

3 Existing Environmental Conditions

3.1 Study Area

This section of the EPR presents the studies and investigations undertaken to document the existing conditions within the Study Area. Overall, baseline data was collected and analyzed for key environmental parameters to:

- Provide an understanding of existing conditions;
- Allow for future predictions of how the proposed project may cause these environmental conditions to change;
- Allow for future predictions of how adverse effects can be mitigated and beneficial effects enhanced; and,
- Provide a basis for designing monitoring programs.

3.1.1 PHYSICAL AND TEMPORAL BOUNDARIES

The Study Area is generally shown in **Figure 1-1**. However, the Study Area limits may change depending on the element of the environment. This is because some potential environmental effects may be much more localized, such as noise, whereas others like the movement of people may have broader extents.

The information in this section is intended to represent a ‘snapshot’ in time. Additional information as it becomes available will continue to be updated during the study period. Results of subsequent detailed and seasonal field surveys are provided in **Section 5** of the EPR.

3.2 Methods of Investigation

The information presented in this section was prepared by a multidisciplinary team of land use planners, biologists, geologists, archaeologists, landscape architects, municipal engineers, transportation planners, and experts in rail safety, agriculture, air quality, noise, and vibration. This team of specialists collected, consolidated, reviewed and screened the available information with a view towards establishing the basis for development, analysis and evaluation of alternatives.

The existing conditions reporting considered all available background material. The inventory is of sufficient detail to enable the analysis and evaluation of alternative transportation solutions, designs, mitigating measures and monitoring programs. As noted, this information will be supplemented by on-site surveys and/or detailed studies where warranted.

The general methodology involved the following elements:

- The submission of requests for data, drawings and reports to relevant agencies;
- Contacting and meeting with affected parties as required;
- Consolidating, reviewing and analysing relevant material for each element;
- Conducting air photo interpretation and field verification as required; and,
- Identifying elements or criteria that could be considered potential evaluation criteria.

Specific methods of investigation may be discussed in further detail in the respective sections as warranted. Transportation conditions and planning policies related to transportation were summarized in the Needs and Opportunities section of the report and are considered as forming part of the existing conditions for the Study Area.

3.3 Social Environment

The social environment for the Study Area is documented through a review of relevant policy and summary of existing conditions with respect to the social environment throughout the following sections.

3.3.1 REGULATORY PLANNING POLICIES

3.3.1.1 Federal Policy

The federal policy and development context affecting the study corridor consists of National Capital Commission (NCC) policy documents as described below and includes the Plan for Canada’s Capital and more specifically, the Greenbelt Master Plan.

3.3.1.1.1 Plan for Canada’s Capital (2017)

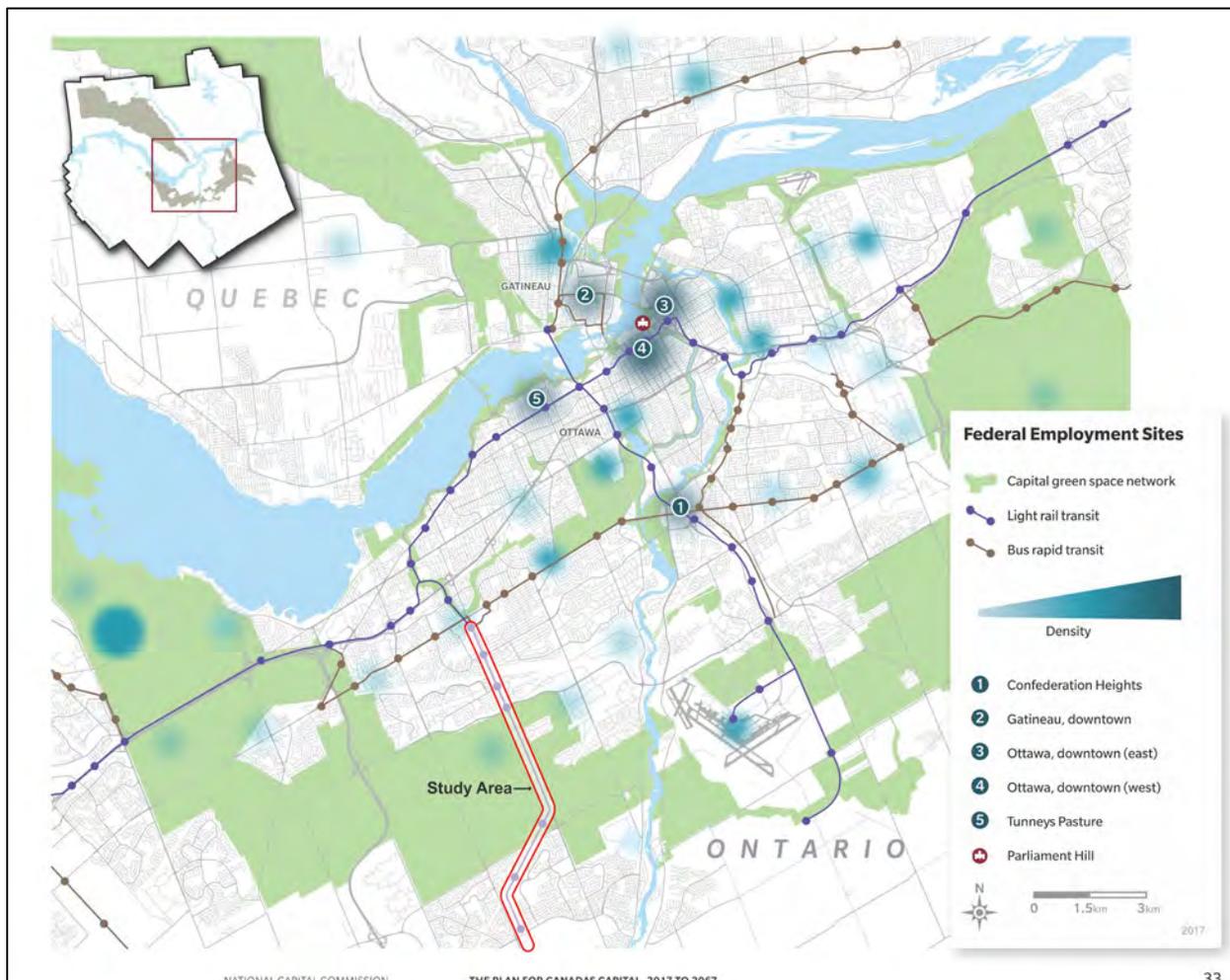
The Plan (2017) is a long-range planning document that acts as a blueprint for the planning and use of federal lands within the National Capital Region. It guides the federal management of lands to ensure that the capital reflects its national importance. The Plan acknowledges a shared and collective responsibility with municipal and provincial planning authorities to achieve the objectives of the plan.

The Plan has three strategic pillars that guide it, including:

- An Inclusive and Meaningful Capital;
- A Picturesque and Natural Capital; and,
- A Thriving and Connected Capital.

The Plan aims to protect the legacy from the past while building on and strengthening the unique character of Canada’s Capital Region looking towards Canada’s bicentennial in 2067. The Plan acknowledges investments in LRT and BRT networks (including the extension to Barrhaven) to connect residents across the large geography of the City (**Figure 3-1**).

Figure 3-1 Plan for Canada’s Capital Transit Context



3.3.1.1.2 NCC Greenbelt Master Plan (2013)

The Greenbelt Master Plan (GMP) directs and guides the preservation and evolution of the National Capital Greenbelt into 2067. One of the goals outlined in the GMP with respect to sustainable transportation and infrastructure involves ensuring that “environmental best management practices are applied in the design, operation and maintenance of existing infrastructure.” Furthermore, the GMP highlights that new infrastructure within the Greenbelt should not be permitted “unless there is demonstration that there are no alternatives outside of the Greenbelt and no net loss will result to ecological or overall Greenbelt integrity.”

The portion of the Study Area within the Greenbelt is within or adjacent to four land use designations: 1) Agriculture, 2) Core Natural Areas, 3) Natural Link and 4) Non-Federal Facility. The primary objectives of these land use designations are outlined in **Table 3-1** and shown in **Figure 3-2**.

Table 3-1 Greenbelt Master Plan Land Use Designations

Land Use Designation	Primary Objectives
Agriculture	<ul style="list-style-type: none"> Practice sustainable agriculture Support productive Greenbelt farms that contribute to local and regional food supply Diversify Greenbelt farming and provide opportunities for agri-tourism Reduce the area covered by large mono-culture farming operations and promote diverse agriculture lands Enhance Canada’s Capital through conservation of natural visual landscapes
Core Natural Area	<ul style="list-style-type: none"> Protect biodiversity and ecosystem health for the long term Restore and enhance terrestrial and aquatic biodiversity Enhance Canada’s Capital through the conservation of natural visual landscapes
Natural Link	<ul style="list-style-type: none"> Protect natural linkages between Core Natural Areas Establish or restore terrestrial and aquatic linkages in fragmented landscapes with the Greenbelt Provide public activities and interpretation away from sensitive features Facilitate adaption to environmental change (resiliency) Enhance Canada’s Capital through conservation of natural visual landscapes
Non-Federal Facility	<ul style="list-style-type: none"> Complement the Natural Environment, Agriculture, and Capital Experiences & Recreation Ensure Agriculture Canada Research Facility located within the Study Area contributes to the Greenbelt’s visual landscape

Figure 3-2 Greenbelt Sector Plan applicable within the Study Area



Greenbelt Implementation: Sector Plans

The GMP includes Sector Plans which provides more detailed information on the land use designations, Capital experiences, and the recreation networks in specific parts of the Greenbelt. The Southern Farm & Pinhey Forest Sector Plans are applicable to the Study Area. The GMP aspires to enhance the VIA Rail Train Station located at the intersection of Fallowfield Road and Woodroffe Avenue as a Capital Arrival through visitor information and promotion of the Greenbelt and the Capital, illustrating the importance of the location of the Study Area. The Plan identifies transportation as a key component of the Capital experience committing to achieving sustainable transportation that complies with environmental conservation best practices. Potential impacts to the visual quality, natural links and farming practices in the Greenbelt need to be mitigated/avoided in order to preserve Greenbelt value.

The Sector Plan as seen in **Figure 3-2** identifies several Guidelines and Actions (denoted by characters on the Sector Plan) that may impact the evaluation of alternatives. These include:

A – The Pinhey Forest Core Natural Area:

- The sector is accessible to visitors and residents by transit, boat (via the Rideau River) and recreational pathways. and aspires to offer outdoor recreational and educational experiences in a forest setting.
- The Plan aims at preserving and promoting visual landscapes of farms and forest.
- The adjacent Nepean Sportsplex, (denoted as Q) will help in integrating conservation, forest management and recreational value into an urban setting.
- The Plan suggests working with community and agency partners to enhance the promotion and education value of the Visitor Destination.

B – Southern Farms Natural Link

- To aim for a fully functioning natural link; reduce the tile drain system area as part of regular maintenance.
- To partner with Rideau Valley Conservation Authority (RVCA), farm owners and tenants to restore riparian areas and enhance natural links along Black Rapids Creek and the headwaters of Graham Creek.

I – Greenbelt Research Farm Lands

- Encourage use and demonstration of provincial and federal recognized farm best management practices and diversify farm crop production over time.

N – Visual Quality along Sector Roadways:

- To enhance visual quality of Greenbelt along transportation routes through context sensitive design and landscape management (planting of naturalized trees and shrubs), that maintain views and reduce effects of wind on roads.
- Protect views and enhance visual quality.
- Explore ways to protect and enhance visual experience along scenic routes of Fallowfield Road, Woodroffe Avenue.

Q – The Nepean Sportsplex and Confederation Education Centre

- Permit future continued intensive use and adaptive re-use of the site, including maintenance of existing sports fields and use of the (former) school's existing site for recreational uses.

R – The Fallowfield Park and Ride Facility

- Enhance the VIA Rail Train Station as a Capital Arrival through visitor information and promotion of the Greenbelt and the Capital.

T – Greenbelt Research Farm:

- Allow shared and mixed use of built facilities and explore potential for partnerships to provide sustainable agriculture support at this site, through activities such as farming, processing or value-added facilities, markets, asset sharing.
- Reserve this site for federal use in the long-term.

3.3.1.2 Provincial Policy

The Provincial Policy Statement (PPS) (MMAH, 2020) is issued under Section 3 of the *Planning Act*. The Provincial Policy Statement provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario’s policy-led planning system, the PPS sets the policy foundation for regulating the development and use of land. It also supports the provincial goal to enhance the quality of life for all Ontarians by building strong, healthy, and resilient communities with long-term economic prosperity. It includes policies on key issues that affect our communities, such as:

- The efficient use and management of land and infrastructure;
- Protection of public health and safety;
- Protection of the environment and wise use and management of resources; and,
- Ensuring appropriate opportunities for employment and residential development, including support for a mix of these uses.

Municipalities use the PPS to develop their Official Plans and to guide and inform decisions on planning matters. All decisions affecting land use planning matters “shall be consistent with” the PPS (MMAH, 2020).

The PPS defines *Development* as “the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the *Planning Act*.” Many land use policies outlined in the PPS restrict development in and/or near elements of provincial interest (e.g. provincially significant wetlands) unless it can be demonstrated that there will be no negative impact on the environmental features or their ecological functions. However, as per the PPS, “activities that create or maintain infrastructure authorized under an environmental assessment process” are not considered development.

Notwithstanding, environmental assessments have regard to matters of provincial interest and where impacts cannot be avoided shall be minimized to the extent possible through appropriate mitigation, monitoring and/or compensation.

3.3.1.3 Municipal Policy

The municipal policy context affecting the Study Area consists of the City of Ottawa Official Plan; Secondary Plans; and the Comprehensive Zoning By-Law.

3.3.1.3.1 City of Ottawa Official Plan (2013, as amended)

The Official Plan (OP) provides a vision of the future growth of the City and a policy framework to guide its physical development to the year 2031. It is a legal document that addresses matters of provincial interest defined by the PPS. The Official Plan serves as a basis for, and provides guidance on, a wide range of municipal activities. **Table 3-2** outlines the various land use and other designations that apply within the Study Area. **Figure 3-3** illustrates the land use designations of the Official Plan. Municipal services (including LRT) are generally permitted in all land use designations if authorized under an EA where issues of impact and mitigation are addressed.

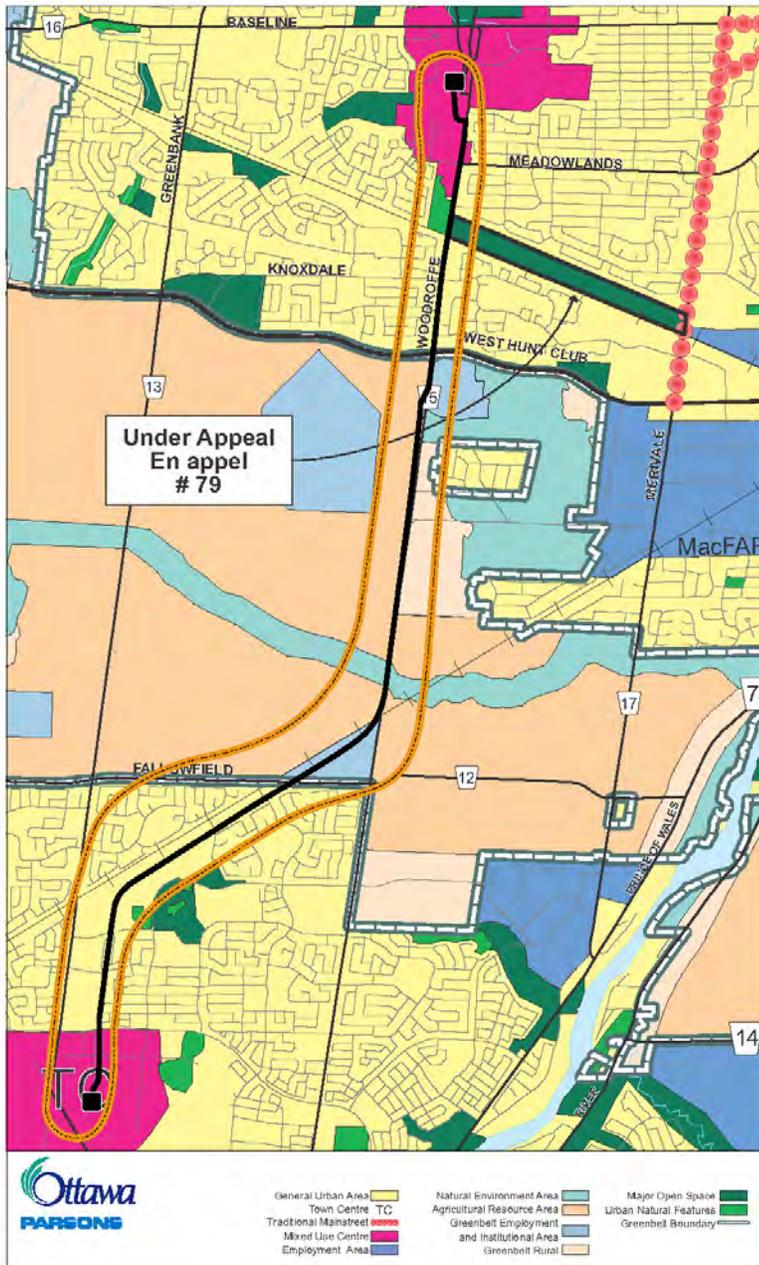
Table 3-2 Land Use Designations applicable to the Study Area

Schedule	Designation	Location within Study Area
B – Urban Policy Plan	GENERAL URBAN AREA	Lands north and south of the Greenbelt and includes existing and developing residential communities.
	MIXED USE CENTRE	Just south of Meadowlands Drive north to Baseline Road and South of Strandherd Drive.

