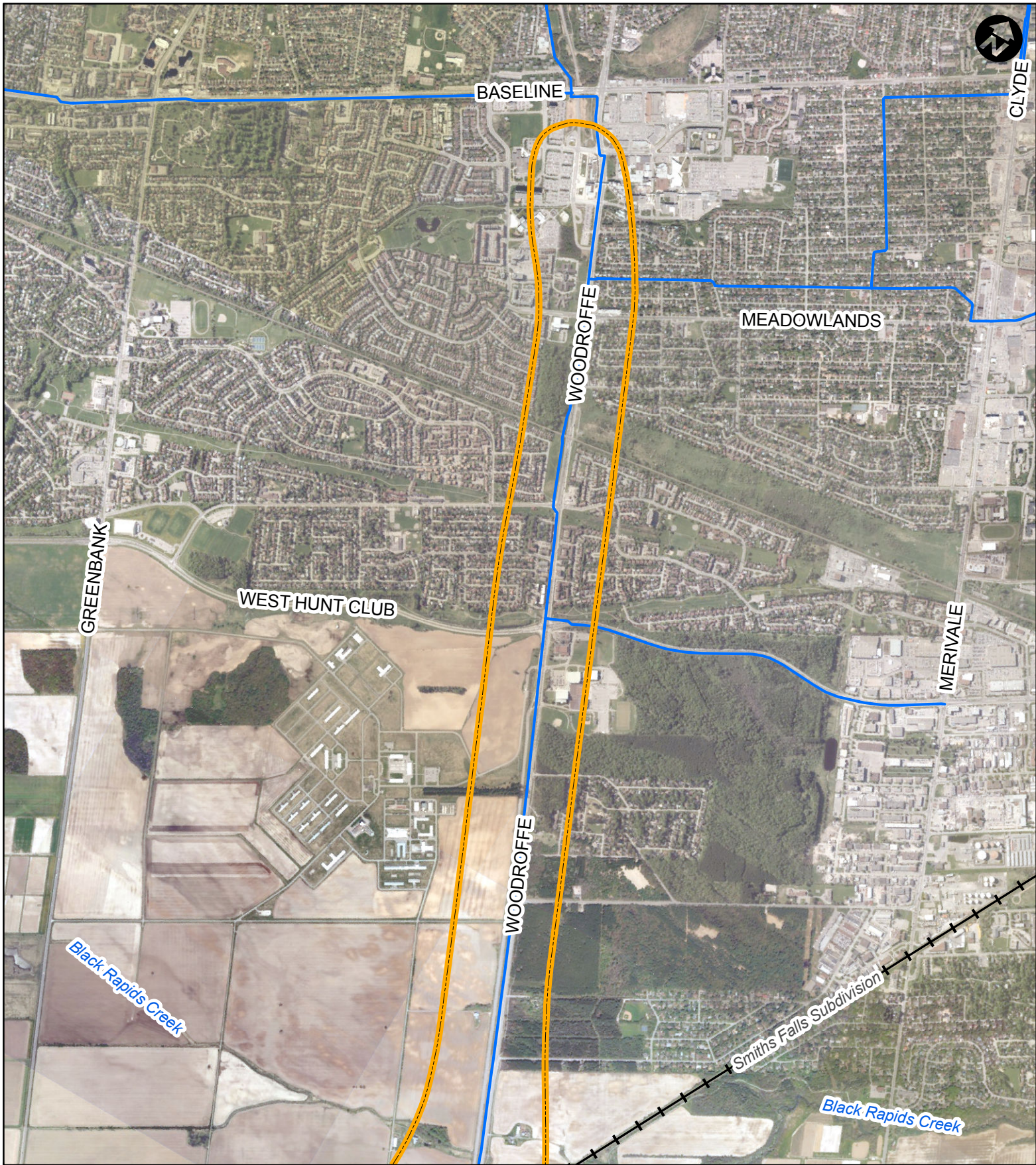
##### 3.5.7.1.2 Future Water Distribution Projects

The 2013 IMP has identified one growth-related water project in the Study Area: Greenbank Road Watermain. This project involves the construction of a 610mm watermain along Greenbank Road from North of Jockvale to South of the Jock River to replace the twin 406mm diameter watermains on Jockvale Road (numbered 1 and 2 in the above table). The project is pending funding; it is not expected to go under construction in the near future unless developers front end the cost of the works.


#### Feeder Main (watermain) Relocation

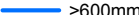
Currently, there is a large 1220mm feeder main (watermain) that runs along Woodroffe Avenue from Baseline Road to Fallowfield Road along the southbound lanes. This is a vital water distribution line to the Barrhaven community. As proposed in the 2015 preliminary feeder main replacement design option, the watermain is planned to be relocated to the northbound lanes to allow the watermain to be constructed while leaving the existing watermain in working condition during construction.





