City of Ottawa Environmental Impact Statement for the Barrhaven Conservancy East

August 5, 2020

Submitted To:

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EXECUTIVE SUMMARY

The Barrhaven Conservancy Development Corporation (BCDC) is proposing a new residential subdivision, named Barrhaven Conservancy East (the "Site") located in the Barrhaven area of Ottawa, Ontario. The Site is situated within the larger Barrhaven Conservancy Community, bordered by the Jock River to the south Foster Ditch to the west, and the Fraser-Clarke Watercourse to the east. The northern border of the Site includes the Canadian National Smiths Falls Rail Corridor, a stormwater management facility, and the future Chapmans Mills Bus Rapid Transit Corridor.

This report is the Environmental Impact Statement (EIS) for the proposed development of the Site. The purpose of this document is to review the overall development concept for the Site from a natural heritage perspective. The report includes a detailed review of both the natural heritage features currently present on the Site and the relevant natural heritage regulations under which site development would proceed. The report is intended to determine potential impacts of proposed site development on existing site natural heritage features, provide mitigation and/or design considerations to protect those features, and highlight relevant regulations as detailed planning proceeds to allow the developer to remain compliant. City staff requested during pre-consultation that the scope of this EIS be expanded to include:

1) Where discrepancies between the proposed development and recommendations in the Jock River Reach One Subwatershed Study (Stantec, 2007) may exist, provide both a rationale and explanation of how goals for the subwatershed will be achieved;

2) Describe how previous compensation works for development south and north of the river (e.g. the fish habitat compensation) will be protected; and,

3) Provide appropriate setbacks around natural features and surface water resources.

Additionally, the RVCA recommended the creation of wetlands/open space in the community within the floodplain of the Jock River be addressed as part of this EIS. As such, this document is more comprehensive than a typical EIS, with information and analysis that is consistent with an Environmental Management Plan (EMP). This report also details how the proposed development is concordant with City of Ottawa Official Plan policy directives associated with both the Jock River Reach One Subwatershed Study and the South Nepean Urban Area Secondary Plan. This EIS is structured generally following City of Ottawa Environmental Impact Statement Guidelines.

The Site is entirely within the City of Ottawa Urban Area but was largely dominated by agricultural land uses in the past. The full build-out of the Site is anticipated to take several years and will include two 'areas' consistent with the Official Plan designation on Schedule B. Residential development is proposed for the north half of the site outside of the floodplain. Former agricultural lands within the floodplain along the south portion of the site will be restored/re-naturalized to include areas of wetland habitat, forest habitat, and meadow habitat with the goal of increasing the ecological diversity of the corridor.

The South Nepean Urban Area Secondary Plan, which predates amalgamation (2001), provided a development vision for the area with floodplain lands along the Jock River to be re-naturalized, while areas of mid- to high-density residential development with some areas of commercial development were to occur outside of the naturalized area. The floodplain on the Site was modified through a cut and fill program under Official Plan Amendment (OPA) 212. OPA 212 delineates areas of Conservation designation and the Residential designation separated by the new regulatory flood line for the Jock River.

The Jock River Reach One Subwatershed Study generally reflects the intent of the Secondary Plan, i.e., to protect natural heritage elements including existing shoreline vegetation and fish habitat, and for the re-naturalization of the floodplain areas. While the Subwatershed Study identified a number of specific natural heritage features (forest and wetland areas) required to be preserved within the broader catchment, none of those habitats occur within the proposed residential areas of the Barrhaven Conservancy Community, nor in the existing floodplain corridor. The Subwatershed Study, further: (1) defined setback requirements from drainage features and the Jock River (30 m); (2) allows for some recreational development within the floodplain (again with the agreement of the RVCA); and, (3) recommended a pathway system along the Jock River corridor. The Subwatershed study also noted both the general importance of the Jock River riparian area as an important natural corridor, and the significant lack of natural forest and wetland cover throughout the catchment.

The City of Ottawa's Official Plan identifies areas adjacent to the Jock River as a natural corridor area.