Schedule	Designation	Location within Study Area
	AGRICULTURE RESOURCE AREA	Greenbelt lands more specifically, between West Hunt Club Road and Fallowfield Road to the west and portions north of Fallowfield Road to the east.
	GREENBELT EMPLOYMENT AND INSTITUTIONAL AREA	Defined area just west of the Study area south of West Hunt Club Road and includes the former Agricultural Research Farm. VIA Rail Station at Fallowfield Road and Woodroffe Avenue.
	MAJOR OPEN SPACE	Corridor extending east from Woodroffe Avenue along the CN Railway and narrow corridor along the north side of West Hunt Club Road and South Nepean Park.
	NATURAL ENVIRONMENT AREA	Greenbelt lands coinciding with Pinhey forest and along Black Rapids Creek
	GREENBELT RURAL	Greenbelt lands east of Woodroffe Avenue south of the Nepean Sportsplex to just north of Black Rapids Creek.
	URBAN NATURAL FEATURE	Tallwood Woods south of Tallwood Drive, north of the CN Railway and Highbury Woods north of Highbury Park Drive, west of Longfields Drive.
C – Primary Urban Cycling Network	ON-ROAD CYCLING ROUTES	Woodroffe Avenue and Fallowfield Road.
	OFF-ROAD CYCLING ROUTES	Portions of Woodroffe Avenue and along the VIA Rail corridor in the southern portion of the Study Area.
D – Rapid Transit and Transit Priority Network	BUS RAPID TRANSIT (BRT)	West of Woodroffe Avenue
	INTER-REGIONAL STATION	The VIA Rail Station at the intersection of Woodroffe Avenue and Fallowfield Road
E – Urban Road Network	ARTERIAL ROADS	Baseline Road West Hunt Club Road Woodroffe Avenue Fallowfield Road Strandherd Road Greenbank Road
	MAJOR COLLECTOR ROADS	Meadowlands Drive Longfields Drive Jockvale Road Tallwood Drive Centrepointe Drive
	COLLECTOR ROADS	Berrigan Drive Highbury Park Drive Mountshannon Drive Holitman Drive Foxfield Drive Wolfgang Drive Grenfell Crescent Riocan Avenue Slack Road Vaan Drive Majestic Drive Knoxdale Road Medhurst Drive Norice Street Constellation Drive Navaho Drive
	INTAKE PROTECTION ZONE	Woodroffe Avenue from Baseline Road to approximately Slack Road

Schedule	Designation	Location within Study Area
K – Environmental Constraints	UNSTABLE SLOPES	Main channel of Black Rapids Creek Pinecrest Creek northern limit of Study Area to Meadowlands Drive
	GREENBELT	West Hunt Club Road to Fallowfield Road
L1 – Natural Heritage System Overlay (East)	NATURAL HERITAGE SYSTEM FEATURES	Tallwood Woods at Tallwood Drive to CN Rail line Pinhey Forest West Hunt Club Road to Grenfell Crescent Wetland parcel west of Woodroffe Avenue on main channel of Black Rapids Creek Highbury Woods
	OTTAWA WATERSHED, PINECREST CREEK SUBWATERSHED	Northern limit of Study Area to mid-Greenbelt
Annex 2a – Watershed and Subwatershed Plans	LOWER RIDEAU WATERSHED, BLACK RAPIDS CREEK AND BARRHAVEN CREEK SUBWATERSHEDS	Mid Greenbelt to Fallowfield Road and Fallowfield Road to approximately Berrigan Drive
	JOCK WATERSHED, JOCK DOWNSTREAM REACH SUBWATERSHED	Berrigan Drive to southern limit of the Study Drive
Annex 2b – Subwatershed Studies and Environmental Plans	PINECREST CREEK STORMWATER MANAGEMENT RETROFIT STUDY	Northern Study Area limit to approximately mid Greenbelt
	LOWER RIDEAU WATERSHED STRATEGY	Mid Greenbelt to approximately Berrigan Drive
	JOCK RIVER REACH 1 SUBWATERSHED STUDY	Berrigan Drive to southern limit of Study Area
Annex 10 – Land Use Constraints Due to Aircraft Noise	25 LINE (COMPOSITE 25 NEF/NEP)	Fallowfield Road, along transitway alignment to Greenbank Road south to Strandherd Drive
	AIRPORT ZONING REGULATIONS/AIRPORT VICINITY DEVELOPMENT ZONE	East side of Woodroffe Avenue from the Nepean Sportsplex to Fallowfield Road and Study Area limits south of Fallowfield Road

Figure 3-3 City of Ottawa Official Plan



3.3.1.3.2 City of Ottawa Secondary Plans

The City of Ottawa Official Plan is supported by a collection of Secondary Plans and Site-Specific Policies prepared by former municipalities for specific areas. The plans contain complementary and more detailed policy direction for specific areas and neighbourhoods in the City.

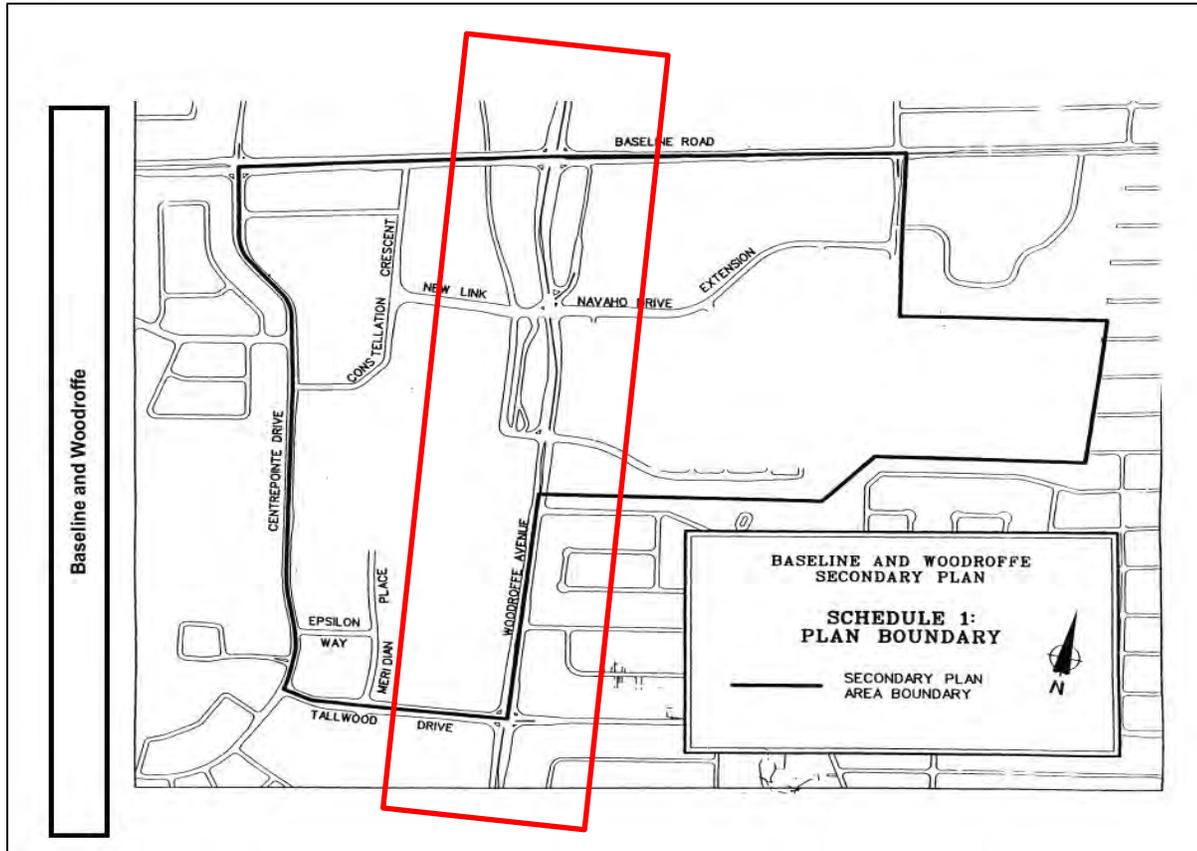
The three (3) secondary plans which provide policy direction within the Study Area are:

- Baseline and Woodroffe Secondary Plan;
- South Nepean Urban Plan for Areas 1, 2 and 3; and,
- Barrhaven Downtown Secondary Plan.

Baseline and Woodroffe Secondary Plan

The Baseline and Woodroffe Secondary Plan as seen in **Figure 3-4** is intended to function as a focal point for business and activity, accommodating a large amount of employment and related development with good access to transit. The transportation system forms the skeletal structure of the area and determines the level of development that can be accommodated. A notable objective of the plan is creating transit-oriented development at Baseline Station.

Figure 3-4 Baseline and Woodroffe Secondary Plan

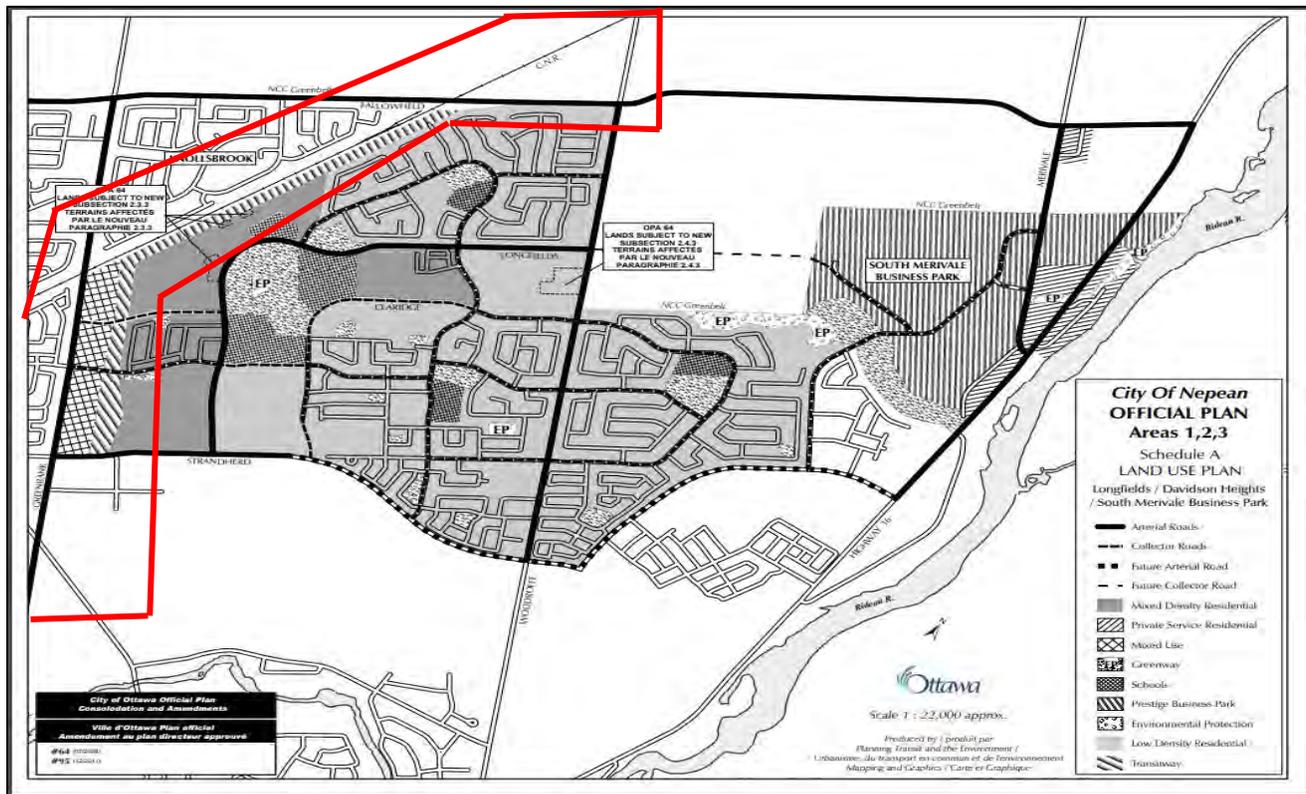


South Nepean Urban Plan for Areas 1, 2 and 3

The South Nepean Urban Plan for Areas 1, 2 and 3 is illustrated in **Figure 3-5**. Fallowfield Road acts as the northern boundary for the Plan and applies to the southern portion of the Study Area. Fallowfield Road is highlighted as it is an Arterial Road for use by pedestrians, cyclists, transit vehicles, trucks and cars and separates the Greenbelt from the mixed-density residential area of the South Nepean Urban Plan Area.

The Secondary Plan emphasizes a strong support to the development of transit within the area. It identifies that the Rapid Transit Corridor will be located adjacent to the VIA Rail corridor south of Fallowfield Road (note the railway is labelled as C.N.R. on **Figure 3-5**), extending south to the South Nepean Activity Centre provided there is future service demand.

Figure 3-5 South Nepean Urban Plan for Areas 1, 2 and 3



Barrhaven Downtown Secondary Plan (2019)

During the course of the EA study, the Barrhaven Downtown Secondary Plan (**Figure 3-6**) was drafted and supersedes the Area 7 plan. The new plan puts forward area-based policy direction to support the Barrhaven Town Centre’s evolution into a compact, mixed-use, and transit-supportive community. The Secondary Plan acknowledges OP direction for area intensification and infill, and highlights a vision of the Barrhaven Downtown as a meeting place for the community. High-quality urban design, a mix of land uses, and accessible greenspace and transportation are emphasized to support community growth.

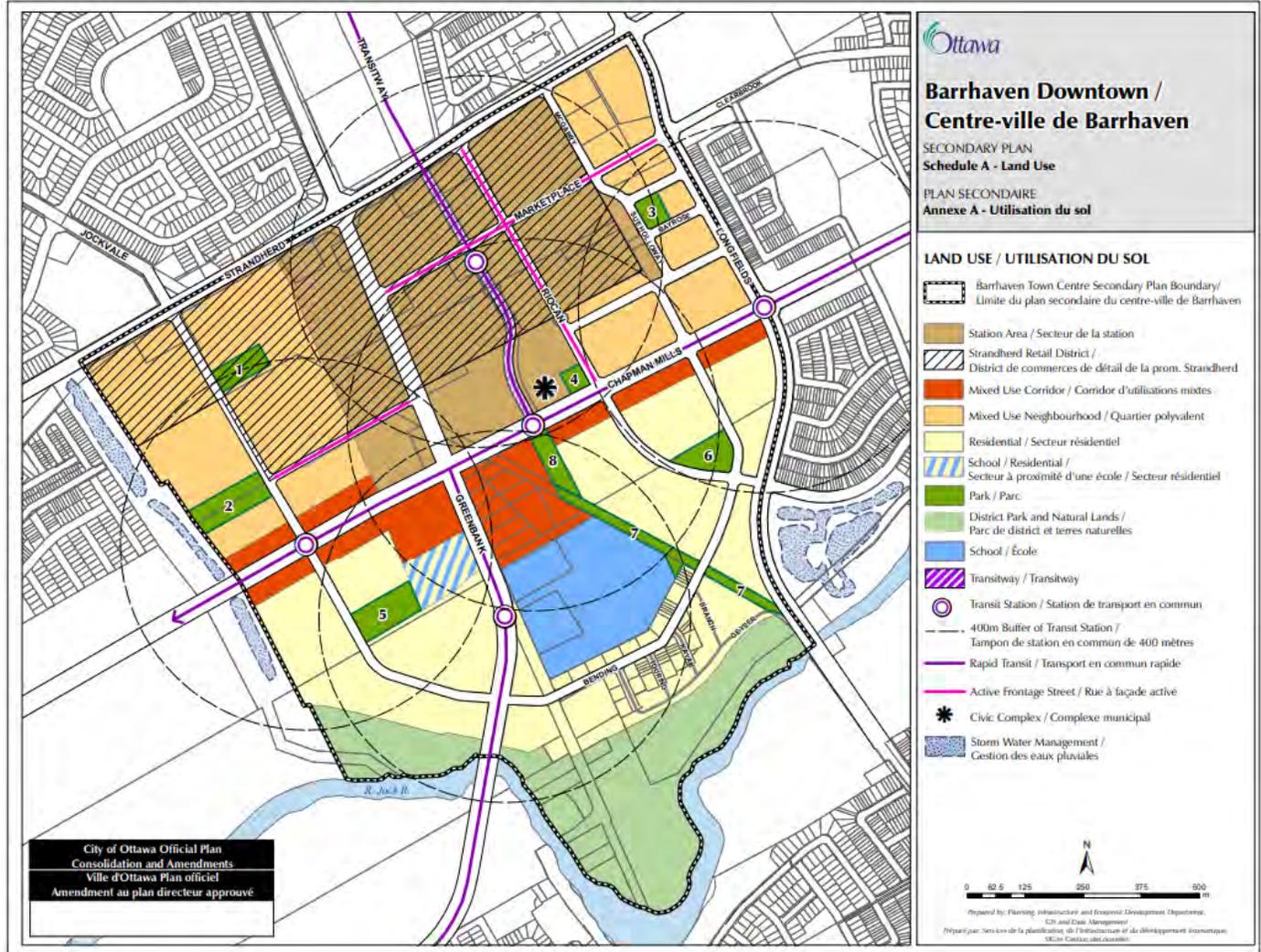
The planning area is intended to develop with a mix of different building heights and typologies. The southern corridor of Chapman Mills Drive is designated a Mixed-Use Corridor with corresponding policies intended to promote a vibrant streetscape. The lands north of Chapman Mills Drive and south of Strandherd Drive are primarily designated as Station Area. The corresponding planning policies are intended to support future O-Train Line 1 by way of a wide range of land uses, an inviting public realm, and a concentration of height and density. The southern portion of the Town Centre towards the Jock River takes on a more residential character according to the suburban context.

The supportive transportation network for the Town Centre will be comprised of transit, street, active transportation, and parking networks, all focused on accessibility and sustainability. For example, all Arterial roads (i.e. Greenbank, Longfields, and Strandherd) and Major Collector roads (Chapman Mills) are to have pedestrian and cycling facilities and a recreation corridor is proposed. The transportation network features two transitway lines (one East-West and one North-South). The East-West line operates entirely in median-separated central lanes along Chapman Mills Drive, while the North-South line uses a dedicated transit corridor north of Chapman Mills and central lanes south of Chapman Mills along Greenbank Road. Five transitway stations (existing and proposed) are identified in the Secondary Plan Downtown area. The intersection of these two transitway lines is considered a transit “hub” as well as a community focal point which is intended to evolve over time as construction of rapid transit lines occurs. The Transit Hub is planned adjacent to the municipal civic complex.

As part of the transit network, the Plan highlights that temporary Park & Ride facilities are permitted within any land use designation in the Town Centre in the immediate vicinity of planned or existing transit stations. Policy for temporary Park &

Ride facilities intends to locate them where they conform with plans for long-term acquisition of public streets or public parks and plans for transit-supportive development. The Plan also permits permanent Park & Ride facilities. Policy promotes locating permanent facilities where they can be integrated with a proposed development, below- or above-grade, or shared with other uses in the Barrhaven Downtown.