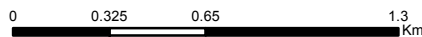
Legend

 Study Area

 Pipe Diameter >600mm

Barrhaven Light Rail Transit  
 (Baseline Station to Barrhaven Town Centre)  
 Planning and Environmental Assessment Study


Watermain








Legend

 Study Area

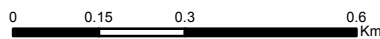
**Pipe Diameter**

 >600mm

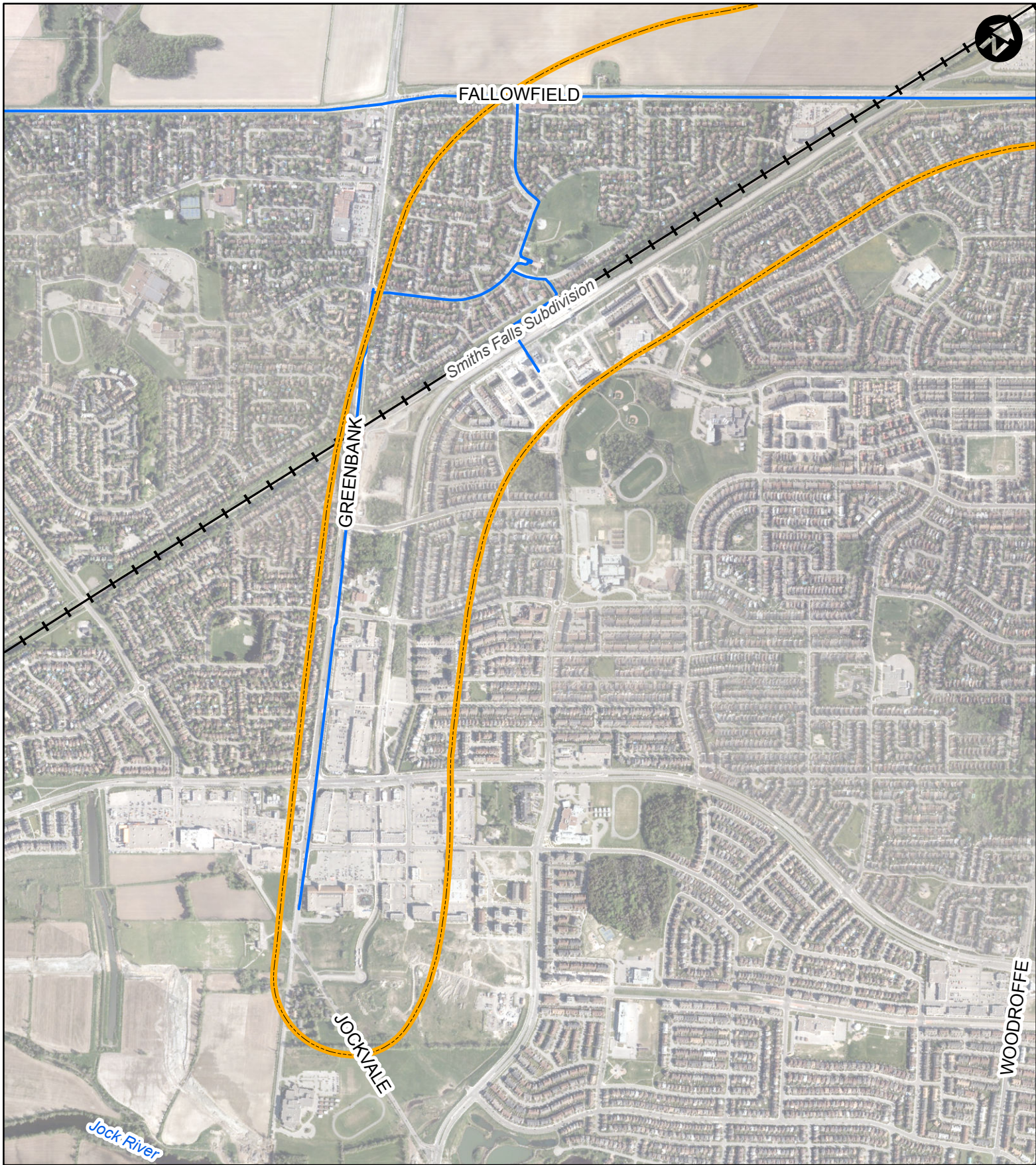
Barrhaven Light Rail Transit  
 (Baseline Station to Barrhaven Town Centre)

Planning and Environmental Assessment Study


Watermain



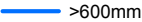




**Legend**

 Study Area

**Pipe Diameter**

 >600mm

**Barrhaven Light Rail Transit**  
(Baseline Station to Barrhaven Town Centre)

**Planning and Environmental Assessment Study**

0      0.2      0.4      0.8  
Km

Watermain





### 3.5.7.2 Wastewater Collection System

#### 3.5.7.2.1 Existing Wastewater Collection System

The wastewater collection system includes collector (trunk) sanitary sewers, a forcemain and local sanitary sewers. The area between West Hunt Club Road and Fallowfield Road is not serviced by the municipal wastewater collection system. The Study Area is fully serviced by the municipal wastewater collection system except for the Greenbelt area between south of the Nepean Sportsplex and Fallowfield Road. This includes the communities of Grenfell Glen and Merivale Gardens which are located on private septic services.

The collector sanitary sewers vary in size from 600mm diameter to 2250mm. The collectors and the forcemain are listed in **Table 3-11** and shown in **Figure 3-61**, **Figure 3-62** and **Figure 3-63** below.