The Site had historically been subject to active agriculture, generally to within 10 m of the river. The site did, however, have treed hedgerows between fields. Most of the hedgerows were recently removed. The narrow band of trees occurring directly along the banks of the Jock River, the Foster Ditch and the Fraser-Clark Watercourse have been fully retained. Otherwise, Natural Heritage Features and Core Natural Areas were and are largely absent from the Site. No Provincially Significant Wetlands, wetlands found in association with Significant Woodlands, Significant Valleylands, or Areas of Natural and Scientific Interest occur on or adjacent to the Site. The nearest Provincially Significant Wetland is the Stoney Swamp Wetland Complex, which is > 3 km east of the Site. Other than the trees along water course, the Site currently consist of bare, flat soil, though the soil has been seeded with a grass mix to provide erosion control.

The identified species at risk with some potential to occur near or traverse the Site, or to otherwise interact with the proposed development project are: Bank Swallow, Northern Map Turtle, Snapping Turtle, and Blanding's' Turtle. The risk of harm to transient individuals during construction, however, can be mitigated through the appropriate and conventional mitigations and there is currently no suitable habitat for these species on the site. As such he proposed project is not anticipated to impact species at risk. The restored corridor has the potential to provide habitat for turtle species that previously did not exist.

The development of this community will support the creation of a riparian corridor, in the floodplain lands, between 80 and 400 m wide to be re-established and re-naturalized. This area will include the creation of ~5 ha of wetland and ~32 ha of forest cover, with a recreational pathway system along its northern edge, and a proposed canoe-launch entry point adjacent to Borrisokane Road.

Drainage features through the proposed community (i.e. the Foster Ditch and the Fraser-Clarke Watercourse) will be retained and protected with 30 m setbacks from their normal high-water marks. The

retained corridors will be replanted and re-naturalized. Requirements from the subwatershed study related to stormwater management will be addressed under functional servicing studies for the area.

The proposed residential development and corridor restoration was designed to be consistent with the goals of the Jock River Subwatershed Study. Key features of the design that are consistent with the subwatershed study goals include 30 m setbacks for the Foster Ditch and Fraser-Clarke Watercourse, a naturalized corridor along the Jock River of between 80 and 400 m width, a significant increase in wetland habitat, and recreational pathways within the corridor. Further, previously developed natural features (fish habitat compensation pond and the Foster Dry pond) will not be impacted by the proposed residential or corridor restoration designs, but rather can be a focus for integration with the restored corridor. The proposed restoration development will represent a significant increase the diversity of natural features within the Site, as well as for the broader communities of Barrhaven and the City of Ottawa. The natural feature improvements to the existing ecological features (e.g., wetlands, meadow habitats, fish habitat) and the creation of new features (e.g., habitat for Species at Risk), will benefit the ecological diversity of the Site while simultaneously creating a recreational opportunities for the public.

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List of Acronyms and Abbreviations

DFO – Fisheries and Oceans Canada
ECCC - Environment and Climate Change Canada
EIS – Environmental Impact Statement
ESA – Endangered Species Act, 2007
FWCA Fish and Wildlife Conservation Act
KAL – Kilgour & Associates Ltd.
JRSWS – Jock River Reach One Subwatershed Study
MBCA - Migratory Bird Convention Act
MNR – Ministry of Natural Resources
MNRF – Ministry of Natural Resources and Forestry
OBBA – Ontario Breeding Bird Atlas
AMO – Atlas of the Mammals of Ontario
OP – Official Plan
OPA – Official Plan Ammendment
PPS – Provintial Policy Statement
RVCA – Rideau Valley Conservation Authority
SAR – Species at Risk
SARA - Species at Risk
TCR – Tree Conservation Report

1.0 INTRODUCTION

Barrhaven Conservancy Development Corporation (BCDC) is proposing a new residential subdivision, named the Barrhaven Conservancy East (the "Site") located in the Barrhaven Conservancy Community area of Ottawa, Ontario (Figure 1). The Site is divided into two sections divided by Borrisokane Road. The east parcel is bordered by the Jock River to the south and the Fraser-Clarke watercourse and future Chapmans Mills Bus Rapid Transit Corridor to the north. The west parcel extends out to the Foster Ditch to the west and is bounded on the south by City of Ottawa property along the Jock River and the Foster stormwater management facility on the north east edge.