Figure 3-6 Barrhaven Downtown Secondary Plan, 2019



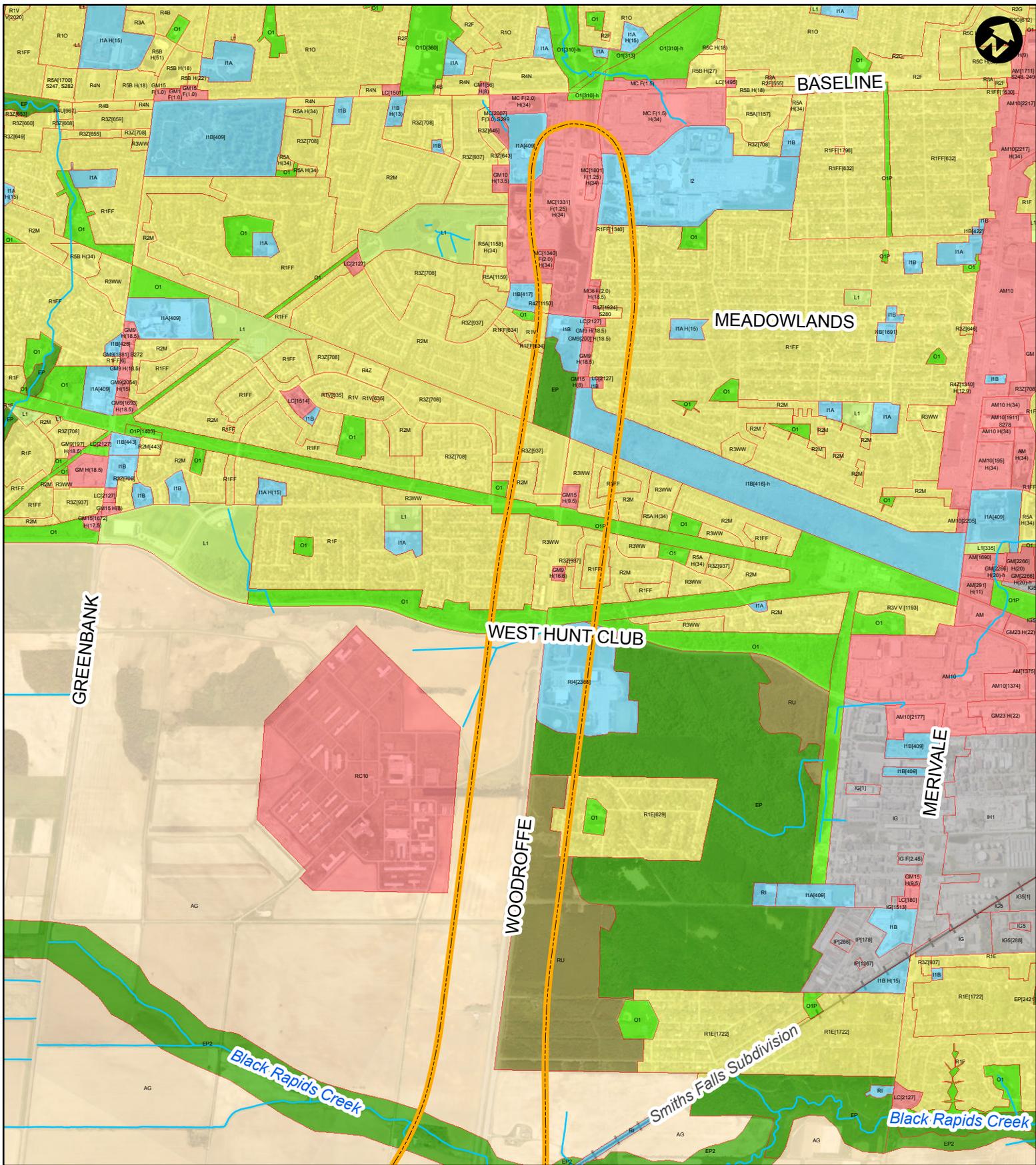
3.3.2 COMPREHENSIVE ZONING BY-LAW

The City of Ottawa Zoning By-Law implements the land use objectives of the Official Plan at a site-specific level. Given the detailed nature of land use zoning provisions, a characterization of zoning is provided rather than a detailed inventory of applicable zones and related standards. Zoning for the Study Area is shown in **Figure 3-7**, **Figure 3-8** and **Figure 3-9**.

The lands adjacent to the Study Area are contained within a range of zones including Agricultural (AG), Environmental Protection (EP), Ground Transportation (T2), Residential First Density (R1), Residential Second Density (R2), Residential Third Density (R3), General Mixed-Use (GM), Mixed-Use Centre (MC), Minor Institutional (I1), Major Institutional (I2), Local Commercial (LC), Parks and Open Space (O1), as well as Rural Countryside (RU).

3.3.3 EXISTING LAND USE

Figure 3-10, **Figure 3-11** and **Figure 3-12** illustrate existing land use within the Study Area.



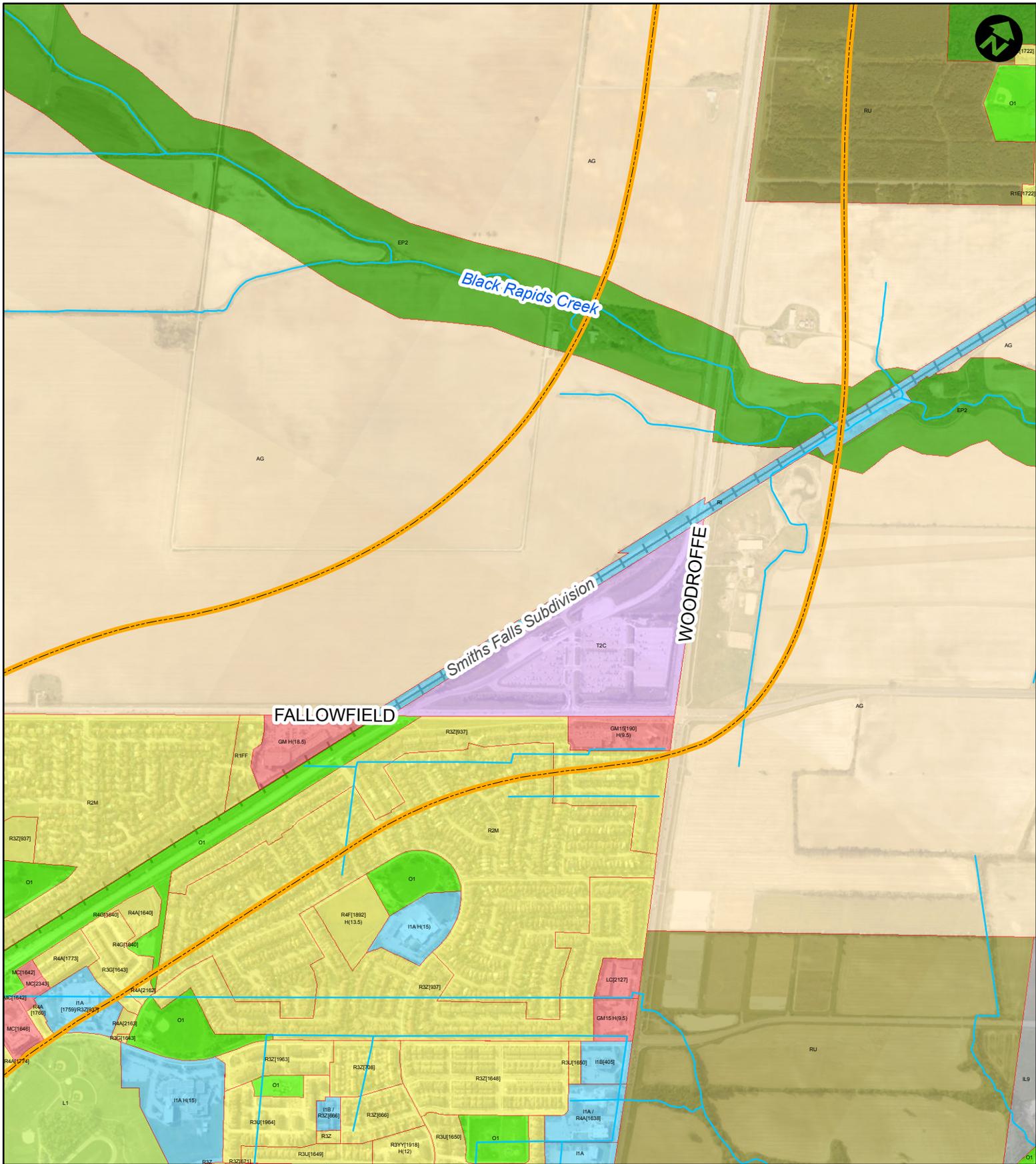
Legend

Study Area	Industrial
Watercourse	Leisure
Zoning (Sept 2018)	Open space
Commercial/Mixed Use	Residential
Environmental Protection	Rural Country Side
Institutional	Agriculture

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

Zoning





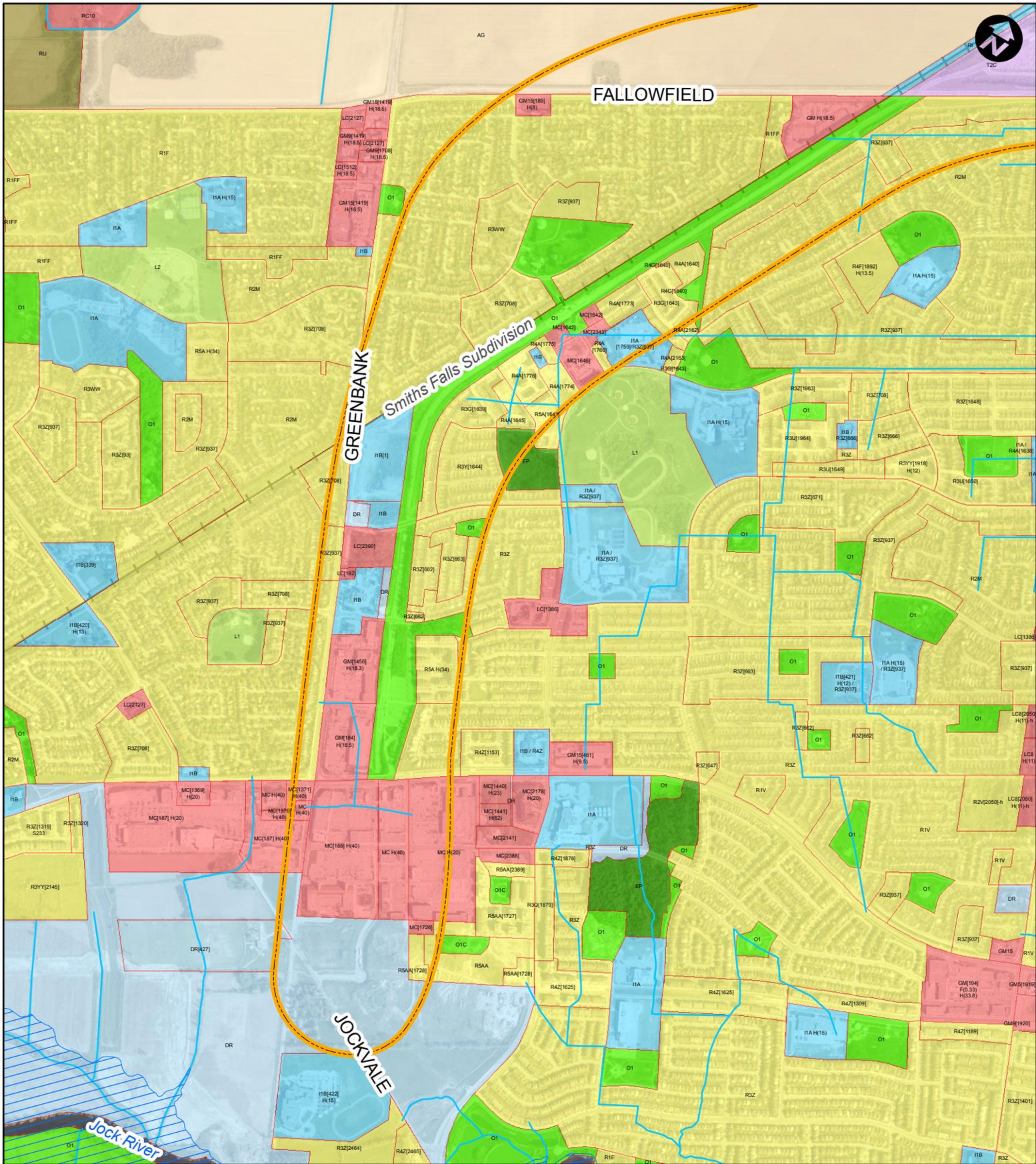
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Study Area	Leisure
Watercourse	Open space
Zoning (Sept 2018)	Residential
Commercial/Mixed Use	Rural Country Side
Environmental Protection	Transportation
Institutional	Agriculture
Industrial	

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

0 0.15 0.3 0.6
 Km

Zoning



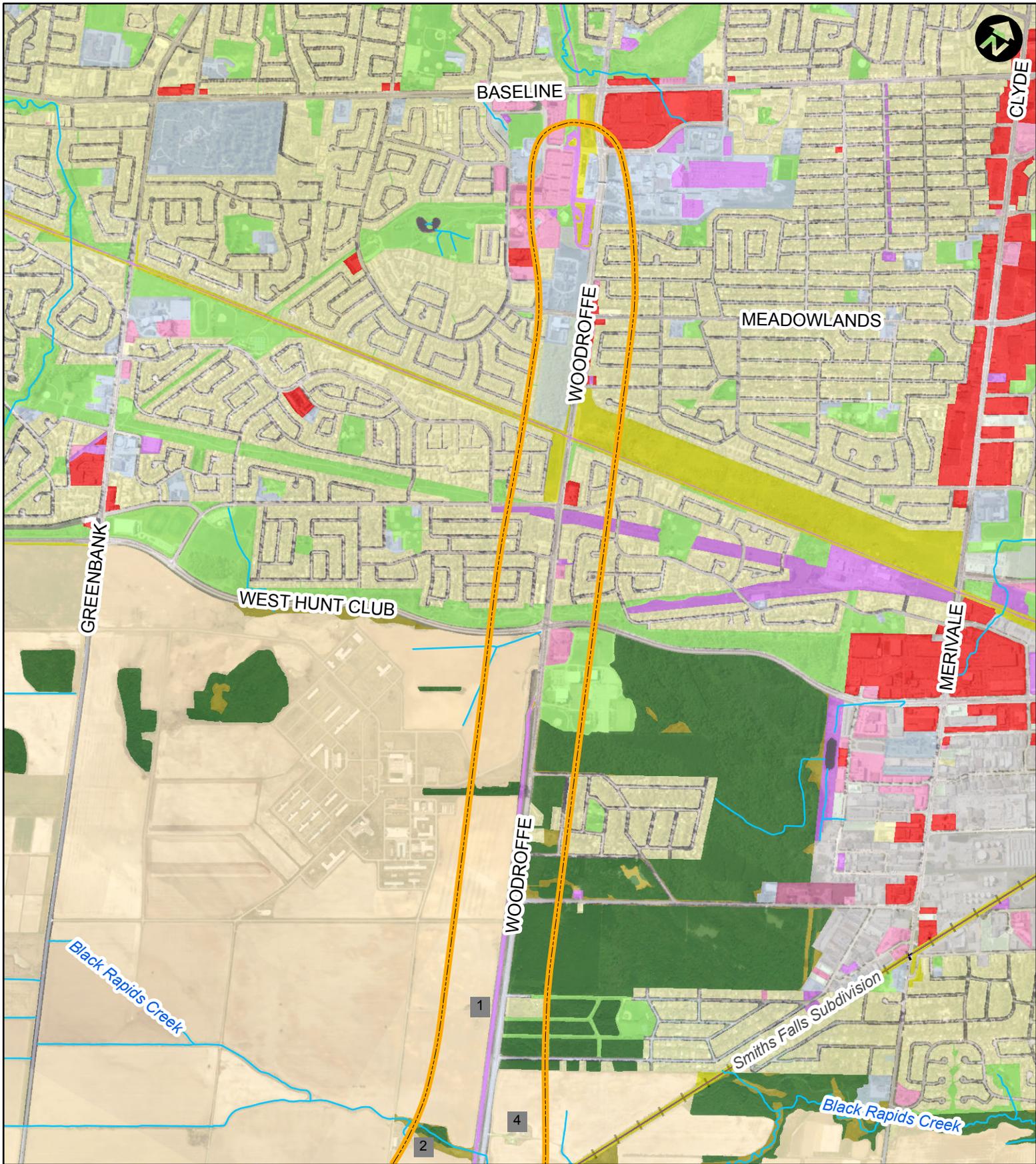
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Study Area	Leisure
Watercourse	Open space
Zoning (Sept 2018)	Residential
Commercial/Mixed Use	Rural Country Side
Development Reserve	Transportation
Environmental Protection	Agriculture
Institutional	Flood Plain

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

0 0.2 0.4 0.8
 Km

Zoning



CLYDE

BASELINE

MEADOWLANDS

WOODROFFE

WEST HUNT CLUB

GREENBANK

MERVALE

WOODROFFE

Smiths Falls Subdivision

Black Rapids Creek

Black Rapids Creek

1

4

2

Legend

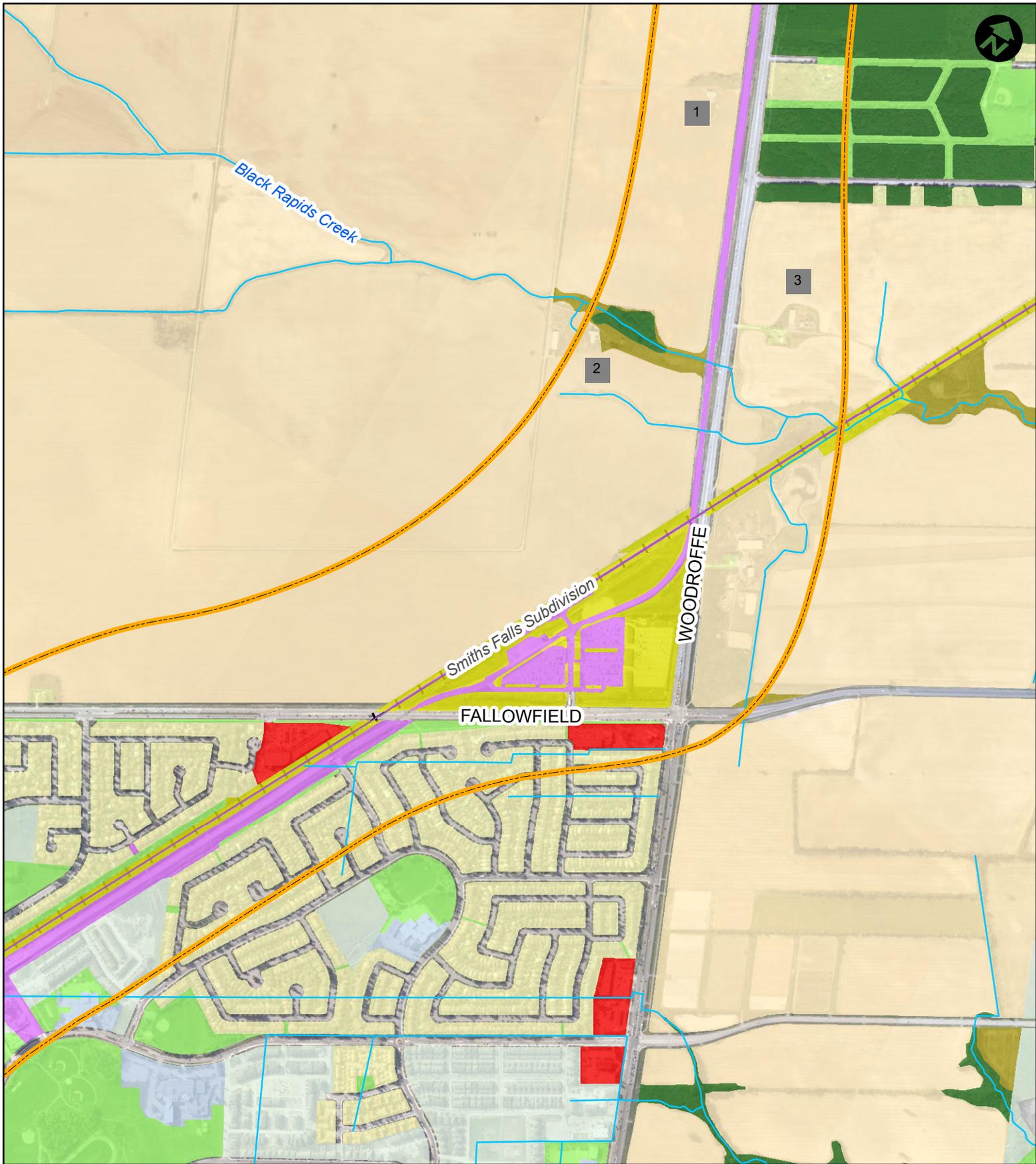
Study Area	Trans and Utility	Quarries
Watercourse	Office	Vacant land
Residential	Recreation	Vacant building
Commercial	Open space	Forest
Institutional	Idle and shrub land	Wetland
Industrial	Agriculture	Farm Number