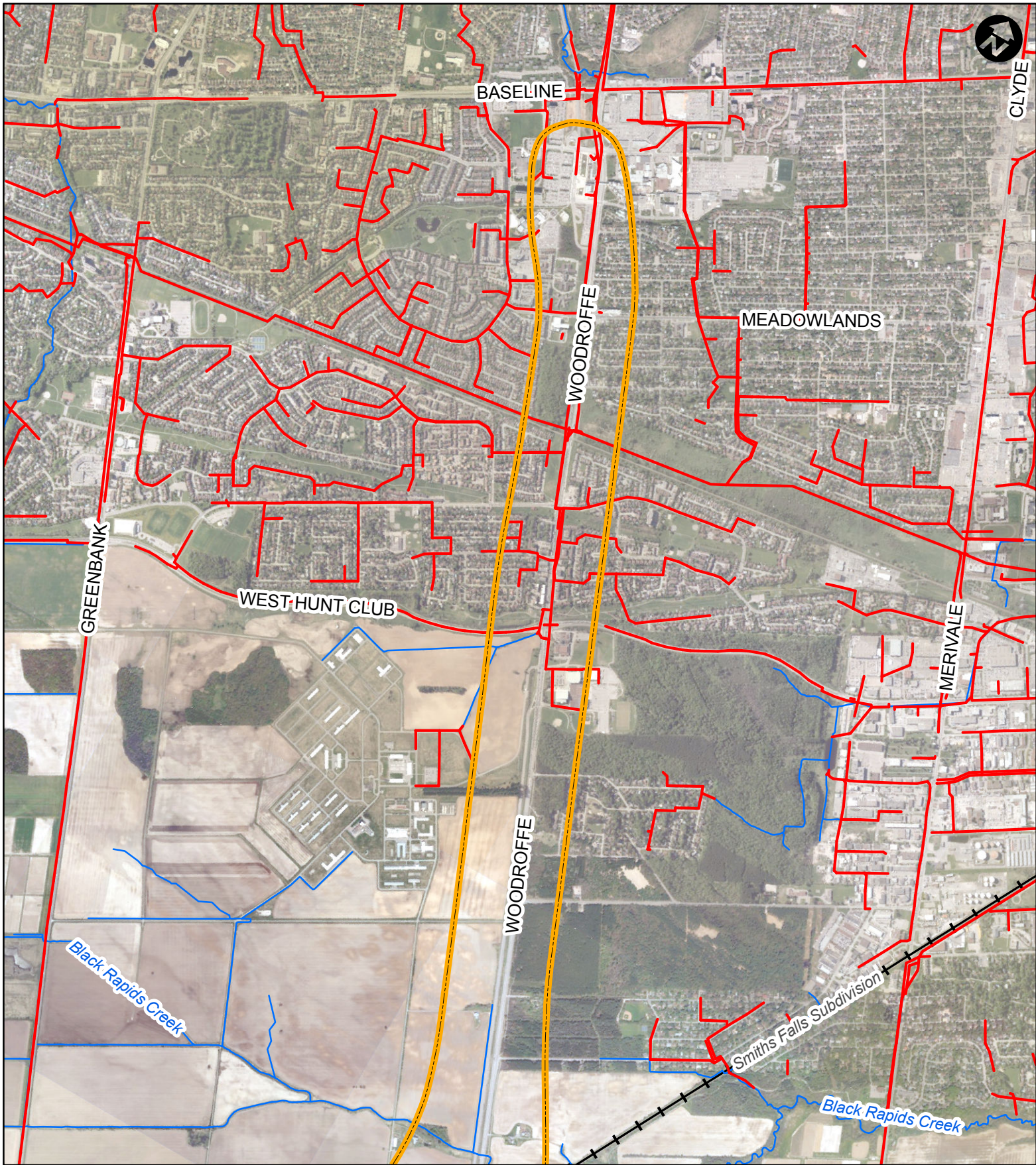
Table 3-11 Sanitary Collectors and Forcemain in the Study Area

Location/Intersection	Collector/Forcemain Name	Parallel/Perpendicular	Diameter (mm)	Material	Year Installed
Woodroffe Avenue, from north of Baseline Road to Norice Street	Woodroffe Diversion Forcemain	Parallel	600	Polyvinyl Chloride	1999
Woodroffe Avenue, from Norice Street to CN Railway	Woodroffe Diversion Sewer	Parallel	675	Concrete	1999
Woodroffe Avenue/CN Rail	Lynwood Collector	Perpendicular	2250	Reinforced Concrete	1981
Woodroffe Avenue, from CN Rail to north of West Hunt Club Road	South Woodroffe Trunk	Parallel	750	Concrete	1974
Woodroffe Avenue/Knoxdale Dr.		Perpendicular	750	Concrete	1974
Woodroffe Avenue/Knoxdale Dr.		Perpendicular	600	Polyvinyl Chloride	1999
Woodroffe Avenue/260m south of Knoxdale Dr.		Perpendicular	525	Concrete	1973
Transitway / Henfield Avenue to Via Verona Avenue	Barrhaven Trunk	Perpendicular	750	Concrete Pressure Pipe	1975

#### 3.5.7.2.2 Future Wastewater Collection Projects

The 2013 IMP has not identified any expansion or replacement projects for major sanitary sewers within the Study Area. Local sewer system extensions are anticipated as development intensifies.