1.1 Property Information

The Site, along with entire Barrhaven Conservancy Community, is owned by the Barrhaven Conservancy Development Corporation (2934 Baseline Rd Suite 302, Ottawa, ON K2H 1B2, 613-518-1864). The full Barrhaven Conservancy Community is comprised of seven contiguous property parcels at 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey Drive are located on Concession 3 Lots 13 – 14 and Concession 4 Lots 13-15, and covers approximately 168 ha. The Site itself includes all portions of this area east of the Foster Ditch, covering an area of approximately 79 ha. The Site is zoned Developmental Reserve (DR) with a small portion along the Fraser-Clarke corridor zoned as Parks and Open Space Zone (O1).

The Site is entirely within the City of Ottawa Urban Area and was largely dominated by agricultural land uses in the past.

1.2 Current Proposal

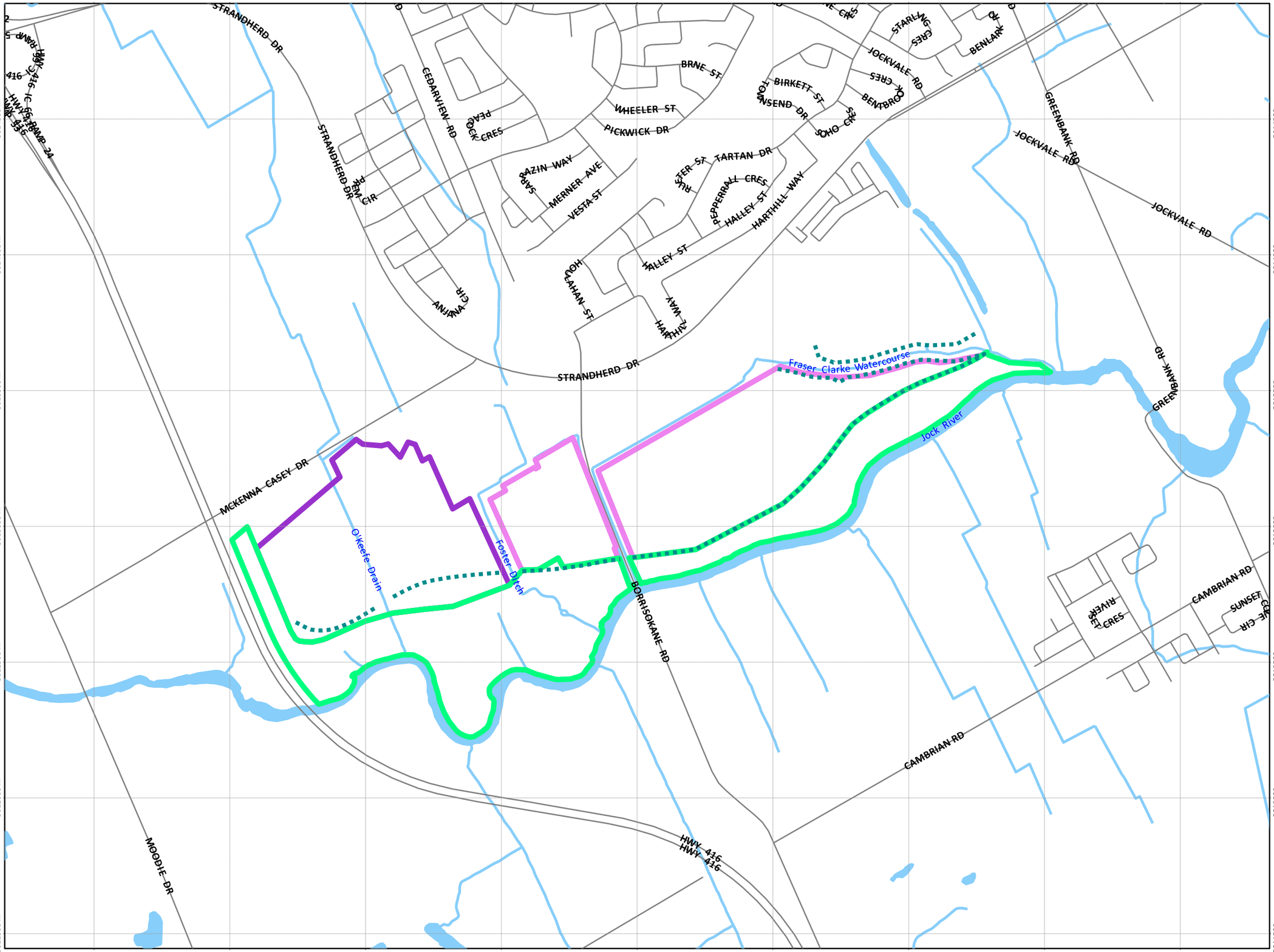
The full build-out of the community is anticipated to take several years to complete. The subject of this application for Barrhaven Conservancy East is a proposed residential development to take place between the Foster Ditch to the Fraser-Clarke watercourse. The Barrhaven Conservancy East community will not require significant alteration of the current site drainage fabric.