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

Planning and Environmental Assessment Study

0 0.325 0.65 1.3
Km

Land Use



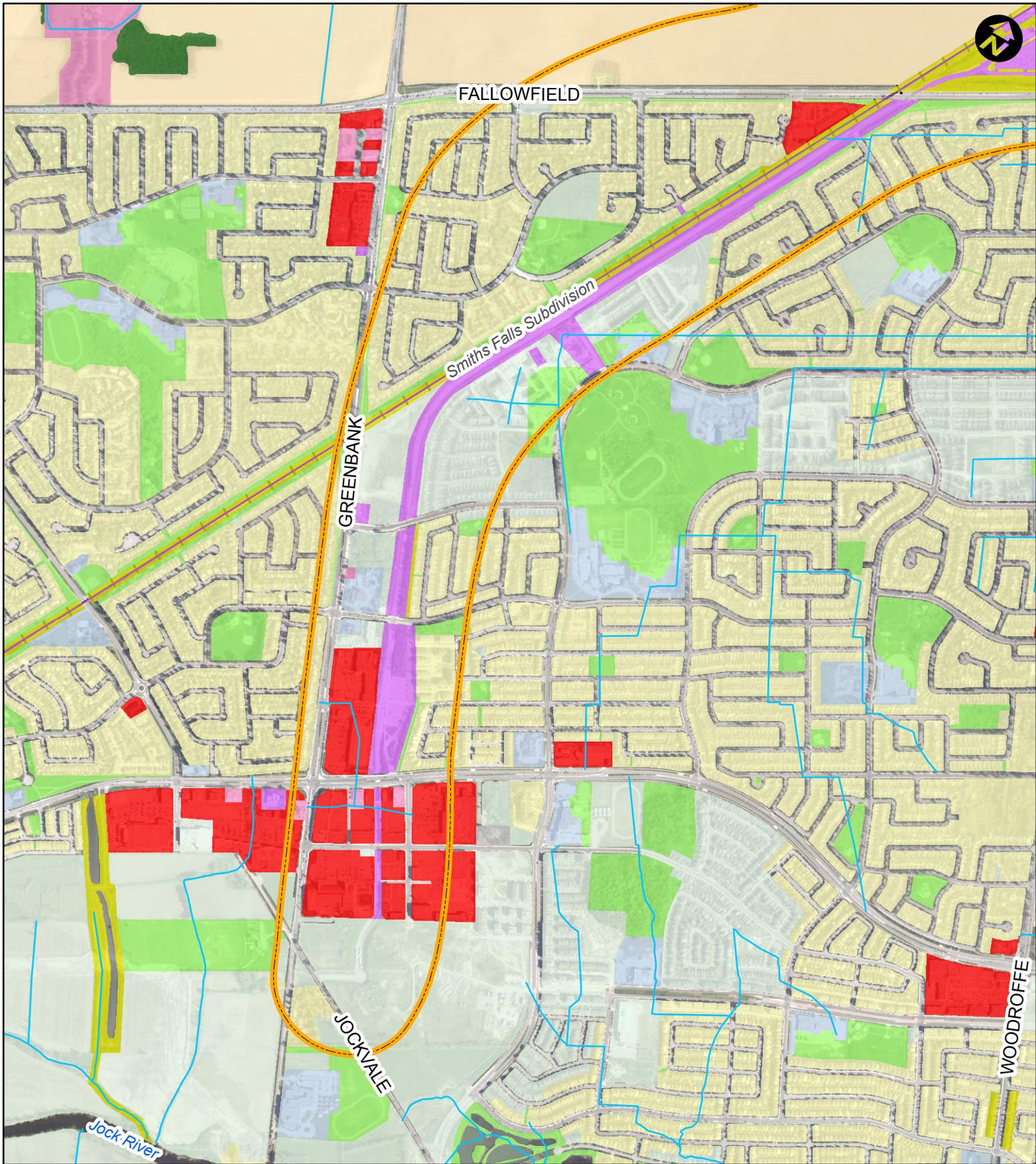
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Study Area	Trans and Utility	Quarries
Watercourse	Office	Vacant land
Residential	Recreation	Vacant building
Commercial	Open space	Forest
Institutional	Idle and shrub land	Wetland
Industrial	Agriculture	Farm Number

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

0 0.15 0.3 0.6
 Km

Land Use



Legend

Study Area	Trans and Utility	Quarries
Watercourse	Office	Vacant land
Residential	Recreation	Vacant building
Commercial	Open space	Forest
Institutional	Idle and shrub land	Wetland
Industrial	Agriculture	

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

0 0.2 0.4 0.8
 Km

Land Use

3.3.3.1 Agricultural Land Use

An Agricultural Assessment was undertaken to support the EA study. The full report can be found in **Appendix B**. Four farms were identified within the Study Area (**Figure 3-10** and **Figure 3-11**), two of which are retired operations (Farms 1 and 2), Farm 3 is a former livestock operation that is currently in crop production and Farm 4 is the Royale Equestrian Centre (horse riding stables). The retired farms still have outbuildings that could be suitable if operations were started up again.

Aside from the farms, crop production is most common throughout the Greenbelt lands. Investments include tile drainage, and an interior road network.

3.3.4 LANDSCAPE AND URBAN DESIGN CHARACTER

3.3.4.1 Woodroffe Avenue: North edge of the Study Area to Baseline Station

Algonquin College is located between Navaho Drive and College Avenue. An arched glass pedestrian bridge is located above Woodroffe Avenue providing connection to the campus on both sides of Woodroffe Avenue (**Figure 3-13**). North of the pedestrian bridge, there are nine (9) travel lanes including dedicated northbound and southbound bus lane. A median chain-link fence separates northbound from southbound traffic in this section. There is an approximately 1.8m wide concrete sidewalk along both sides of Woodroffe Avenue and a southbound bike lane commences at Navaho Drive. There are no bus stops or shelters in this section. Ornamental plantings, grass boulevards and trees are located along the city owned right-of-way. Standard utilities such as hydro lines, water hydrants, light poles, street signage and overhanging directional signs are located within the boulevard space. This section contains public realm enhancements associated with Algonquin Campus in the form of picnic benches and benches.

Figure 3-13 Pedestrian bridge across Woodroffe Avenue looking south



3.3.4.2 Woodroffe Avenue: Baseline Station to Knoxdale Road/Medhurst Drive

In this section, Woodroffe Avenue includes six (6) travel lanes, the northbound and southbound dedicated bus lanes continue in the curbside lane; concrete road medians replace the chain-link fence and transition to grassed medians further south. An on-road bike lane is provided southbound. However, a northbound bike lane exists between Medhurst Drive and at Norice Street. Sidewalks are located on both sides of Woodroffe Avenue. Bus stops and shelters are located within this section. Standard utilities such as hydro lines, water hydrants, light poles, street signage and overhanging directional signs are located within the right-of-way. Noise walls are located on the east side of the road for the residences at Parkglen Drive and David Drive siding onto Woodroffe Avenue. There are no landscaping enhancements in this section (aside from grassed medians and boulevards).

The Baseline Transit Station and the affiliated Park & Ride facility are located at the intersection of College Avenue on the west side of Woodroffe Avenue (**Figure 3-14**). They are setback considerably from Woodroffe Avenue accommodating grass boulevards, some trees, overhead signage posts and road signage. Major institutional areas on the west side include the City of Ottawa offices located on Constellation Drive (Mary Pitt Centre), Meridian Theatres, CentrepoinTE Library, Ben Franklin Place and the Peter D. Clark Long Term Care Centre (**Figure 3-15**). A small asphalt path connects the Centre’s parking lot to

a transit stop located on Woodroffe Avenue. The east side is composed of residential homes behind commercial uses fronting on Woodroffe Avenue located between David Drive and Norice Street.

Figure 3-14 Transit priority corridor along Woodroffe Avenue entering the Baseline Southwest Transitway Station and Park-and-Ride looking southwest



Figure 3-15 Woodroffe Avenue looking south. Southwest Transitway Park-and-Ride (west) with the Peter D. Clark Centre behind, noise walls for residences (east)



South of Tallwood Drive is Tallwood Woods located on the west side of Woodroffe Avenue acting as a natural buffer between Woodroffe Road and the Centrepointe residential community (**Figure 3-16**). A multi-use pathway (MUP) connects through the woods to Woodroffe Avenue. The Crestview-Meadowlands community is located on the east side of Woodroffe Avenue. A large open space is located south of Norice Street extending eastwards adjacent to the CN Rail line. The CN Rail line overpasses Woodroffe Avenue between Norice Street and Knoxdale Road/Medhurst Drive (**Figure 3-17** and **Figure 3-18**).

Tallwood woods gives way to open space buffering Beechcliffe Street to Woodroffe Avenue on the west (**Figure 3-19**). The Tanglewood community is located to the east.

Figure 3-16 Woodroffe Avenue north of Norice Street looking south. Tallwood Woods (west) Commercial uses (east)



Figure 3-17 CN Rail line overpass of Woodroffe Avenue looking south



Figure 3-18 CN Rail line overpass of Woodroffe Avenue



Figure 3-19 Woodroffe Avenue south of the CN Rail line overpass looking south. Open space to the west with residences on Beechcliffe Street behind (west) and Brockington Court residences backing onto Woodroffe Avenue (east)



3.3.4.3 Woodroffe Avenue: Knoxdale Road/Medhurst Drive to West Hunt Club Road

In this section Woodroffe Avenue appears to narrow as adjacent residences are located immediately adjacent to the right-of-way. Woodroffe Avenue continues to maintain six (6) travel lanes including the northbound and southbound dedicated curbside bus lanes; with a combination of concrete and grass medians. Northbound and southbound on-road bike lanes are provided on the outer edge of the roadway. Concrete sidewalks continue along both sides of Woodroffe Avenue. Bus stops and shelters are located within this section. Standard utilities such as hydro lines, water hydrants, light poles, street signage and overhanging directional signs are located within the right-of-way. Noise walls are located on the west side of the road for the residences at Manor Village and Cheryl Gardens backing onto Woodroffe Avenue (**Figure 3-20**). There is an 11m grassed buffer to the residences on the east side. There are no landscaping enhancements in this section (aside from grassed medians).

In this section, Hydro One transmission lines cross Woodroffe Avenue twice. Two sets of lines – one on wooden towers, the other on steel towers are located immediately south of the intersection of Knoxdale Road/Medhurst Drive (**Figure 3-21**). Two

sets of lines both supported on steel towers are located north of West Hunt Club Road. These transmission line corridors stretch to the east and west, with both corridors incorporating MUPs throughout (Figure 3-22).

Figure 3-20 Noise walls located along the residential area on the west side of Woodroffe Avenue (Cheryl Gardens)



Figure 3-21 Hydro One transmission lines crossing Woodroffe Avenue south of the intersection of Knoxdale Road/Medhurst Drive looking south



Figure 3-22 Hydro One transmission line crossing Woodroffe Avenue north of the intersection of West Hunt Club Road looking southwest



3.3.4.4 Woodroffe Avenue: West Hunt Club Road to Fallowfield Road

The Greenbelt is located on both sides of Woodroffe Avenue between West Hunt Club Road and Fallowfield Road and is the dominant land use within this section (Figure 3-23). Six (6) travel lanes with curbside northbound and southbound dedicated bus lanes transitions to four (4) travel lanes separated by a central concrete median. The transit facilities transition to the Southwest Transitway on the west side of Woodroffe Avenue opposite the Nepean Sportsplex (Figure 3-24). Northbound and southbound on-road bike lanes transition to paved shoulders at the Nepean Sportsplex. Sidewalks on both sides of Woodroffe Avenue transition to a MUP on the east side only. The MUP crosses water features via bridges. The only bus stop (there are no shelters) located within this section is at Vaan Drive. Standard utilities such as hydro lines, water hydrants, light poles,

street signage and overhanging directional signs are located within the right-of-way. The MUP and the Southwest Transitway are buffered from the roadway.

The agricultural vistas of the Greenbelt expand to the west of the roadway with some shelterbelt elements and a guard rail in the right-of-way. The east side of the Greenbelt is shaded by the mature coniferous Pinhey Forest (Figure 3-25). South of Pinhey Forest the landscape opens up to agriculture and the Royale Equestrian Centre.

Figure 3-23 Woodroffe Avenue looking south. Greenbelt Agriculture lands and the Southwest Transitway to the west. The Nepean Sportsplex and Pinhey Forest to the east



Figure 3-24 The Southwest Transitway exiting Woodroffe Avenue to the west



Figure 3-25 Woodroffe Avenue looking south with Pinhey Forest to the west



The VIA Rail line crosses Woodroffe Avenue and the Southwest Transitway at-grade just north of Fallowfield Road (**Figure 3-26**). The rail-crossing contains train gates, bells and lights including a set for pedestrians using the MUP and buses using the Southwest Transitway. The MUP at this location is secured by a chain-link fence as it approaches the at-grade rail crossing. The east-west NCC Pathway connects to a north-south MUP running parallel to Woodroffe Avenue just south of the VIA Rail line on the east side.

Figure 3-26 Woodroffe Avenue VIA Rail line at-grade crossing looking south. Southwest Transitway crossing (west) and MUP crossing (east)



3.3.4.5 Southwest Transitway: Woodroffe Avenue to Fallowfield Road

The OC Transpo Fallowfield Park & Ride facility is located in the northwest quadrant of the intersection of Woodroffe Avenue and Fallowfield Road. The entrance to the Park & Ride facility serves the Fallowfield Transit Station and provides access to the VIA Rail Fallowfield Station (**Figure 3-27**). The Park & Ride facility is accessed from Via Park Place connected to Fallowfield Road. The Southwest Transitway has four (4) travel lanes through the station area. The station area specific to the Southwest Transitway consists of a lighted platform and bus shelter area. A memorial dedicated to the bus and train collision of September 18, 2013 is located in the northeast portion of the parking area.

Figure 3-27 Fallowfield Transit Station on the Southwest Transitway looking west. VIA Rail Station (west)



3.3.4.6 Fallowfield Road: Woodroffe Avenue to Greenbank Road

In this section, Fallowfield Road has four (4) travel lanes, and eastbound and westbound bike lanes with a concrete median. It also includes ten bus stops (five eastbound and five westbound) provided to serve the local community. From Woodroffe Avenue to Via Park Place there is a sidewalk on the south side of the roadway and a MUP on the north side. Low-rise commercial uses and parking lots are setback from the roadway. West of Via Park Place to the Study Area boundary of Greenbank Road there is only a MUP on the south side of the road and an approximately 15m of sidewalk at the three transit stops on the north side of the road. Noise walls typically setback approximately 7.5m from the edge of pavement are located

along the residences that are backing onto Fallowfield Road. Standard utilities such as hydro poles, light poles, and signage posts are located within the Fallowfield Road right-of-way.

West of Via Park Place the Southwest Transitway and the VIA Rail line cross Fallowfield Road on an angle at-grade (**Figure 3-28**). The crossings are very close together, approximately 65m from centerline apart. Traffic is controlled via traffic lights and train gates, bells and lights for the rail line including a set for pedestrians using the MUP. There is a median chain-link fence between Via Park Place and Barrhaven Crossing commercial retail plaza. West of the Southwest Transitway where it crosses Fallowfield Road, the westbound bike lane transitions to a paved shoulder.

Beyond the at-grade crossings, the vista of the NCC Greenbelt is located to the north while the Barrhaven West residential community is located to the south (**Figure 3-29**). Nearing Greenbank Road, the median becomes grassed and bus stops contain shelters with benches (in some cases).

Figure 3-28 Fallowfield Road at-grade crossing of the Southwest Transitway and VIA Rail line looking west



Figure 3-29 Fallowfield Road Greenbelt vistas (north) looking west



3.3.4.7 Southwest Transitway: Fallowfield to Barrhaven Town Centre

The Southwest Transitway is two lanes wide in this section and runs parallel to the VIA Rail line until just north of Highbury Park Drive where it turns south to head towards the Barrhaven Town Centre. Stations located along the Southwest Transitway in this section include Longfields, Strandherd, Marketplace and Barrhaven Centre. Trees are found along both sides of the Southwest Transitway providing a green buffer to the commercial uses on Greenbank Road on the west side and residential community on the east side. A MUP is located parallel on the east side of the Southwest Transitway until Strandherd Drive where it stops but commences again just south of Marketplace Avenue (**Figure 3-31**). The Southwest Transitway crosses Berrigan Drive at-grade just before widening to four (4) lanes at the Strandherd Station (**Figure 3-30**). South of Berrigan Drive there are sidewalks on the east side until Marketplace Avenue. South of Marketplace Avenue sidewalks continue on the west side and tie into the MUP from the east side at the terminus of the Southwest Transitway.