**Legend**

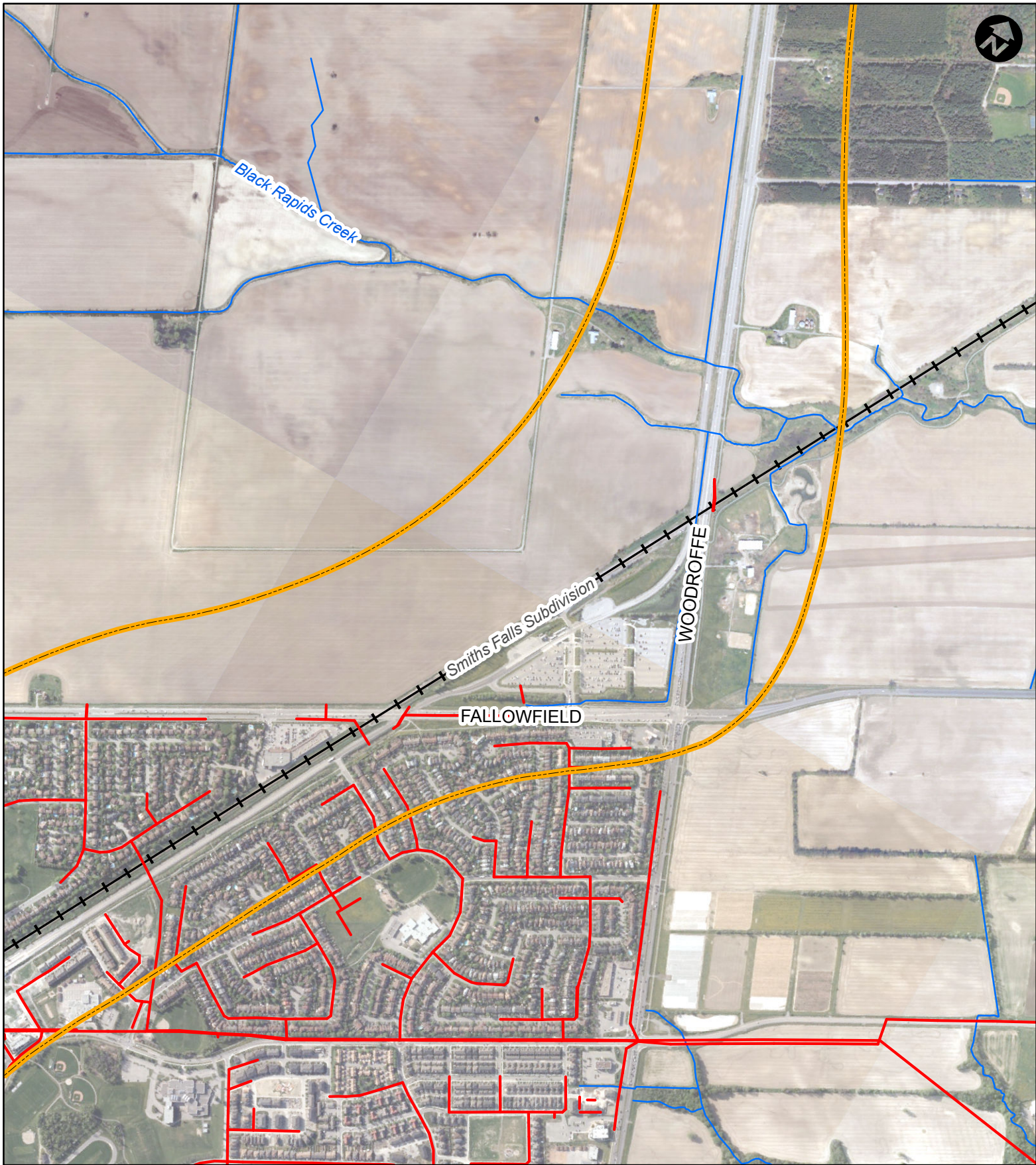
- Study Area
- Pipe Diameter**
- >525 mm
- Watercourse

**Barrhaven Light Rail Transit**  
 (Baseline Station to Barrhaven Town Centre)  
**Planning and Environmental Assessment Study**