Accompanying this new residential community is the proposed re-naturalization of the Jock River corridor: (1) natural features such as wetlands and forest / canopy cover; and (2) recreational infrastructure (e.g. pathways). Plans for the restoration are currently being developed through consultation with Rideau Valley Conservation Authority and the City of Ottawa. The restoration is anticipated to include areas of wetland habitat, forest habitat, and meadow habitat, increasing the ecological diversity of the corridor.

1.3 Objective

This report is the Environmental Impact Statement (EIS) for the proposed Barrhaven Conservancy East development. The purpose of this document is to review the overall development concept for the Site from a natural heritage perspective. The report includes a detailed review of both the natural heritage features currently present on the Site and the relevant natural heritage regulations under which site development would proceed. The report is intended to determine potential impacts of proposed site development on existing natural heritage features, provide mitigation and/or design considerations to protect those

Figure 1 Site Context



Legend

- Application Areas
  - BC East
  - BC West
  - Jock Corridor
- Edge of Regulatory Floodplain

N

0 500 m

Project: Barrhaven Conservancy Development Corporation
Created By: AF
MTM Zone 9
(NAD 83)
Printed on: 2020-08-05

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This EIS is structured generally following City of Ottawa *Environmental Impact Statement Guidelines* (City of Ottawa, 2012). Environmental Policy Context provided in Section 2 identifies the relevant natural heritage regulations under which site development and planning would proceed. Section 3 details the process by which existing site natural heritage conditions were determined and Section 4 details the existing natural heritage conditions within the Site. Section 5 describes the proposed project. Designs at this stage are still conceptual rather than detailed, but the section outlines major components and general design elements to be considered in the review of potential natural heritage impacts. Section 6 reviews the likely impacts of the overall proposed community design, while Section 7 provides recommended mitigation for likely impacts to the natural environment.

During the pre-consultation meeting for the proposed project (February 13, 2020), the City of Ottawa requested the following points be included in the EIS in addition to the usual components of an EIS (Appendix A):

1) Where discrepancies between the proposed development and recommendations Jock River Reach One Subwatershed Study (Stantec, 2007) exist, provide both a rationale and explanation of how goals for the subwatershed will be achieved;

2) Describe how previous compensation works for development south and north of the river (e.g. the fish habitat compensation) will be protected; and,

3) Provide appropriate setbacks around natural features and surface water resources.

Additionally, the Rideau Valley Conservation Authority (RVCA) recommended the creation of wetlands/open space, as part of this proposal through the EIS. As such, this document is more comprehensive than a typical EIS, with information and analysis that is consistent with an Environmental Management Plan (EMP).

This report also includes the Tree Conservation Report (TCR) for the proposed project (Appendix B).

2.0 ENVIROMENTAL REGULATORY CONTEXT

Natural heritage policies and legislation relevant to this EIS are outlined below.