The Southwest Transitway intersects Market Place Avenue arriving at the Market Place Station through a narrow concrete corridor in the commercial core of Marketplace (**Figure 3-32** and **Figure 3-33**). Within this intersection the street character changes to accommodate wide sidewalks, light poles, signal posts, and signage posts on both sides of the Southwest Transitway guiding pedestrians and vehicular movement.

The Southwest Transitway ends intersecting with Jockvale Road with a largely undeveloped area south and east and some houses west and south on Jockvale Road (**Figure 3-34**). Jockvale Road in this area is two (2) lanes, with gravel shoulders and no cycling or pedestrian facilities. There are a couple bus stops on Jockvale Road; no shelters.

Figure 3-30 Strandherd Transit Station and Park & Ride



Figure 3-31 MUP located to the east of the Southwest Transitway underpass at Highbury Park looking south



Figure 3-32 Southwest Transitway at Marketplace Avenue Intersection looking south



Figure 3-33 Southwest Transitway seen from Strandherd Drive overpass

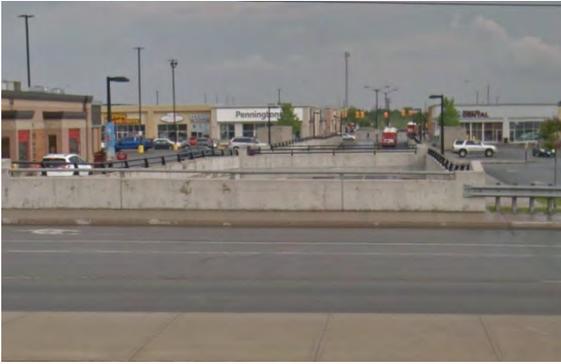
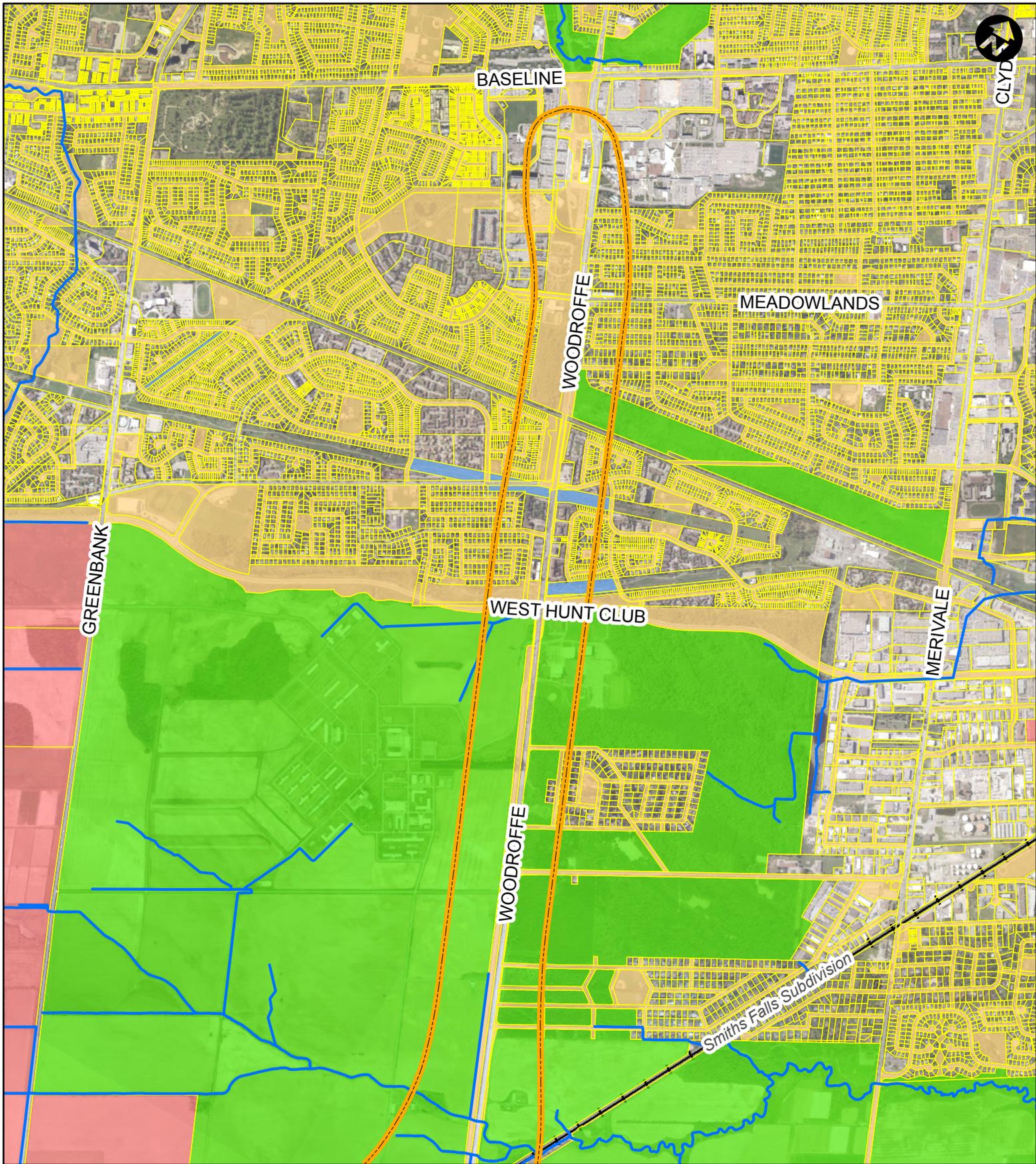


Figure 3-34 Terminus of the Southwest Transitway at Jockvale Road looking south



3.3.5 LAND OWNERSHIP

Figure 3-35, Figure 3-36 and Figure 3-37 illustrate land ownership in the Study Area. A major landowner in the Study Area is the NCC.



Legend

	Study Area	Public Ownership
	Watercourse	 Federal parcels
	Parcels	 NCC parcels
		 Ontario parcels
		 Ottawa parcels

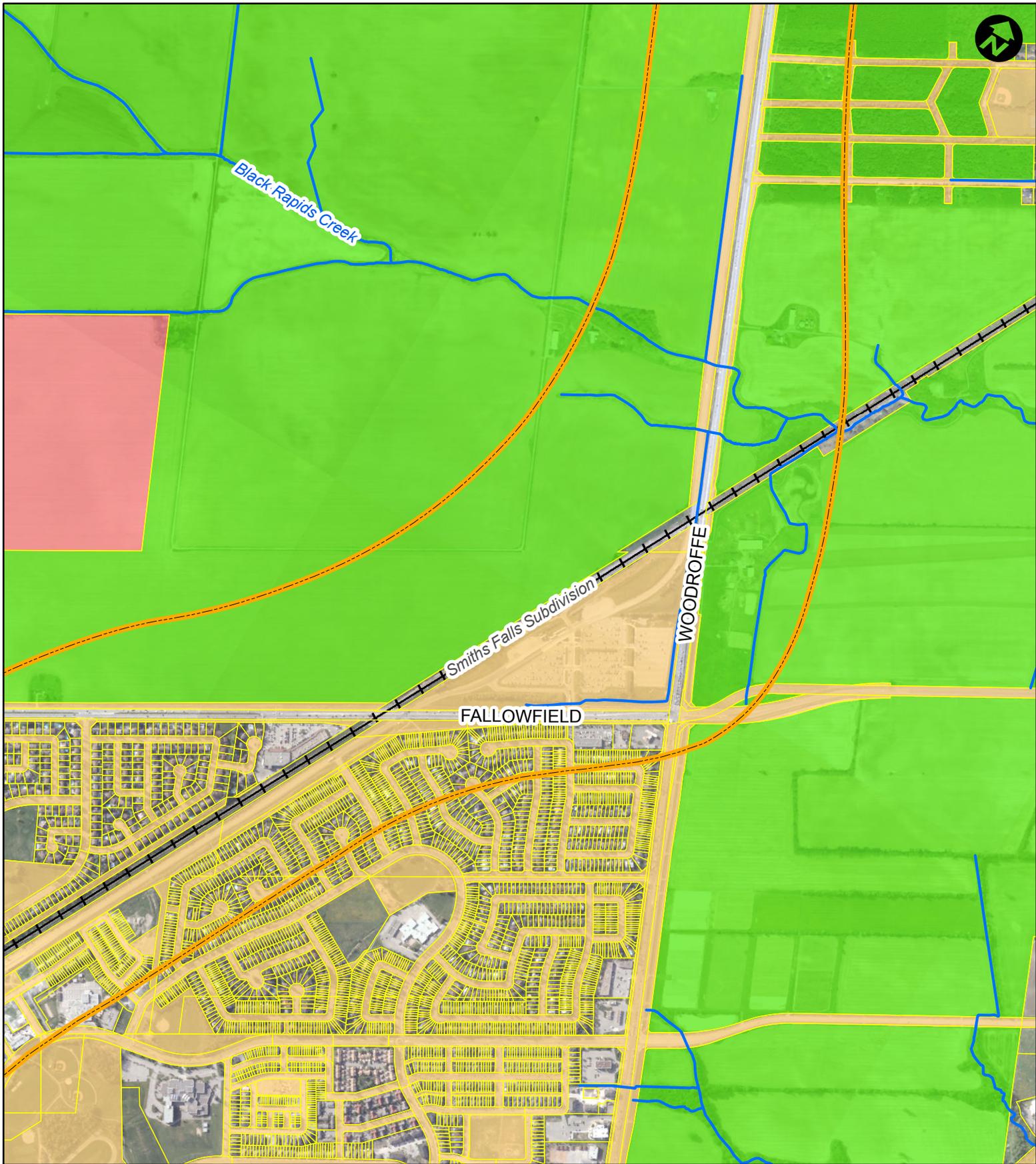
Barrhaven Light Rail Transit
(Baseline Station to Barrhaven Town Centre)

Planning and Environmental Assessment Study

0 0.325 0.65 1.3
Km

Land Ownership

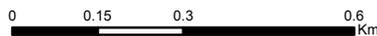




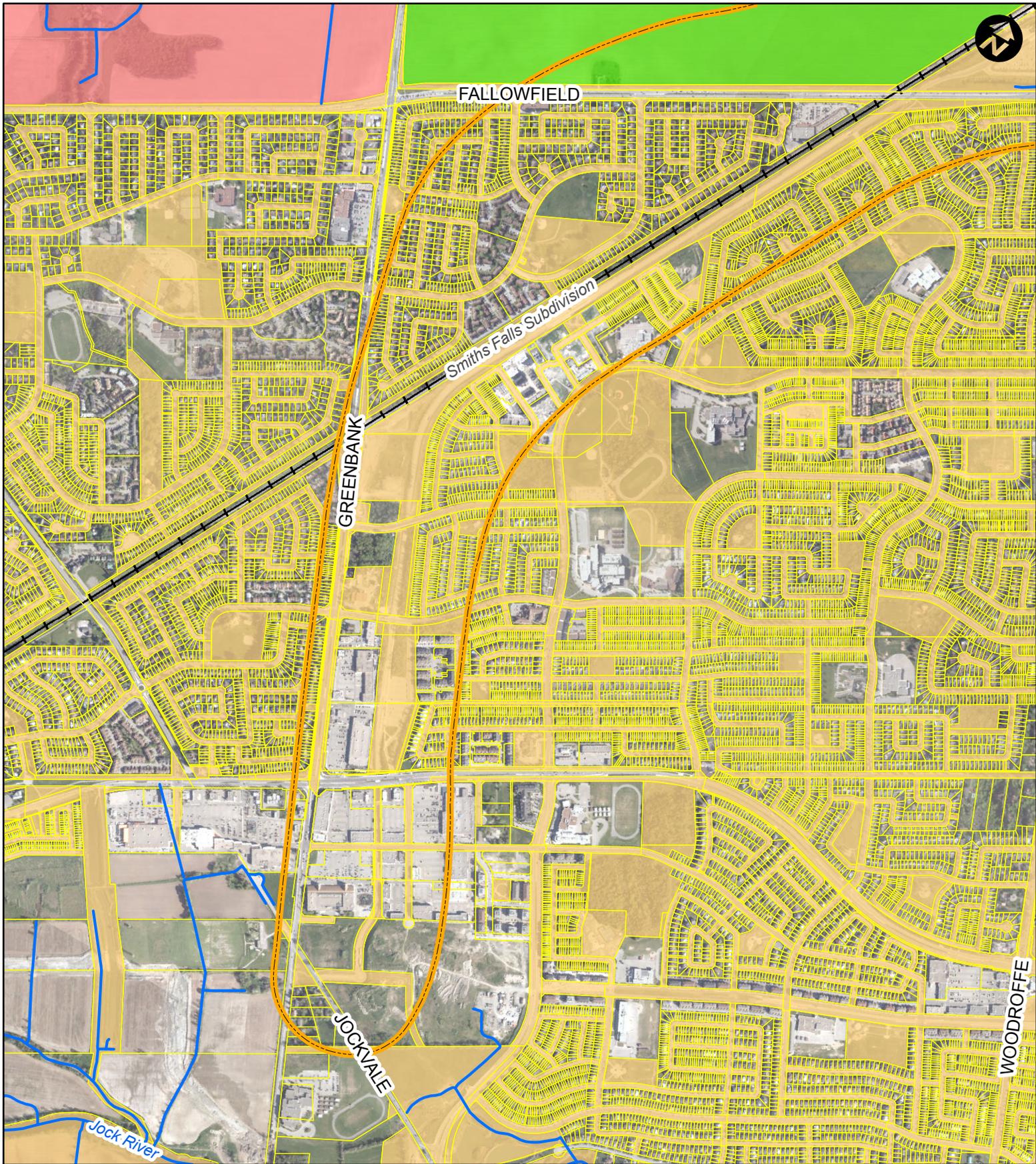
- Legend**
- Study Area
 - Watercourse
 - Parcels
- Public Ownership**
- Federal parcels
 - NCC parcels
 - Ottawa parcels

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

Planning and Environmental Assessment Study



Land Ownership



- Legend**
- Study Area
 - Parcels
 - Watercourse
 - Federal parcels
 - NCC parcels
 - Ottawa parcels

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

Land Ownership



3.3.6 CLIMATE CHANGE

There is global awareness that Earth is experiencing climate change resulting from anthropogenic effects. Climate change effects include such things as drought, flooding, heat waves, extreme storm events and warmer winters. The impacts of these events in Ontario have resulted in water shortages, forest fires, flooding, declines in agricultural production, lower Great Lakes water levels, power outages and outbreaks of water-borne diseases (OCCIAR (2012)). These impacts result in unexpected economic and social costs.

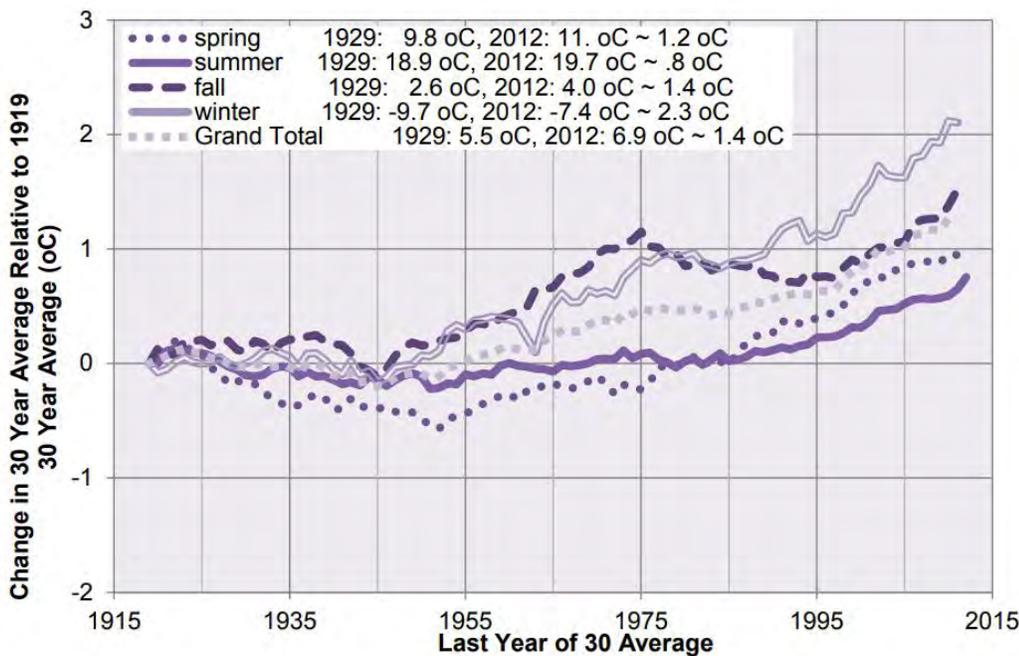
The existing conditions related to common climate change effects are described in the sections below. Most studies discuss climate change on provincial or national scales, however, where possible, Ottawa specific information is described.

3.3.6.1 Temperature

Understanding how Ottawa fits into discussions of temperature change is still emerging through current research. The average annual mean temperature in the City of Ottawa has increased over the last century by 1.7°C (City of Ottawa, 2014), as shown in **Figure 3-38**. This in turn results in an increase of the number of extreme heat days, days in a year when temperature exceeds 30°C and increases to daily maximum and minimum temperatures. Research analyzing historical temperature trends to predict future trends for Ottawa is consistent with global trends of warming temperatures (Zhai, 2018).

The Ontario Climate Change Data Portal (Ontario CCDP) models climate data regionally throughout Ontario. This model indicates that the mean average annual temperature in the Ottawa region has and will continue to increase by approximately 2.27°C from the period 1960-1990, to the current period, 2015-2045 (Ontario CCDP, 2018).

Figure 3-38 Average Temperatures (City of Ottawa, 2013)



3.3.6.2 Precipitation

The body of Canadian research indicates it is getting wetter across Canada. The World Meteorological Organization has found that wetter-than-average conditions occurred in 2013, compared to averages dating back to 1960 (World Meteorological Organization, 2013). Over the last century, there has been a 25% to 30% increase in the number of days with precipitation (City of Ottawa, 2013). Additionally, the frequency of precipitation events lasting three or more consecutive days has increased from 18% to 31% (City of Ottawa, 2013).

The Ontario CCDP indicates that annual precipitation in the Ottawa region has and will continue to increase by approximately 50mm from the period 1960-1990, to the current period, 2015-2045 (University of Regina, 2018). In the winter months, this increase is approximately 15mm from the period 1960-1990, to the current period, 2015-2045 (University of Regina, 2018).