0      0.325      0.65      1.3  
 Km

Sanitary Pipes







**Legend**

 Study Area

**Pipe Diameter**

 >525 mm


 Watercourse

**Barrhaven Light Rail Transit**  
(Baseline Station to Barrhaven Town Centre)

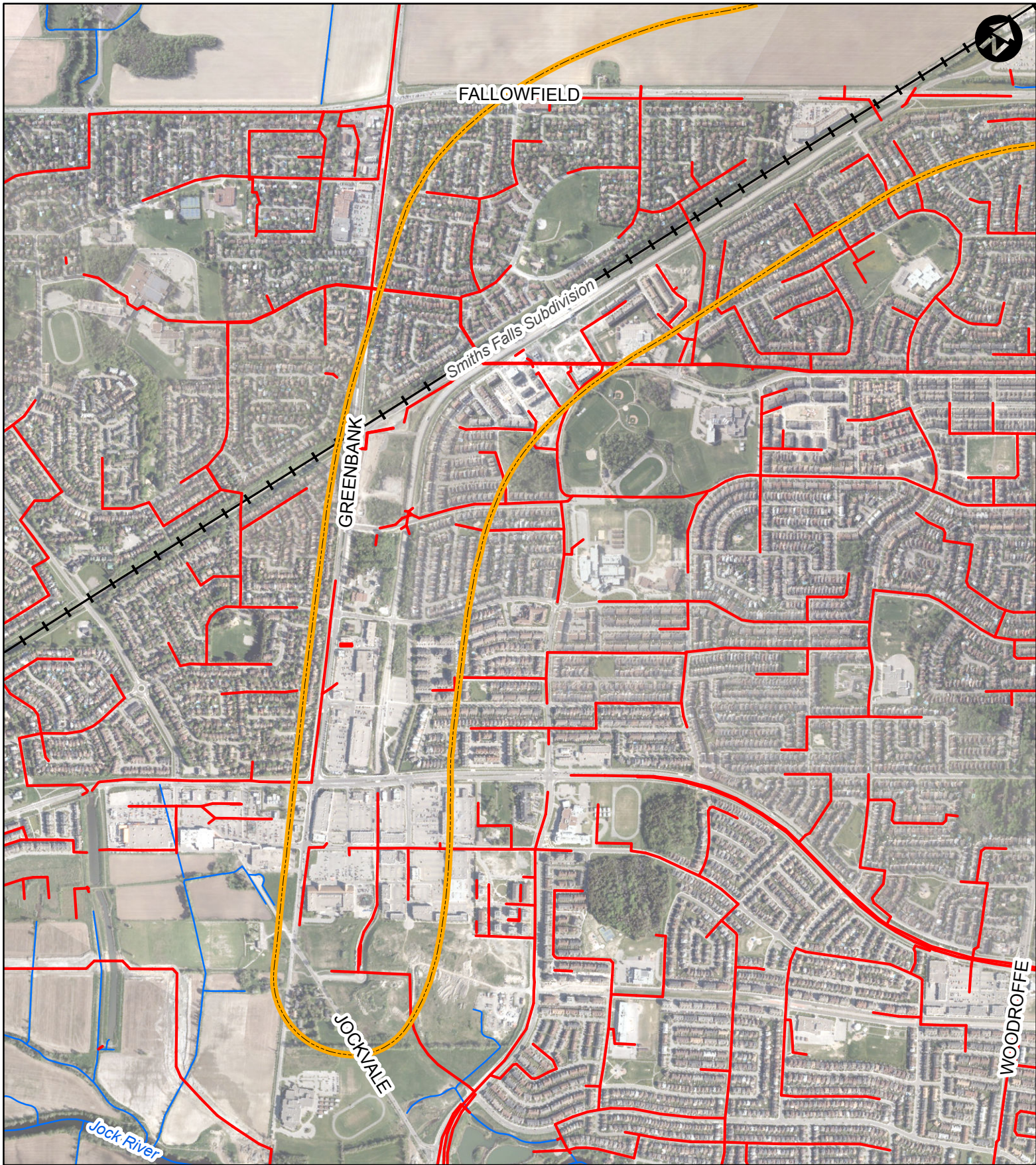
**Planning and Environmental Assessment Study**

0    0.15    0.3    0.6  
Km

Sanitary Pipes







**Legend**

- Study Area
- Pipe Diameter**
- >525 mm
- Watercourse

**Barrhaven Light Rail Transit**  
 (Baseline Station to Barrhaven Town Centre)  
**Planning and Environmental Assessment Study**

0      0.2      0.4      0.8  
 Km

Sanitary Pipes



### 3.5.7.3 Stormwater Collection System

The stormwater collection system in the Study Area includes collector storm sewers, local storm sewers, a stormwater management pond (SWM pond), box culverts and culverts. The Study Area is fully serviced by the municipal stormwater collection system except for the Greenbelt area between south of Nepean Sportsplex and Fallowfield Road. This includes the communities of Grenfell Glen and Merivale Gardens which contain rural stormwater management including ditches.

Black Rapids Creek crosses the existing Southwest Transitway with a series of box culverts ranging in sizes from 1800mm x 3600mm to 2400mm x 3600mm.

The collector storm sewers through the serviced areas vary in sizes from 750mm diameter up to 2400mm diameter. The local roadways are serviced with smaller storm sewers (300mm-600mm) and runoff is captured through a series of catch basins and maintenance holes. The collectors are listed in **Table 3-12** and shown in **Figure 3-64**, **Figure 3-65** and **Figure 3-66** below.

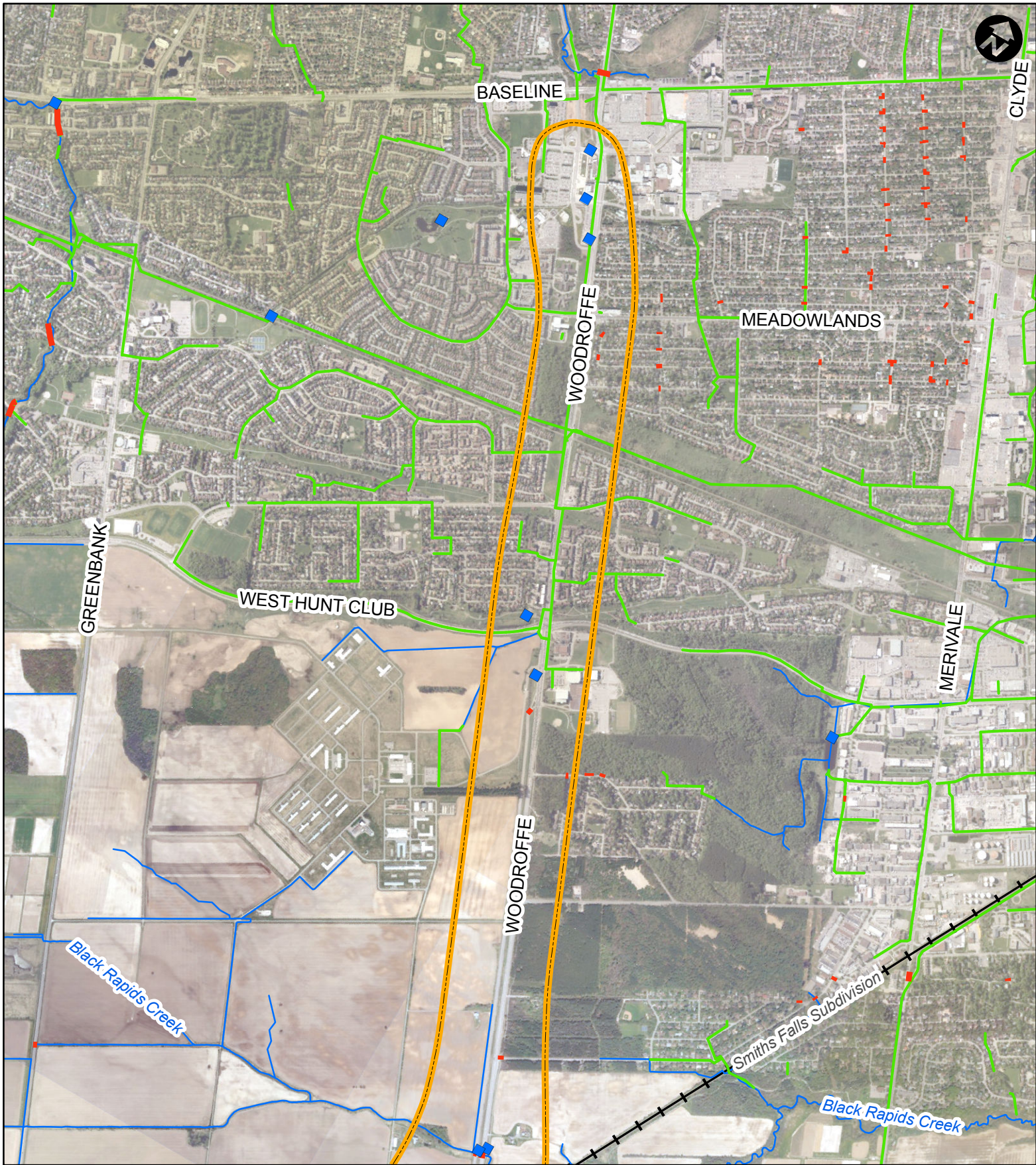
Table 3-12 Stormwater Collectors in the Study Area