2.1 The Provincial Policy Statement, 2014

The Provincial Policy Statement (PPS, 2020) was issued under Section 3 of the Planning Act (1990). The latest revision of the PPS was approved by the Ministry of Municipal Affairs and Housing on February 28, 2020 and came into effect on May 1, 2020. Natural features are afforded protections under Section 2.1 of the PPS. Protections may include maintenance, restoration, and improved function of diversity, connectivity, ecological function, and biodiversity of natural heritage systems. These protections restrict development and site alteration in significant natural areas (e.g., woodlands, wetlands, wildlife habitat) unless it can be demonstrated that there will be no negative effects on the features and ecological functions of those natural areas. Technical guidance for implementing the natural heritage policies of the PPS is found within the second edition of the *Manual for Natural Heritage Policies of the Provincial Policy Statement* (Ministry of Natural Resources and Forestry (MNRF), 2010). This manual recommends the approach and technical criteria for protecting natural heritage features and areas in Ontario.

2.2 City of Ottawa Official Plan

The City of Ottawa Official Plan (OP) provides direction for future growth in the City of Ottawa and is a policy framework to guide physical development to 2031 (City of Ottawa, 2003). The OP was first approved in 2003 and is updated every five years. The most recent update was approved by City council in 2013. This EIS is limited to the natural environment (e.g., natural heritage system) and land use designations related to the natural environment. Two major document classes developed under the OP provide more specific direction for large scale development activities: subwatershed studies and secondary plans.

2.2.1 Jock River Reach One Subwatershed Study, 2007

The Jock River Reach One Subwatershed Study (JRSWS; Stantec, 2007) is a planning document that describes existing environmental conditions throughout the lower Jock River subwatershed and provides recommendations for environmental protection, conservation and restoration to be incorporated into land development and land use practices to ensure long-term ecological sustainability of the subwatershed.

The JRSWS notes that while the Jock River and its riparian lands provide the main wildlife corridor through the broader area, the forest cover and riparian vegetation throughout the subwatershed is limited and there is lack riparian vegetation along the river. The JRSWS indicates specific woodland and wetland areas to be preserved, though none of the features specifically addressed are located within or adjacent to the proposed development area. The JRSWS does not provide specific targets for forest or wetland coverage within development areas. To improve natural heritage conditions within the subwatershed, the JRSWS does provide three major categories of recommendations for development related to fish habitat compensation, stormwater management planning, and natural environment planning.

2.2.1.1 Fish Habitat Compensation

Fish habitat compensation requirements per the JRSWS apply only to developments south of the Jock River. In accordance with the JRSWS, alterations to the Corrigan Drain, the Todd Drain and the East and West Clarke Drains (all located on the south side of the Jock River) as part of previous development projects resulted in losses of fish habitat. Those losses were compensated for through the construction of the “Compensation Pond” and improvement to the Foster Pond, both located on City-owned land south of the west of Borrisokane Road, between the Jock River and the southern boundary of lands owned by BCDC.

2.2.1.2 Stormwater Management Planning

The JRSWS defines objectives for stormwater management planning for this project that will be addressed in detail through the functional servicing studies for the proposed development. The key points include:

For the Jock River:

- No quantity control storage required for flood control purposes as the hydrograph from the subwatershed will peak before the upstream peak in the Jock River;
- No erosion control storage required to maintain the predevelopment in-stream erosion condition; and,

- Quality control volume as per the Ministry of Environment Enhanced Treatment (80% TSS removal).

For existing drainage channels to the north bank of the Jock River (i.e. through the proposed development area):

- Quantity control storage as required to meet constraints within existing channels and/or at existing crossings (quantity control/level of control requirements to be determined through further detailed study);
- Erosion control storage as required to maintain stability and geomorphic function of the existing tributaries, as determined through further detailed study;
- Quality control storage as per the Ministry of Environment Enhanced Treatment (80% TSS removal); and,
- All stormwater management facility outlets will be designed to augment low flows to the extent possible.

Through the development area generally:

- Implement structural infiltration practices in areas of suitable soil; implement non- structural best management practices (i.e., reduced grading, disconnected impervious areas, promotion of open space and park lands, maximizing vegetative cover) elsewhere in the system to reduce magnitude of runoff volume.