3.3.6.3 Wind

High wind speeds and wind gusts are a significant meteorological hazard. Ontario has been experiencing increased windstorms and is projected to experience more frequent and severe wind gust events in the future as a result of the changing climate (Cheng, 2012). Studies have found that all regions across Canada are expected to see the frequency of localized windstorms, particularly in summer season, increase due to warmer temperatures under a future changing climate. Increased wind events can also lead to the uproot of trees in forested areas, leaving areas susceptible to fire.

3.3.6.4 Extreme Weather Events

Extreme weather events are increasing in both frequency and intensity, resulting in larger, torrential style precipitation events, punctuated with droughts and dry conditions. Both Natural Resources Canada and the MECP expect that precipitation will change to more pronounced periods of both flooding and drought (McBean, 2012) (Ministry of Environment, 2014). These events are also increasing in randomness (McBean, 2012).

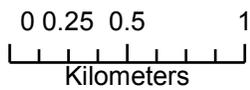
There has been an increase in the occurrence of hot dry periods over the last thirty years, compounding the risks from the urban heat island effect (Martin, G. and P. Ballamingie, 2016). Extreme weather events featuring high temperatures and a lack of precipitation are contributing to the occurrence of forest fires. Climate change provides the appropriate weather conditions, which allows for the drying of fuel and subsequent spread of wildland fires (Wotton, 2017). Fire activity in boreal forest environments is anticipated to increase with climate change (Wotton, 2017).

There have been increases in the extreme minimum temperatures in Ottawa since 1919 to present day (City of Ottawa, 2013). As a result, it is expected that snowmelt amounts will increase as well as winter rainfall, possibly leading to an increase in flood events. Recent flood events have caused significant stress on private and public property, and indications are that these conditions will continue to occur.

3.3.7 ARCHAEOLOGICAL RESOURCES

A Stage 1 Archaeological Assessment was undertaken for the Study Area to determine areas with archaeological potential. The Stage 1 Archaeological Assessment consisted of a review of available previously completed reports, historical, archaeological and environmental research relevant to the local area. The full report is available in **Appendix B**.

The results of the study indicate that there are portions of the Study Area that exhibit archaeological potential. Developed areas, a portion of the Southwest Transitway (Fallowfield Road to Berrigan Drive) and some areas near Greenbank Road are “cleared” of archaeological potential through previous studies. Portions of the Study Area that still contain archaeological potential are illustrated in **Figure 3-39** and **Figure 3-40**.



Study Area

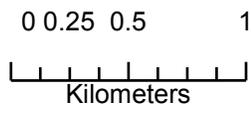
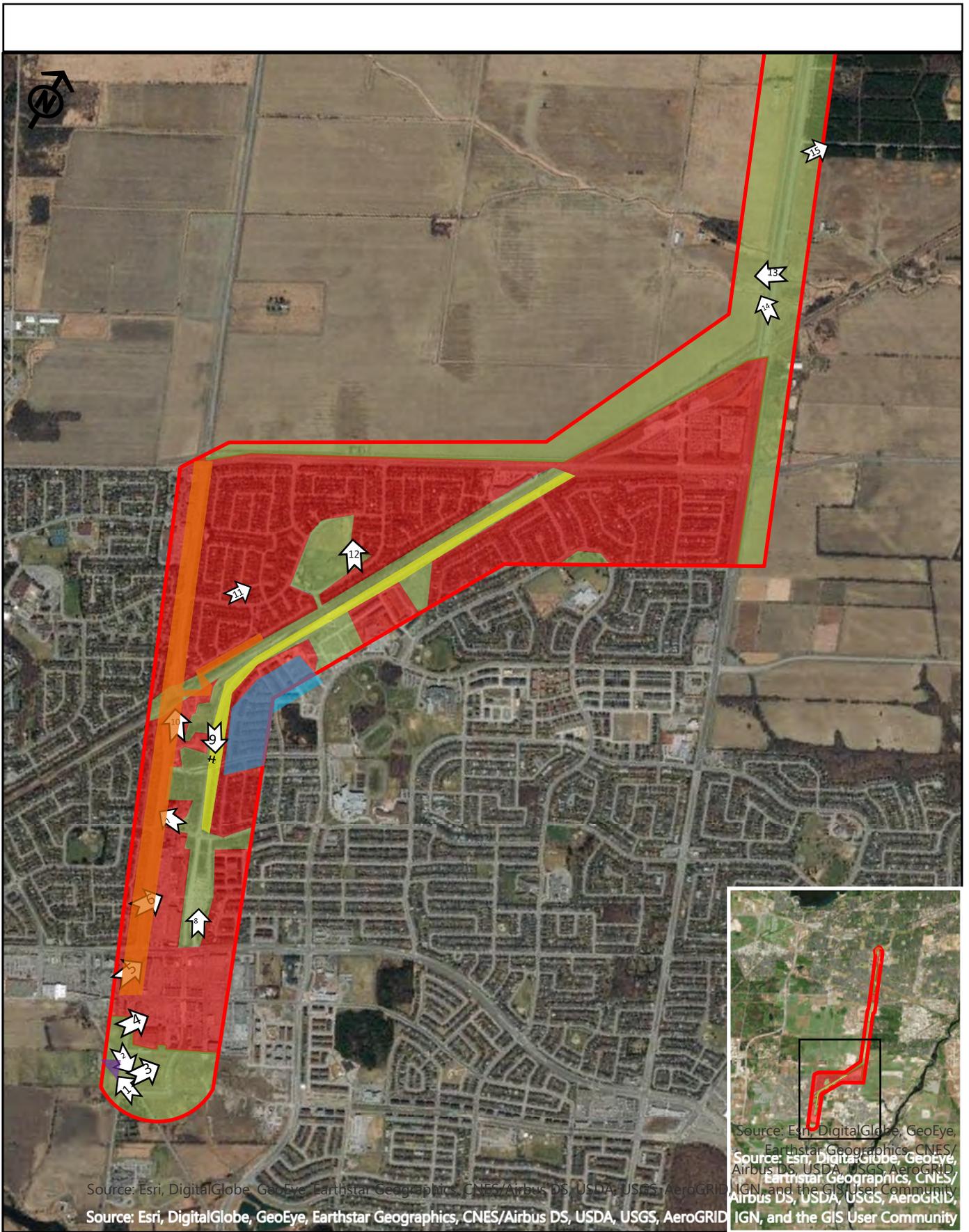
Archaeological Potential

Stage 2 Assessment Recommended

Low Archaeological Potential

Developed Lands

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Study Area
- Photo Location

Archaeological Potential

- Stage 2 Assessment Recommended

Low Archaeological Potential

- Developed Lands
- Previously Assessed (Golder 2008)
- Previously Assessed (Paterson 2013)
- Previously Assessed (Stantec 2011)
- Previously Assessed (Golder 2011)

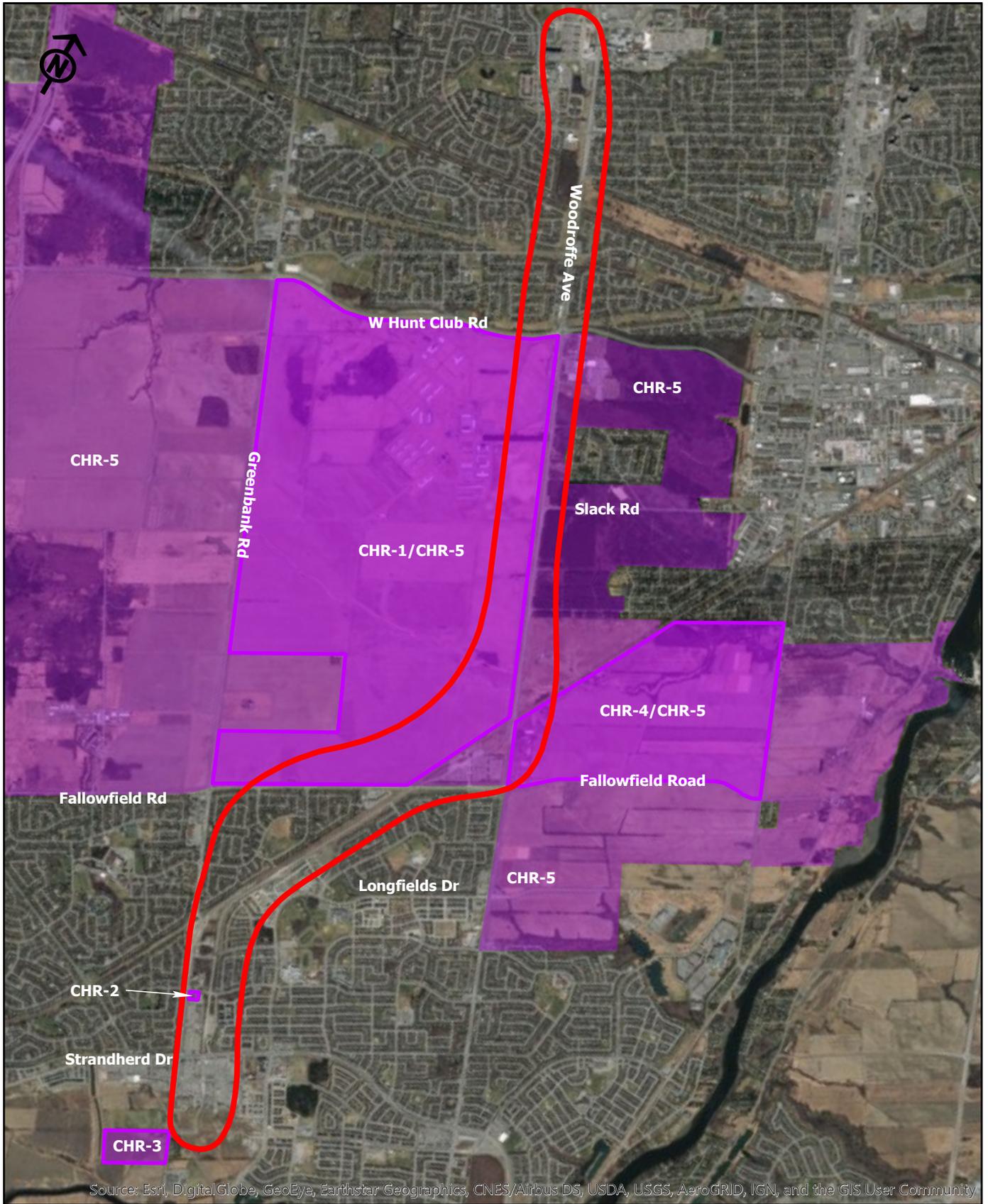
3.3.8 BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES

A Cultural Heritage Evaluation Report (CHER) (later renamed to: *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment and Addendum - Heritage Impact Assessment*, 2020) was undertaken for the Study Area to provide an overview of recognized and potential Cultural Heritage Resources (CHR) which includes both built heritage resources (BHR) and cultural heritage landscapes (CHL). Built heritage resource means a building, structure, monument, installation, or any manufactured remnant that contributes to a property’s cultural heritage value or interest as identified by a community, including an Aboriginal community. Built heritage resources are generally located on a property that has been designated under Parts IV or V of the *Ontario Heritage Act*, or included on local, provincial and/or federal registers. A cultural heritage landscape means a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. Farms and cemeteries are examples of cultural heritage landscapes. The complete heritage report can be found in **Appendix B**. The heritage report included completion of the Cultural Heritage Screening Checklist, previously completed cultural heritage reports, a review of online databases and historical and environmental background research of the Study Area.

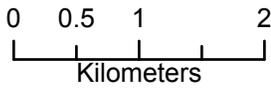
Known and potential CHRs are listed in **Table 3-3** and shown in **Figure 3-41**. No properties which are subject to federal, provincial, or municipal heritage protections are located within, or adjacent to the Study Area. Portions of the Study Area are located within the NCC Greenbelt, which is considered by the NCC as a CHL. Two properties within the Greenbelt are also individually identified as CHLs: 2191 Woodroffe Avenue (part of 2070 Merivale Road) and 3641 Fallowfield Road (part of 1470 Woodroffe Avenue). 3641 Fallowfield Road is also included on the Heritage Reference List. Two additional properties, 1081 Greenbank Road and 3288 Greenbank Road were identified during the screening process as properties of potential cultural heritage value or interest. These potential CHRs were screened for their potential to meet the criteria outlined in Ontario Regulation 9/06: *Criteria for Determining Cultural Heritage Value or Interest* under the *Ontario Heritage Act* and it was determined that both properties have the potential to meet one or more of the criteria.

Table 3-3 Summary of Known and Potential Cultural Heritage Resources

CHR	Category	Address	Current Recognition
CHR-1	Cultural Heritage Landscapes (CHL)	3641 Fallowfield Road (part of 1740 Woodroffe Avenue)	Heritage Reference List, NCC Greenbelt
CHR-2	Built Heritage Resources (BHR)	1081 Greenbank Road	None
CHR-3	CHL	3288 Greenbank Road	None
CHR-4	CHL	2191 Woodroffe Avenue (part of 2070 Merivale Road, NCC Greenbelt lands) Royaume Equestrian Centre	NCC Greenbelt
CHR-5	CHL	National Capital Greenbelt	NCC Greenbelt



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



 Study Area

 Cultural Heritage Resource, CHR-#

3.3.9 NOISE, AIR QUALITY AND VIBRATION

Existing conditions for noise, air quality, and vibration were assessed within the Study Area. The full report is available in **Appendix B**.

3.3.9.1 Noise

Environmental noise levels in the Study Area vary based on proximity to high-volume roadways and the VIA Rail. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) (2016) objective level is 55 decibel unit (dBA) before noise attenuation should be provided as part of transportation infrastructure projects and mitigation.

Based on the ENCG, the following categories are applicable to describe the existing noise conditions from transportation sources for the Study Area:

- ELEVATED Daytime (daytime equivalent sound energy level) Leq noise levels at receivers are expected to exceed 60 dBA.
- MODERATE Daytime Leq noise levels at receivers are expected to fall in the range of 55 to 60 dBA.
- LOW Daytime Leq noise levels are expected to fall below 55 dBA.

Noise levels throughout the Study Area fall into one of the three above categories. Environmental noise levels are generally moderate to elevated depending on proximity to roadways and railways. Generally, beyond 100 meters from arterial roadways and 300m from railways, noise levels fall below the ENCG objective level of 55 dBA.

3.3.9.2 Air Quality

In the Study Area, roadway vehicle traffic is the primary source of air-borne pollutants. Emissions from roadway vehicles Carbon Monoxide (CO), Hydrocarbons (HC), Oxides of Nitrogen (NOx) and Particulate Matter (PM), among other volatile organic compounds (VOC), which contribute to ambient air quality levels.

Based on the Ambient Air Quality Criteria (AAQC), recorded ambient levels and land usage within the Study Area, the following categories are applicable to describe air quality conditions from transportation sources in the Study Area:

- ELEVATED Selected pollutants are expected to approach AAQC standards on a regular basis, or occasionally exceed them.
- MODERATE Selected pollutants are expected to approach AAQC standards occasionally.
- LOW Selected pollutants are expected to rarely approach AAQC standards.

Existing conditions found the concentrations of pollutants produced by vehicle and train emissions are low throughout the Study Area.

3.3.9.3 Ground Vibrations and Ground Borne Noise Assessment

Railway traffic and heavy roadway vehicles on uneven terrain can produce perceptible levels of ground vibrations, and incidentally ground-borne noise.

Based on the ground vibration criteria for human perception, the following categories are applicable to describe the existing ground vibrations within the Study Area:

- ELEVATED Vibrations at receptors exceed 1 mm/s (92 dBV) rms particle velocity and are likely to cause adverse reactions with building occupants.
- MODERATE Vibrations at receptors fall between 0.1 mm/s (72 dBV) to 1 mm/s (92 dBV) rms particle velocity and will be noticeable but will not cause adverse reactions in the building occupants.
- LOW Vibrations at receptors fall below 0.1 mm/s (72 dBV) and will not be noticeable to building occupants.

The estimated ground vibration levels are low to moderate throughout the Study Area based on the analysis undertaken as part of the EA study. The highest concentrations of ground vibrations are along the VIA Rail, within 50 metres (m) of the centerline. Ground-borne noise levels produced by ground vibrations have similar impacts.

3.3.10 INDIGENOUS LAND CLAIMS

The Study Area is within the Algonquins of Ontario land claim area. There is no known current use of lands and/or resources for traditional purposes within the Study Area. Known areas used for traditional fishing include the Rideau River which is more than 3 km east of the Study Area (Algonquins of Ontario, 2014). Potential past use of lands for traditional purposes is described in the Stage 1 Archaeological Assessment found in **Appendix B**.

The negotiators for the Algonquins of Ontario and the Canadian and Ontario Government drafted an Agreement-in-Principle in December 2012. The aforementioned parties signed this non-binding Agreement-in-principle, by the signing, negotiations towards a Final Agreement can begin. Within the revised Agreement-in-Principle (2016) there are land parcels within the Ottawa area identified for potential transfer to the Algonquins of Ontario. There are no identified parcels of land for transfer within the Study Area.

3.4 Natural Environment

This section provides a high-level summary of natural environment features of provincial interest as identified by the PPS (MMAH, 2014), MNRF and City's Official Plan (2013). The full Natural Environment Existing Conditions Report can be found in **Appendix B**. Existing Natural Environment Features are shown in **Figure 3-42**, **Figure 3-43** and **Figure 3-44**.

3.4.1 TERRESTRIAL ENVIRONMENT

The Study Area is mostly comprised of agricultural fields (in the NCC Greenbelt), transit corridors, commercial centres and residential properties. Small watercourse channels with naturally occurring riparian areas represent a small portion of the Study Area. Mature coniferous plantations and other deciduous woodlands of moderate size are also present within the central portion of the Study Area.

The Study Area is located within the Kemptville Ecodistrict 6E-12. The physiology of this area consists of limestone plain and sandstone bedrock with sand, silt, loam, and clay soils (OMAFRA, 2018); (Henson & Bodribb, 2005). The Study Area occurs close to the northern boundary of the physiographic region between the Russell and Prescott Sand Plains and the Ottawa Valley Clay Flats. Vegetated natural cover within this Ecodistrict is primarily deciduous forest at 37%, where 22% is composed of swamp wetlands (Henson and Brodribb 2015).

The Study Area is located within the Great Lakes-St. Lawrence Forest Region, within the forest section of Upper St. Lawrence. Although the Forest Region is characterized by deciduous forests of sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), basswood (*Tilia americana*), and white ash (*Fraxinus americana*) (Rowe, J.S., 1972) to name a few; the Study Area is now highly developed with urban lands and only small, fragmented deciduous woodlots occur.