Location/Intersection	Parallel/Perpendicular	Diameter (mm)	Material	Year Installed
Woodroffe Avenue, from Knoxdale Road to Pinecrest Creek (north of Baseline Rd)	Parallel	2400	Concrete	1974
Woodroffe Avenue/Tallwood Dr.	Perpendicular	2100	Concrete	1985
Woodroffe Avenue, from Crestlea Crescent to Knoxdale Road	Parallel	1800	Concrete	1974
Woodroffe Avenue, from Nepean Sportsplex to Crestlea Crescent	Parallel	1200	Concrete	1974
Woodroffe Avenue/260m south of Knoxdale Dr.	Perpendicular	1800	Concrete	1973
Woodroffe Avenue/Majestic Drive	Perpendicular	900	Concrete	1972
Woodroffe Avenue/75m north of Hunt Club Road	Perpendicular	1800 (1200 lined)	Concrete	1974
Woodroffe Avenue/70m south of West Hunt Club Road	Perpendicular	900 (twin)	Concrete	1993
Transitway/Blacks Creek north crossing	Perpendicular	2400 x 3600	Concrete	-
Woodroffe Avenue/Blacks Creek north crossing	Perpendicular	2400 x 3600	Concrete	-
Transitway /Blacks Creek south crossing	Perpendicular	1800 x 3600	Concrete	-
Woodroffe Avenue /Blacks Creek south crossing	Perpendicular	1800 x 3600	Concrete	-
Transitway/Fallowfield Road	Perpendicular	525 (twin)	Polyvinyl Chloride	2005
Transitway/between Cobb Court and Mountshannon Drive	Perpendicular	1350	Concrete	1974
Transitway/between Foxhill Way and Via Verona Avenue	Perpendicular	2250	Concrete	1975
Transitway, from SWM pond to between Foxhill Way and Via Verona Avenue	Parallel	750	Concrete	2014
Transitway, from Strandherd Drive to Jockvale Road	Parallel	Varies from 975 to 1350	Concrete	2010
Transitway/Marketplace Avenue	Perpendicular	1050	Concrete	2002
Transitway, from Jockvale Road to east of transitway	Parallel	Varies from 1500 to 1650	Concrete	2010

#### 3.5.7.3.1 Future Stormwater/Drainage Projects

The 2013 IMP does not identify any expansion or replacement projects for major storm sewers or stormwater management facilities within the Study Area. Local sewer system extensions are anticipated as development intensifies.