2.2.1.3 Natural Environment Planning

Individual recommendations from the JRSWS associated with natural environment planning apply specifically to the catchments of drainage channels through the development area and/or of the Jock River itself. These recommendations have been numbered so that they may be directly referenced as they are addressed through this EIS (Table 1).

Table 1 Natural Environment Planning Recommendations from the JRSWS

Feature	Recommendation	Recommendation Number
Foster Catchment		
Ditch/Tributary Corridor	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	JRRS-1
Watercourse Setback Requirement	Setback greater of the 100 y floodline elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	JRSWS-2
Fraser Clarke Catchment		
Ditch/Tributary Corridor	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	JRSWS-3
Watercourse Setback Requirement	Setback greater of the 100 y floodline elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	JRSWS-4
Jock River Corridor		
Floodplain	Maintain the regulatory floodplain by not permitting active development within its limits. Some reduced risk uses such as sports fields and trails	JRSWS-5

	may be considered subject to RVCA approval.	
Riparian Corridor	Prepare a Jock River Corridor Riparian Planting Plan to improve and enhance riparian vegetation coverage along the banks and shoreline of the river.	JRSWS-6
Aquatic Habitat	Protect critical fish habitat and spawning areas along the Jock River and tributary mouths.	JRSWS-7
Creation of Aquatic Habitat (city lands)	Create pike spawning habitat area adjacent to Foster Dry Pond as compensation for loss of fish habitat in tributaries within Barrhaven South.	JRSWS-8 Note: previously completed
Setback Requirement	Development setback for the Jock River will be the greater of: floodplain, meander belt width, geotechnical, 15 m top of defined bank or 30 m from normal high water mark	JRSWS-9
Erosion Investigations	Further detailed studies required to confirm bank erosion areas, causes and to recommend bank stabilization and erosion protection measures	Objective for the City/RVCA
Recreational Pathway	Provide recreational trail along the Jock River as per OP and Greenspace Master Plan.	JRSWS-10

2.2.2 South Nepean Urban Area Secondary Plan – Area 8

The City of Ottawa provides policies and an approach to guide the future development of the area bounded by Strandherd Drive on the north, the Jock River on the south, Borrisokane Road on the west and the Kennedy-Burnett Stormwater facility to the east in the *South Nepean Secondary Plan for Area 8* (City of Ottawa, 2003).

With respect to the general development of the area, the secondary plan recommended that the Jock River floodplain provide the divide between the "building intensive" and "land intensive" (e.g., conservation lands) categories of land use. Conservation lands were deemed to occur within the regulatory flood line for the Jock River together with any additional land required by the City or the Conservation Authority for flood mitigation or stormwater control facilities. The conservation lands were to be re-naturalized, while areas of mid- to high-density residential development with some areas of commercial development were to occur outside of the naturalized area (City of Ottawa, 2003). The floodplain on the Site was modified through a cut and fill program under Official Plan Amendment (OPA) 212. OPA 212 confirms areas of Conservation designation and of Residential designation (removing areas of commercial development) separated by the new regulatory flood line for the Jock River.

The city requires that future design of stormwater management facilities shall provide for pedestrian and cycling paths that connect to the adjacent areas and to the Jock River. Whenever the stormwater facilities are reconstructed or new facilities are built, their design should have a more natural shoreline and vegetation than existing facilities. The rural landscape of the Jock River floodplain should also be conserved (City of Ottawa, 2003).

2.3 Species at Risk Act, 2002

The federal Species at Risk Act (SARA; 2002) is administered by Environment and Climate Change Canada (ECCC) and provides direction to protect and ensure the survival of wildlife species in Canada. The purpose of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened,

provide recovery Endangered or Threatened species, and to manage other species to prevent them from becoming Endangered or Threatened.

All species listed on Schedule 1 of SARA are afforded protection on federal lands. Aquatic species and species of migratory birds protected by the Migratory Birds Convention Act (MBCA; 1994) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership.