3.4.1.1 Wildland Fire Risk

Table 3-4 provides a description of forest species composition categorized by wildland fire risk level as described in the Wildland Fire Risk Assessment and Mitigation Reference Manual (Ministry of Natural Resources and Forestry (MNRF), 2017). The risks associated with wildland fire in the Study Area are anticipated to be generally low, with some areas of moderate risk, based on the MNRF's generalized wildland fire hazard data which provides a coarse scale assessment of areas with the greatest potential for risks associated with wildland fire.

The Study Area contains several mixedwood and coniferous communities which present a moderate risk of wildland fire, located within Pinhey Forest. However, these communities may represent a higher risk level based both on forest species composition, age and other available fuel types and factors (i.e. forest density, needle litter accumulation, woody debris, ladder fuels), therefore further fire risk assessment is recommended to confirm.

Potential fire risk forest species communities present in the Study Area include ELC communities: Naturalized Coniferous Hedgerow, Naturalized Coniferous Plantation, Dry-Fresh White Pine Naturalized Coniferous Plantation, Dry-Fresh Red Pine Naturalized Coniferous Plantation, Dry-Fresh Scots Pine Naturalized Coniferous Plantation, Dry-Fresh White Pine-Hardwood Mixed Forest. Detailed ELC results are discussed in **Section 5.1.1**.

Table 3-4 Hazardous Forest Types Characteristic and Risk Level (MNRF, 2017)

Wildland Fire Risk Level	Forest Species Composition
Extreme	<ul style="list-style-type: none"> • Immature jack pine • Boreal spruce • Black or white spruce • Balsam fir • Immature red, white pine
High	<ul style="list-style-type: none"> • Mature jack pine • Mixedwood with >50% conifer (jack pine, spruce, balsam fir, immature red or white pine)
Moderate to Low	<ul style="list-style-type: none"> • Mixedwood forests ranging from 25% (low) to 50% (moderate) conifer composition. • Mature red, white, and Scots pine • Hardwood/deciduous forests composed of maple, birch, oak, poplar, ash etc. • Typically standing cedar, hemlock and tamarack are low risk • Mature red, white and Scots pine with clean or deciduous understory are low risk.

3.4.2 AQUATIC ENVIRONMENT

3.4.2.1 Hydrology

The hydrology in the Study Area includes three subwatersheds of the Rideau River and one of the Ottawa River. The Study Area falls primarily within two catchments of the Lower Rideau subwatershed, and partially within the Jock River subwatershed. The Lower Rideau is the most populated and urbanized subwatershed of the Rideau River system as it occupies the confluence of the Rideau and Ottawa Rivers. The Pinecrest Creek catchment area is also present in the Study Area but is part of the Ottawa River West subwatershed and is 17.1 square kilometers (RVCA, 2017).

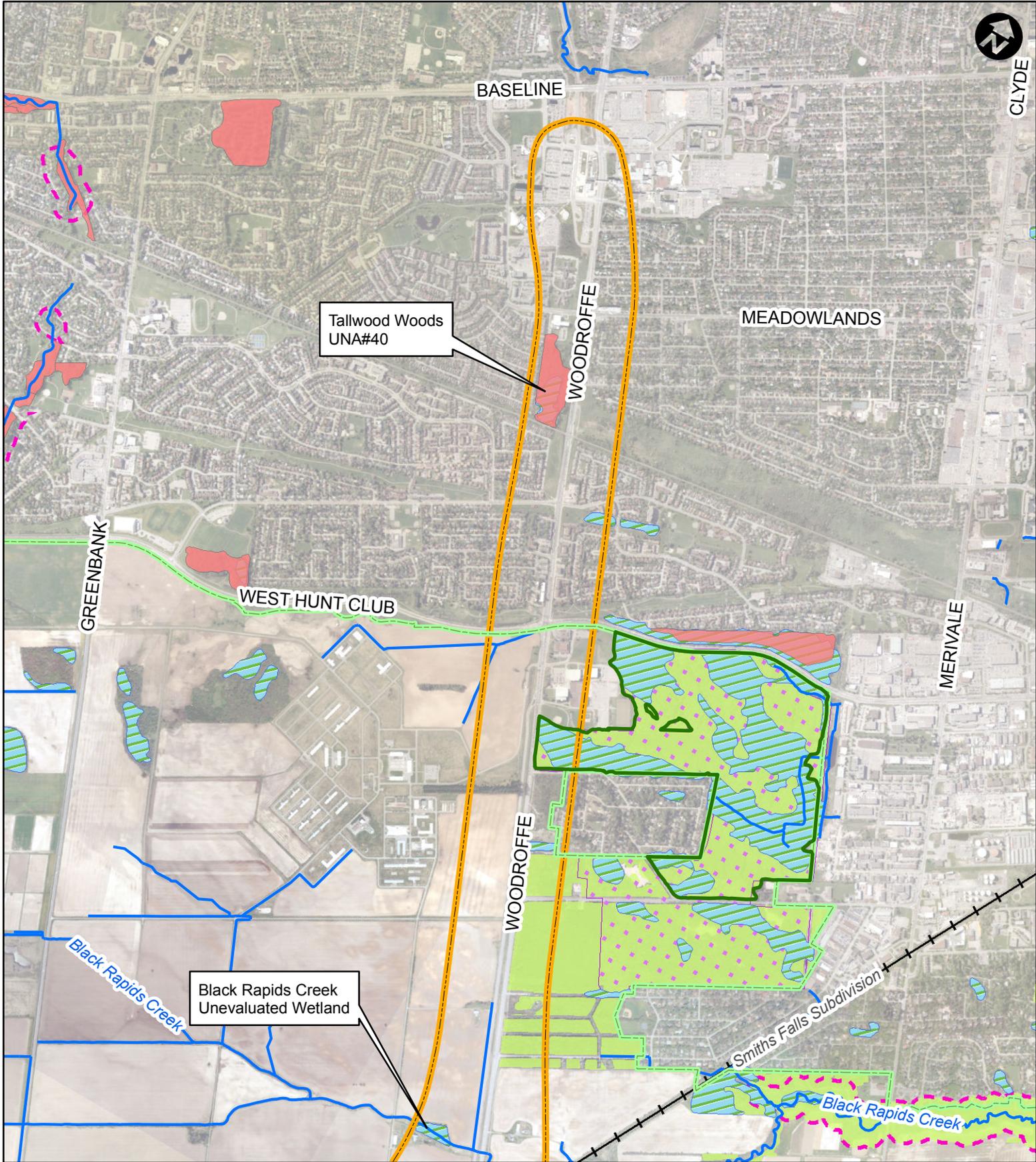
Water quality within the Lower Rideau subwatershed ranges from good to poor depending on the sampling site and adjacent land uses. There are no surface water features that drain into the catchment areas of Nepean Creek (RVCA, 2012c) and Barrhaven Creek (RVCA, 2012d). Subwatershed catchment areas for the Study Area are listed in **Table 3-5** and shown in **Figure 3-45** below.

Table 3-5 Rideau River Subwatersheds and Catchment Areas related to the Study Area

Drainage Area	Subwatershed	Catchment Area
Baseline Road to south of Nepean Sportsplex	Ottawa River West	Pinecrest Creek
Nepean Sportsplex to south of Fallowfield Road	Lower Rideau River	Black Rapids Creek
South of Fallowfield Road to south of Berrigan Drive	Lower Rideau River	Barrhaven Creek
South of Berrigan Drive to Jockvale Road	Jock River	Jock River – Barrhaven



CLYDE



Legend	
	Study Area
	Watercourse
	Unevaluated Wetlands (City of Ottawa)
	Significant Valleylands
	Pinhey Forest Candidate ANSI, Life Science
	Natural Heritage System (City OP)
	Urban Natural Areas
	Greenbelt Limits 2013 (NCC)
	Significant Woodlands (City of Ottawa 2011)

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

Planning and Environmental Assessment Study

0 250 500 1,000
Meters

Natural Environment



Black Rapids Creek
Unevaluated Wetland

Black Rapids Creek
Restoration Wetland

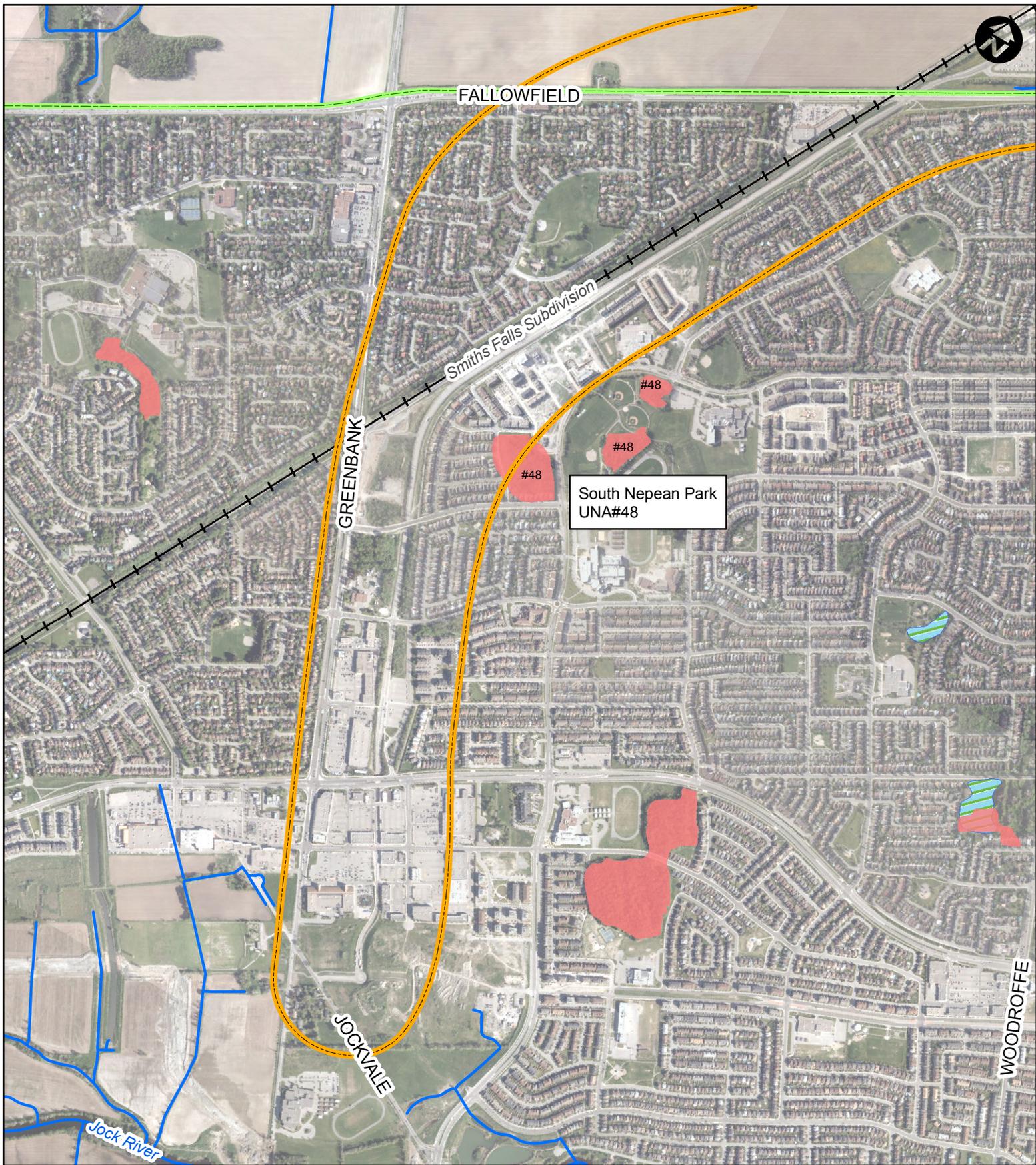
South Nepean Park
UNA#48

Legend	
	Study Area
	Watercourse
	Significant Woodlands 2011 (City of Ottawa)
	Unevaluated Wetland (City of Ottawa)
	Significant Valleylands
	Pinhey Forest Candidate ANSI, Life Science
	Natural Heritage System (City OP)
	Urban Natural Areas
	Greenbelt Limits 2013 (NCC GBMP)

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



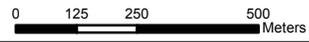
Natural Environment

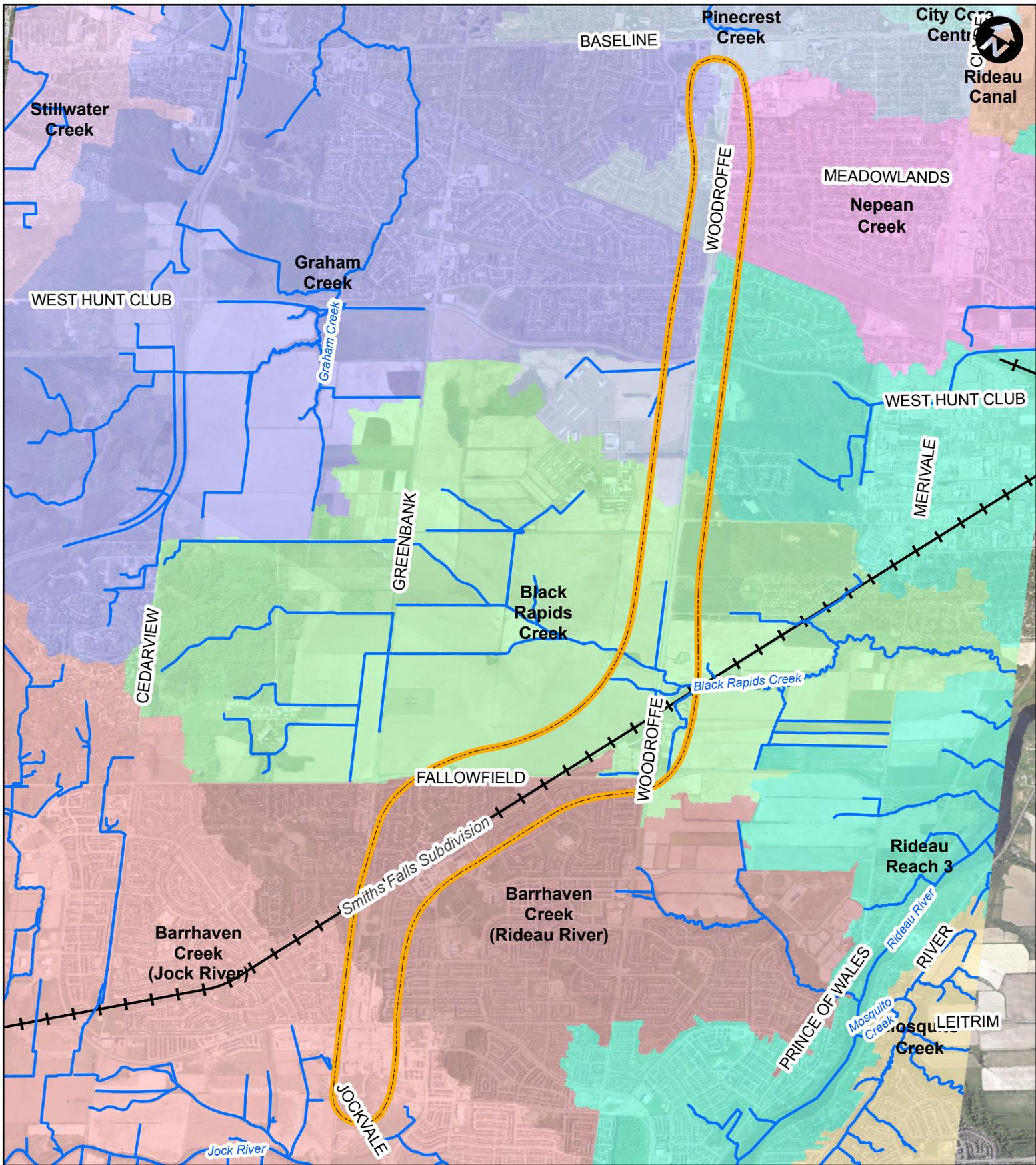


- Legend**
- Study Area
 - Watercourse
 - Significant Woodlands 2011 (City of Ottawa)
 - Unevaluated Wetland (City of Ottawa)
 - Significant Valleylands
 - Natural Heritage System (City OP)
 - Urban Natural Areas
 - Greenbelt Limits 2013 (NCC GBMP)

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

Natural Environment



Legend

Study Area	Graham Creek
Watercourse	Mosquito Creek
Rail Lines	Nepean Creek
Barrhaven Creek	Pinecrest Creek
Barrhaven Creek_	Rideau Canal
Black Rapids Creek	Rideau Reach 3
City Core Centre	Stillwater Creek

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

0 0.5 1 2 Km

Subwatershed Catchment Areas

3.4.2.2 Surface Water Features

Black Rapids Creek is the only perennial natural watercourse within the Study Area (**Figure 3-42**). It is approximately six kilometers (km) long and flows east from its headwaters near Greenbank Road through the NCC Greenbelt to the Rideau River, where it has been identified as an important ecological link for fish and wildlife (RVCA, 2014). It is comprised of two branches (north and south) and crosses both Woodroffe Avenue and the Southwest Transitway. The north branch is approximately one to three meters wide and 10 to 40 cm deep. The south branch is approximately one meter wide and five to 25 cm deep (McCormick Rankin, 1997a). Black Rapids Creek is classified as a cool to warmwater system and permanent water channel (RVCA, 2014).

Surface water quality conditions are monitored through the City of Ottawa’s Baseline Water Quality Program. The water quality rating for Black Rapids Creek was “Fair” in 2016 and based on parameters such as nutrients (i.e. total phosphorous, nutrients, and nitrates), E. coli, metals (i.e. aluminum and copper), and additional chemical/physical parameters (i.e. alkalinity, chlorides pH, and suspended solids). To summarize; the nutrients, E. coli, and metals all exceeded guidelines and it was recommended that efforts should be made to reduce contamination to the creek for overall water quality and aquatic life (RVCA, 2012a). However, the Black Rapids Creek Restoration Project began in 2016 and since that time water quality may have improved due to recent enhancements. An updated monitoring/summary report has yet to be released at the time of this review.

3.4.2.3 Fish and Fish Habitat

Black Rapids Creek contains habitat that supports various fish species that have adapted to cool-warmwater systems. It has been classified as habitat primarily for warmwater baitfish in the vicinity of Woodroffe Avenue (RVCA, 2012a), (EcoTec Environmental Consultants, 2003). During the City Stream Watch monitoring activities in 2003, 2008, and 2014; 29 fish species were observed throughout Black Rapids Creek (RVCA, 2012a)(RVCA, 2014) and eight fish species during EcoTec’s investigations (2003). Those fish species captured where Black Rapids Creek intersect with Woodroffe Avenue are highlighted in **Table 3-6**. Mottled sculpin (*Cottus bairdii*) was captured within the south branch of Black Rapids Creek at Woodroffe Avenue.