**Legend**

- SWM Facilities
- Culvert
- Study Area

**Pipe Diameter**

- >750mm
- Watercourse

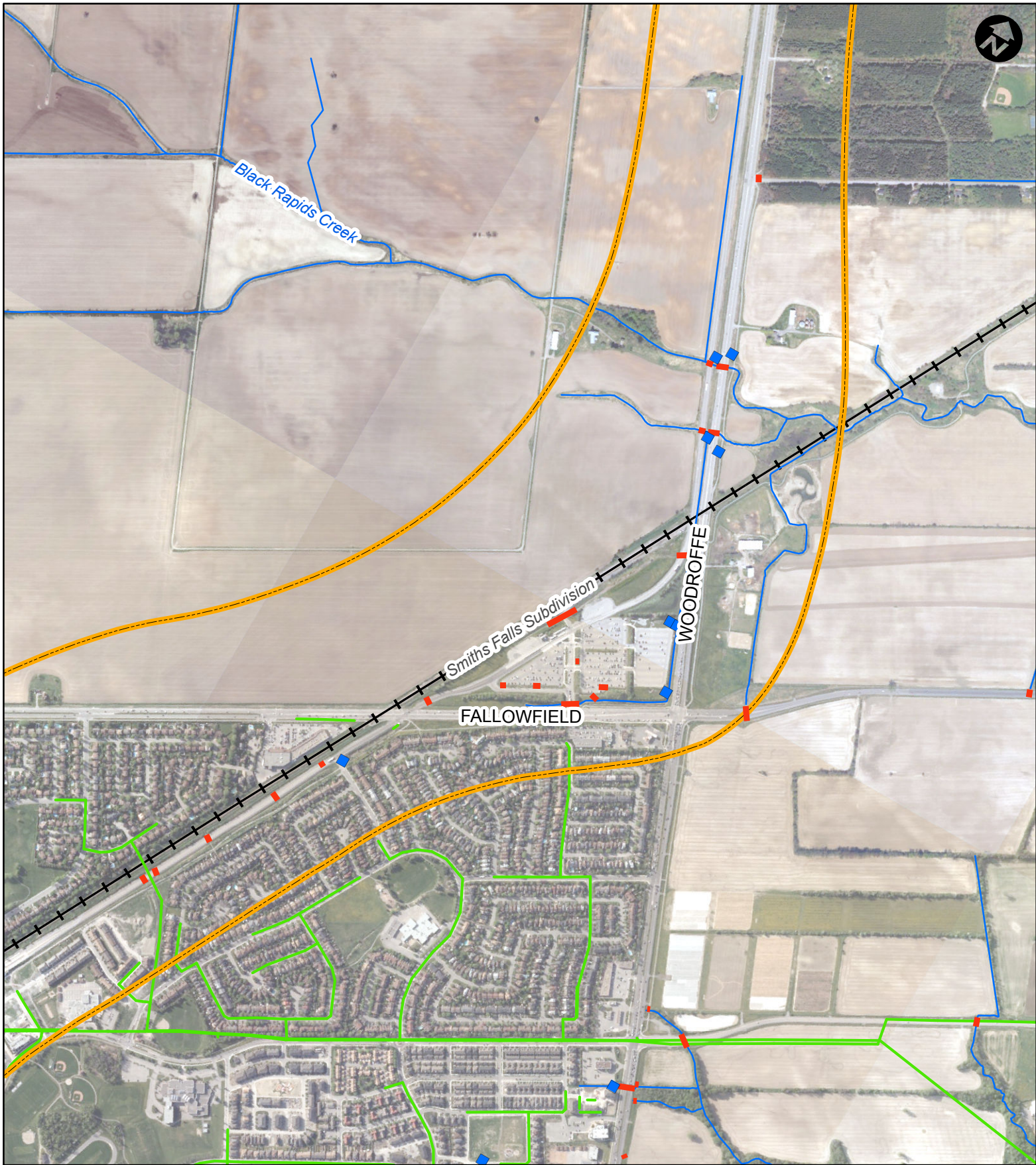
Barrhaven Light Rail Transit  
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0      0.325      0.65      1.3  
Km

Storm Pipes



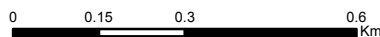


Legend

- SWM Facilities
  - Culvert
  - Study Area
- Pipe Diameter**
- >750mm
  - Watercourse

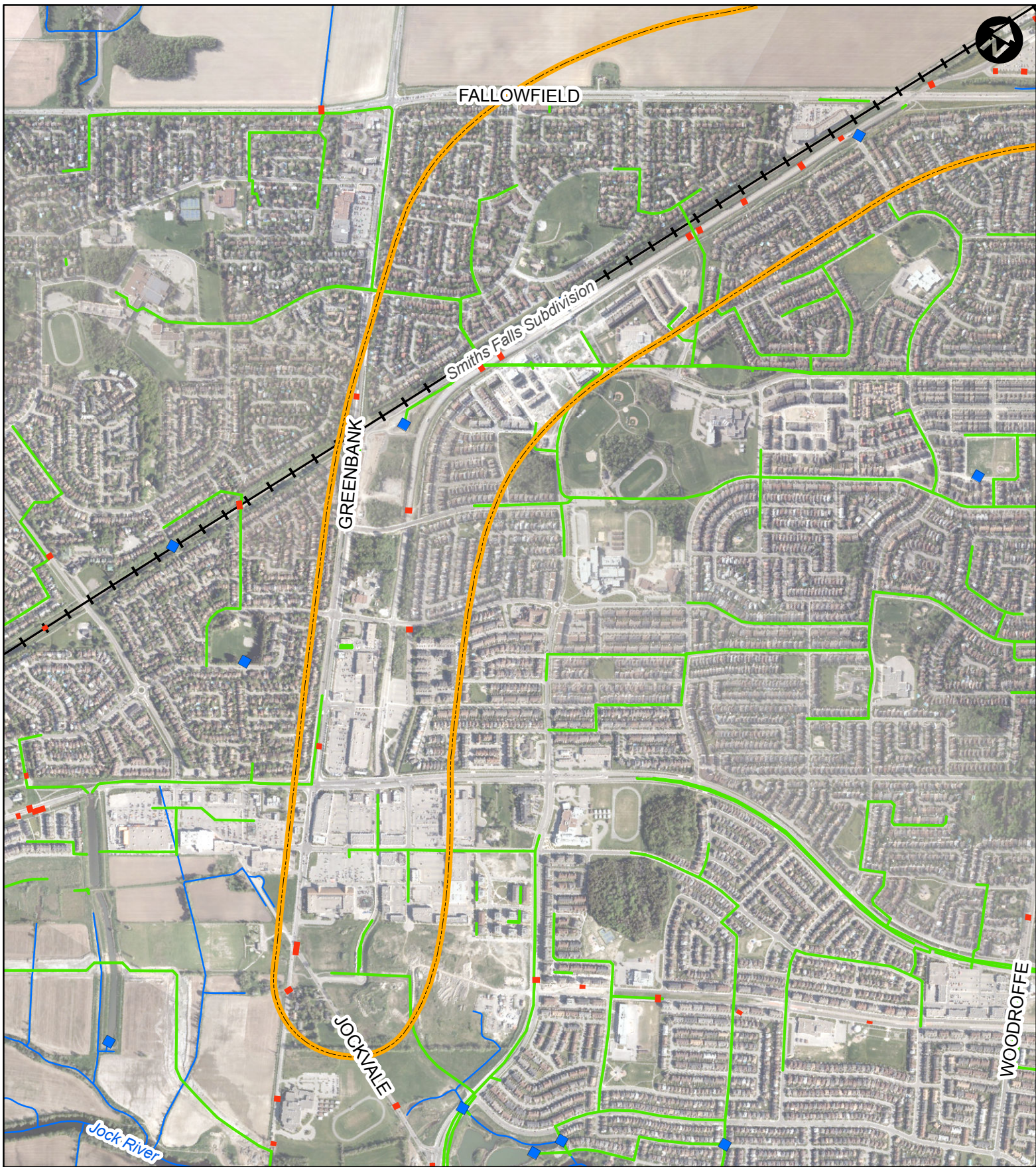
Barrhaven Light Rail Transit  
(Baseline Station to Barrhaven Town Centre)