Table 3-6 Fish Species observed in Black Rapids Creek

Common Name	Scientific Name	RVCA 2012a, 2014	EcoTec 2003
Black crappie	<i>Pomoxis nigromaculatus</i>	X	
Blackchin shiner	<i>Notropis heterodon</i>	X	
Blacknose shiner	<i>Notropis heterolepis</i>	X	
Bluntnose minnow	<i>Pimephales notatus</i>	X	X
Brassy minnow	<i>Hybognathus hankinsoni</i>	X	
Brook stickleback	<i>Culaea inconstans</i>	X	X
Central mudminnow	<i>Umbra limi</i>	X	X
Common shiner	<i>Luxilus cornutus</i>	X	
Sculpin species	<i>Cottus</i> spp.	X	
Creek chub	<i>Semotilus atromaculatus</i>	X	X
Carp/Minnow species	<i>Cyprinid</i> spp.	X	
Darter species	<i>Etheostoma</i> spp.	X	
Fallfish	<i>Semotilus corporalis</i>	X	
Fathead minnow	<i>Pimephales promelas</i>	X	X
Finescale dace	<i>Phoxinus neogaeus</i>	X	X
Largemouth bass	<i>Micropterus salmoides</i>	X	
Common logperch	<i>Percina caprodes</i>	X	
Longnose dace	<i>Rhinichthys cataractae</i>	X	
Mottled sculpin	<i>Cottus bairdii</i>	X	

Common Name	Scientific Name	RVCA 2012a, 2014	EcoTec 2003
Northern redbelly dace	<i>Chrosomus eos</i>	X	X
Pearl dace	<i>Margariscus margarita</i>	X	
Pumpkinseed	<i>Lepomis gibbosus</i>	X	
Rock bass	<i>Ambloplites rupestris</i>	X	
Slimy sculpin	<i>Cottus cognatus</i>	X	
Smallmouth bass	<i>Micropterus dolomieu</i>	X	
Tesselated darter	<i>Etheostoma olmstedii</i>	X	
Walleye	<i>Sander vitreus</i>	X	
White sucker	<i>Catostomus commersonii</i>	X	X
Yellow perch	<i>Perca flavescens</i>	X	

3.4.3 WETLANDS

Wetlands within Ontario can have varying designations based on whether a wetland has been evaluated as per the Ontario Wetland Evaluation System (OWES). This is the only means of evaluating wetlands within Ontario to determine Provincial Significance and is administered through the MNRF. As such, wetlands can be defined as either provincially significant, other-evaluated, or unevaluated. Provincially Significant Wetlands (PSW) are the most valued and receive protection under the PPS (MMAH, 2014) and the City of Ottawa Official Plan (2013). Any wetlands found in association with significant woodlands, however, are considered part of the City’s Natural Heritage System (City of Ottawa, 2013) and must be considered during planning processes. Wetlands on federal lands regardless of provincial significance are subject to the federal policies and the corresponding Canadian Wetland Classification system. The Canadian Wetlands Classification system is discussed further in **Section 5.1.5**.

3.4.3.1 Provincially Significant Wetlands

No wetlands within the Study Area have been designated as provincially significant and therefore considered absent from the Study Area.

3.4.3.2 Other-Evaluated Wetlands

No wetlands within the Study Area have been evaluated as per the provincial evaluation system and therefore considered absent from the Study Area.

3.4.3.3 Unevaluated Wetlands

Unevaluated wetlands are mapped by the MNRF and the City of Ottawa (2011) in the Study Area and are illustrated in **Figure 3-42**, **Figure 3-43** and **Figure 3-44**. Several small isolated unevaluated wetlands occur throughout and in proximity to the Study Area, including some found in association with the Pinhey Forest Significant Woodland.

The Black Rapids Creek unevaluated wetland occurs on the west side of Woodroffe Avenue and the Southwest Transitway, adjacent to Black Rapids Creek. It occurs on federal lands and as such is subject to the Federal Policy on Wetland Conservation.

One section of Black Rapids Creek (located east of Woodroffe Avenue and south of the VIA Rail) has recently undergone an extensive restoration project due to findings of poor water quality and overall lack of wildlife habitat. The RVCA in collaboration with NCC and the Great Lakes Guardian Community Fund has enhanced and enlarged the wetland to improve water quality, increase biodiversity, and to provide important habitat and movement corridors for flora and fauna. Enhancements include side slopes, woody debris, and re-planting of native vegetation (RVCA, 2018).

3.4.4 NATURAL HERITAGE FEATURES

3.4.4.1 NCC Greenbelt Lands

The NCC Greenbelt consists of farms, forests, and wetlands covering approximately 20,000 hectares (ha) of land within the City of Ottawa and is a mosaic of land uses and facilities. The Study Area includes a large portion of the Greenbelt, specifically, the Southern Farm & Pinhey Forest Sector which includes a large portion of Agricultural Resource Area, Pinhey Forest as well as Black Rapids Creek (Figure 3-2).

Southern Farm/Pinhey Forest became a conservation area in 1948. This tract of land was donated to the NCC to enhance overall forest cover in the watershed, demonstrate forest conservation practices, and for human health. The NCC currently maintains the woodland and the rare post-glacial sand dunes on which it grows (NCC, 2018).

3.4.4.2 Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSI) are identified by the MNRF. Pinhey Forest is a Candidate Life Science ANSI within the Study Area (Figure 3-42). This forest contains a rare inland sand dune complex with eastern white pine (*Pinus strobus*) and red pine (*Pinus resinosa*) occurring either naturally in small areas or as large plantations. It extends from Woodroffe Avenue just south of the Nepean Sportsplex to the Grenfell Crescent and Burnbank Street intersection (NCC, 2018). Deciduous swamp forests of red maple and silver maple (*Acer saccharinum*) also occur amongst the dunes and support unique and regionally rare flora which are known to occur in wet acidic sites (MNRF, 2018). Despite historical disturbance to the site and extensive coniferous plantations, the area still hosts rare flora and insect species indicative of exceptional dune elements (MNRF, 2018). As previously noted, this forest is also part of the NCC Greenbelt

3.4.4.3 Significant Woodlands

Criteria established for Significant Woodlands in the City of Ottawa are defined by the Official Plan (City of Ottawa, 2013) as amended by Official Plan Amendment (OPA) 179. The City identifies one Significant Woodland feature in proximity to the Study Area, within Pinhey Forest. This woodland includes several small areas of unevaluated wetlands which are also part of the City's Natural Heritage System. At this time, the City is in the process of developing new mapping to reflect change in the OP policies for the identification of significant woodlands. The criteria for significance are different for urban and rural (i.e., Greenbelt) policy areas. Any changes to the status of woodlands within the Study Area as a result of the new policies will be addressed through subsequent stages of the planning process for this project.

3.4.4.4 Significant Valleylands

The City of Ottawa identifies Significant Valleylands by slopes greater than 15% and a length of more than 50 m with water present for some period of the year and are typically, part of the Natural Heritage System (City of Ottawa, 2013).

There are no Significant Valleylands within the Study Area. However, one is present approximately 700 m east of the Study Area boundary. This area coincides with Black Rapids Creek to the east of Woodroffe Avenue.

3.4.4.5 Linkage Features

A strong component of the Natural Heritage System incorporates and promotes linkages/corridors to support ecological functions. OPA 150 describes and maps areas that provide linkage opportunities between significant features (City of Ottawa 2013, Schedule L).

OPA 150 identifies land parcels within the NCC Greenbelt, specifically the southern portions of Pinhey Forest and a small wet woodland (unevaluated wetland) on Black Rapids Creek, and beyond the Study Area as wildlife linkage opportunities. The creek corridor has also been designated as a Natural Link within the GMP (National Capital Commission, 2013).

3.4.4.6 Urban Natural Features

The City of Ottawa undertook the Urban Natural Areas Environmental Evaluation Study (UNAEES; (Muncaster and Brunton, 2006) (Muncaster and Brunton, 2005) in conjunction with the Greenspace Master Plan (City of Ottawa 2006). The purpose

of the UNAEES was to identify woodlands, wetlands and ravines throughout the City of Ottawa urban area and evaluate their environmental significance.

Once the UNAEES was completed, those Urban Natural Areas (UNAs) worthy of protection and/or acquisition were identified using strategic guidelines set forth within the Urban Natural Features Strategy (City of Ottawa, 2007). UNAs identified as priority areas included high and moderate-rated sites, natural features currently in City ownership (including sites with low environmental rating), areas with recognized planning status, and the ability to promote environmental stewardship on privately-owned lands with a low environmental rating (City of Ottawa, 2007). A total of 40 UNAs were re-designated to Urban Natural Features based on this strategy. UNFs are shown on Schedule B of the Official Plan (2013) as land use designations and are included on Schedule L as part of the City's Natural Heritage System.

Two Urban Natural Areas (UNA) are located within the Study Area: Tallwood Woods (UNA #40) and South Nepean Park (UNA #48), both of which have been designated as Urban Natural Features.

Tallwood Woods is approximately 5.4 ha in size and located at the northwest corner where the CN Rail corridor and Woodroffe Avenue meet (**Figure 3-42**). This woodlot has been described as a lowland deciduous forest over substrates of sand and clay. A mature canopy of red maple and sugar maple is present within the central portion of the forest; however, the edge boundary is composed of early successional trees of trembling aspen, white birch, and green ash (*Fraxinus pennsylvanica*) (Muncaster and Brunton, 2005). At the time of the evaluation, no standing or flowing water occurred within the forest. A formal paved pathway bisects the forest along with several informal trails offering recreational opportunities to nearby residents. This greenspace is highly valued and the pathways are well-used by the surrounding community (MacPherson, Amy, November 2018). It received an overall ecological rating of "Moderate" due to habitat maturity that potentially supports uncommon flora and fauna, and for its aesthetic value within an urban landscape (Muncaster and Brunton, 2005).

South Nepean Park is approximately 5.5 ha and located southwest of Fallowfield Road and the VIA Rail corridor **Figure 3-44**. Three isolated disturbed forest units occur amongst a recreational park and have been described as disturbed upland deciduous forests with a canopy of white elm (*Ulmus americana*), green ash, and sugar maple. The understorey is densely occupied by buckthorn species limiting natural diversity. It received an overall ecological rating of "Low" due to urban disturbances and lack of biodiversity, connectivity, and wildlife habitat (Muncaster and Brunton, 2006). As a City-owned natural area, however, it was preserved and integrated into the greenspace network for the developing Longfields community.

One of the three forest units, known locally as Highbury Woods is located along the edge of the Study Area.

3.4.4.7 Official Plan Designations

Land use designations for the Study Area are discussed in **Section 3.3.1.3.1**. Designations specific to natural heritage features include: Natural Environment Area, Agricultural Resource Area, Greenbelt Rural, Major Open Space and Urban Natural Features. These are briefly described below and shown in **Figure 3-3**.

3.4.4.7.1 Natural Environment Area

Natural Environment Areas are lands that hold a high environmental value assessed through either federal, provincial, and/or municipal studies. Lands with such a designation contain components of wetlands, significant woodlands, and wildlife habitat and are of most significance within the City as they maintain biodiversity and ecological functions. Natural Environment Areas within the Greenbelt were identified by the NCC. Designated lands are protected and preserved to ensure the inherent function of natural features (City of Ottawa, 2013).

Black Rapids Creek and Pinhey Forest have been designated as a Natural Environment Area.

3.4.4.7.2 Agricultural Resource Area

To protect this resource for future generations, the City limits development in prime agricultural areas (City of Ottawa, 2013). Agricultural Resource Areas may also support valuable habitat for wildlife, including some species at risk, depending upon their use and management.

Prime agricultural lands are present in the Study Area west of Woodroffe Avenue.

3.4.4.7.3 Greenbelt Rural

This designation is part of the greater Greenbelt policy but has specific policy activities for farming, forestry, recreation, and small-scale commercial uses directly related to rural activities within the Greenbelt (City of Ottawa, 2013).

The pine plantation within Pinhey Forest is designated Greenbelt Rural lands within the Study Area.

3.4.4.7.4 Urban Natural Features

Tallwood Woods (UNA # 40) and South Nepean Park (UNA #48) have been designated as urban natural features in the Study Area. This designation contributes to biodiversity and wildlife habitat in the urban area.

3.4.4.7.5 Major Open Space

Major open space areas are a key component of the Greenspace Network which also contributes to neighbourhood quality of life and the overall integrity of the natural environment (City of Ottawa, 2013). A linear stretch of major open space area is present in the Study Area north of the Canadian National (CN) Railway and Medhurst Drive on the east side of Woodroffe Avenue, across from Tallwood Woods. The non-wooded portions of South Nepean Park are also designated as Major Open Space.

3.4.4.8 Other

One natural heritage feature that the MNRF classifies only as a “Life Science Site” is located within the Study Area (**Figure 3-42**). The footprint of this feature is similar to that of Tallwood Woods, located within the northwest section of the Study Area. MNRF describes this feature as a disturbed lowland deciduous forest with occurrences of red maple, yellow birch, black ash (*Fraxinus nigra*), white cedar (*Thuja occidentalis*), and white elm on Clay Plain (MNRF, 2018).

3.4.5 SPECIES AT RISK AND SPECIES OF CONSERVATION CONCERN

A review of online resources and personal communication (e.g., wildlife atlas records, NHIC database, A. MacPherson, 2018) identified 27 species at risk (SAR) with current occurrence records (≤ 30 years) that exist in the vicinity of the Study Area either within 1 km (as per NHIC and A. MacPherson 2018) or 10 km (as per wildlife atlas records; **Table 3-7**). S-Ranks are a provincial status used by the NHIC to set protection priorities for rare species and is based on the number of occurrences in Ontario. The MNRF tracks species with S1 to S3 (vulnerable to critically imperiled) designations and are considered Species of Conservation Concern. SAR potential will be confirmed following completion of focused field studies detailed in a subsequent section of the Environmental Study Report: Update to Existing Conditions (**Section 5.1.4**).

Table 3-7 SAR and Species of Conservation Concern Wildlife Records for the Study Area

Common Name	Scientific Name	S-Rank ¹	ESA Status ²	SARA (Schedule 1) Status ³
PLANTS				
Butternut	<i>Juglans cinerea</i>	S2?	Endangered	Endangered
INSECTS				
Monarch	<i>Danaus plexippus</i>	S2N, S4B	Special Concern	Special Concern
REPTILES				
Blanding’s Turtle	<i>Emydoidea blandingii</i>	S3	Threatened	Threatened
Northern Map Turtle	<i>Graptemys geographica</i>	S3	Special Concern	Special Concern
Snapping Turtle	<i>Chelydra serpentina</i>	S3	Special Concern	Special Concern
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S4	Not at Risk	Special Concern
BIRDS				
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	S3B, S3N	No status	No status
Peregrine Falcon	<i>Falco peregrinus</i>	S3B	Special Concern	Special Concern
Short-eared Owl	<i>Asio flammeus</i>	S2N, S4B	Special Concern	Special Concern

Common Name	Scientific Name	S-Rank ¹	ESA Status ²	SARA (Schedule 1) Status ³
Common Nighthawk	<i>Chordeiles minor</i>	S4B	Special Concern	Threatened
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	Threatened	Threatened
Eastern Wood-pewee	<i>Contopus virens</i>	S4B	Special Concern	Special Concern
Purple Martin	<i>Progne subis</i>	S3S4B	No status	No status
Bank Swallow	<i>Riparia riparia</i>	S4B	Threatened	Threatened
Barn Swallow	<i>Hirundo rustica</i>	S4B	Threatened	Threatened
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	Special Concern	Threatened
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	Special Concern	Special Concern
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	Threatened	Threatened
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	Threatened	Threatened
MAMMALS				
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	Endangered	Endangered
Northern Myotis	<i>Myotis septentrionalis</i>	S3	Endangered	Endangered
FISH				
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	S3	Special Concern	Special Concern
Bridle Shiner	<i>Notropis bifrenatus</i>	S2	Special Concern	Special Concern
River Redhorse	<i>Moxostoma carinatum</i>	S2	Special Concern	Special Concern
Greater Redhorse	<i>Moxostoma valenciennesi</i>	S3	No status	No status
Channel Darter	<i>Percina copelandi</i>	S2	Special Concern	Threatened
<p>Status Source: ¹S-Rank (MNRF 2017)</p> <p>S1: Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province. S2: Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province. S3: Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. S4: Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors. S5: Secure – Common, widespread, and abundant in the nation or state/province. SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities. S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4). SR or ? - Recorded within a nation or subnation, but local status not available or not yet determined. When combined with a global rank of G1 to G3, local status is 'Indeterminate,' but the entity is nevertheless presumed vulnerable, if still extant. N – rank for non-breeding populations in the province. B – rank for breeding populations in the province.</p> <p>²ESA (Endangered Species Act) Status (MNRF 2018) ³SARA (Species at Risk Act) Status (federal status - listed) (Government of Canada, 2018) Extinct - A species that no longer exists anywhere. Extirpated (EXT) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario. Endangered (END) - Lives in the wild in Ontario but is facing imminent extinction or extirpation. Threatened (THR) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it. Special Concern (SC) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats. Not at Risk (NAR) - A species that has been evaluated and found to be not at risk. Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.</p>				

3.5 Physical Environment

The physical environment is documented through a number of varying studies including an agricultural assessment, geotechnical report and a Phase I Environmental Site Assessment (ESA).

3.5.1 SOIL SERIES

An Agricultural Assessment for the Study Area was undertaken to support the study. The full report is included in **Appendix B**. Detailed soil surveys confirmed the presence of Carlsbad, Ramsayville, Dalhousie, Brandon, Allendale and Alluvial soils within the Study Area (**Figure 3-46**).

Canada Land Inventory (CLI) capability rating indicates that the Study Area has a mix of prime and non-prime agricultural lands with CLI capability ratings of CLI Class 2, 3, 4 and 5 (descending in quality from Class 1 having no limitations and is

absent from the Study Area) (**Table 3-8**) (**Figure 3-47**). Approximately 44.04% of the lands within the Study Area consist of prime agricultural lands (CLI Classes 2 and 3).

Table 3-8 CLI Capability Ratings for the Study Area

Soil Series	Area (Ha)	% of Study Area	CLI Capability Class
Carlsbad	30.18	48.57	4
Dalhousie	16.86	27.14	2
Brandon	7.35	11.83	3
Allendale	3.15	5.07	3
Ramsayville	2.90	4.67	4
Alluvial	1.70	2.74	5