Planning and Environmental Assessment Study








Storm Pipes






**Legend**

 Study Area	<b>Pipe Diameter</b>
 SWM Facilities	 >750mm
 Culvert	
 Watercourse	

**Barrhaven Light Rail Transit**  
 (Baseline Station to Barrhaven Town Centre)  
**Planning and Environmental Assessment Study**

0      0.2      0.4      0.8  
 Km

Storm Pipes





### 3.5.7.4 Gas Distribution

Enbridge Gas distributes gas in the Study Area except in the Greenbelt (where no service is provided) between West Hunt Club Road and Fallowfield Road. The gas pipes vary in size from 35mm diameter to 300mm diameter. A 300mm diameter vital gas main is located within Fallowfield Road right-of-way under the westbound lanes. Vital gas mains are critical to the gas distribution system. These gas mains are typically more costly to relocate due to their size and operating pressure. There are plans for the extension of a 20"-24" extra high-pressure vital gas main along the north side of West Hunt Club from Greenbank Road to Prince of Wales Drive which will cross Woodroffe Avenue. This is planned for 2020-2025.

### 3.5.7.5 Electricity Distribution

In the Study Area, hydro is distributed either underground through duct banks, conduits, and cables or overhead on poles. The UCC drawings identify the size of duct banks which vary in size from 400mm to 1370mm wide (**Table 3-13**).

A Hydro Ottawa overhead major distribution line runs north-south along the east side of Woodroffe Avenue from north of Knoxdale Road/Medhurst Drive to West Hunt Club Road. Approximately 200m south of West Hunt Club it crosses over to the west side of Woodroffe Avenue and continues south past Fallowfield Road; this overhead line branches out on Fallowfield Road.

Table 3-13 Hydro Duct Banks in the Study Area

Location/Intersection	Parallel/Perpendicular	Width (mm)
Woodroffe Avenue/ Navaho Dr.	Perpendicular	1370
Woodroffe Avenue/ College Avenue	Perpendicular	1370
Woodroffe Avenue, from 30m north of College Avenue to 68m north of Parkglen Drive	Parallel	542
Woodroffe Avenue, from Meadowland Drive to 44m south	Parallel	542
Woodroffe Avenue/5m south of Nepean Sportsplex entrance	Perpendicular	404
Woodroffe Avenue, 225m north of Fallowfield	Parallel	400
Fallowfield Road/east of Via Park Place	Perpendicular	400
Fallowfield Road/west of Via Park Place	Perpendicular	400
Transitway/Highbury Park	Perpendicular	542
Transitway/Strandherd Drive	Perpendicular	818
Transitway/Marketplace Avenue	Perpendicular	818

#### 3.5.7.5.1 Hydro One Electricity Transmission

Hydro One transmission lines in the Study Area include two separate corridors:

The first one is running east-west on the south side of Knoxdale Road and contains the following lines:

- a 115 kV circuit (C7BM) twin wood pole line.
- a 230 kV transmission line (M32S) supported by steel towers.

The second corridor on the north side of West Hunt Club contains four transmission lines on two sets of steel towers. The voltages of the transmission lines vary from 115 kV to 500 kV as follows:

- The northernmost line (S7M) is operated at 115 kV.
- The two middle lines (X522A and X523A) are operated at 500 kV.
- The southernmost line (E34M) is operated at 230 kV.



### **3.5.7.6 Telecommunications Distribution Systems**

In the Study Area, telecommunication utilities are distributed either underground through duct banks, conduits and cables or overhead on poles.

Rogers cables run along Woodroffe Avenue between Knoxdale/Medhurst Drive and Majestic Drive and along VIA Rail from Woodroffe Avenue to Greenbank Road. Atria crosses VIA Rail at Woodroffe Avenue.