2.4 Endangered Species Act, 2007

The provincial Endangered Species Act (ESA; 2007) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for species at risk (SAR) and their habitat. The Act prohibits killing, harming, harassing, possessing, transporting, buying, or selling Extirpated, Endangered, and Threatened species. Species listed as Endangered, Threatened, or Extirpated and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation, and migration) are automatically afforded legal protection under the ESA.

2.5 Fisheries Act, 1985

The federal Fisheries Act (1985) is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the Fisheries Act provides:

- Protection for all fish and fish habitat
- Prohibition against the "harmful alteration, disruption or destruction of fish habitat"
- Prohibition against causing "the death of fish by means other than fishing"

Projects that with a scope that does not fall within DFO defined standards and codes of practice require submission of a request for review to DFO.

2.6 Migratory Birds Convention Act, 1994

The Migratory Birds Convention Act (MBCA) is legislation administered by the ECCC that provides protection for migratory birds listed in the Act. The disturbance, destruction, take and killing of migratory birds, their eggs, and their nests are prohibited in the Act. The “incidental take” and work that would result in the destruction of active nests, or the wounding or killing of bird species protected under the MBCA and/or associated regulations (e.g., SARA) is prohibited.

2.7 Fish and Wildlife Conservation Act, 1997

The provincial Fish and Wildlife Conservation Act (FWCA, 1997) governs the hunting and trapping of a variety of wildlife including mammals, birds, reptiles, amphibians, and fish in Ontario, thereby facilitating the protection of wildlife and their habitat. The FWCA outlines the prohibition of hunting or trapping specially protected species and the requirement for provincially issued licenses for the hunting or trapping of “furbearing” or “game” animals.

2.8 Conservation Authorities Act, 1990

Conservation Authorities were created to address erosion, flooding, and drought concerns regionally by managing at the watershed level. Conservation Authorities were given the ability to regulate under Section 28 of the Conservation Authorities Act. The act provides mechanisms to regulate works and site alterations that have potential to affect erosion, flooding, land conservation, and alterations to waterbodies within their jurisdiction. It is the obligation of all Conservation Authorities to implement their local Ontario *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

3.0 METHODOLOGY

3.1 Background Data Review

A detailed review of the available background information was completed and is summarized for the proposed development. Much of the existing published information pertaining to natural systems is out of date since the Site has been cleared and re-graded as part of a previous earthworks program.

3.1.1 Agency Consultation

3.1.1.1 MECP

The Study Area is located within the jurisdiction of MECP Kemptville district. A request for confirmation of SAR related to the Study Area was submitted to the MECP May 5, 2020 (Appendix A). A response has not yet been received from MECP.

3.1.1.2 RVCA

Consultations with the RVCA have been ongoing with respect to the restoration of the north shore of the Jock River. Discussions generally focused on natural features for the restoration works (e.g., wetland and forest cover, meadow), recreational uses (e.g., paths / trails, access, parking), and public safety.

The RVCA provided the following input with respect to restoration designs:

- Ponds and wetland features should have a variety of slopes (e.g., 4:1, 3:1 2:1);
- Natural areas should have a diversity of aquatic and terrestrial vegetation;
- Ponds and wetland features should have wood structure in significant abundance at a variety of elevations (root wads, sweeper trees, basking logs); and,
- Ponds should have shallow, moderate and deep zones broken down by percentage.

3.1.1.3 City of Ottawa

The City of Ottawa staff participated in the February 19, 2020 meeting to scope the restoration concept, and provided verbal input (Appendix A) on the design at that time which is reflected in the concept (Figure 5).

3.1.2 Records Review

The description of the existing natural environment is partially based on a review of previously completed studies, including:

- Barrhaven Conservancy Cut and Fill Environmental Impact Statement (KAL, 2017a); and,
- Jock River Restoration Project: Aquatic and Ecological Site Assessment Supporting Document (KAL, 2018).

On-line databases queried for SAR, provincially rare species, and natural heritage features included that of the following:

- DFO SAR Mapping (DFO, 2020);
- Ontario MNRF;
    - Natural Heritage Information Centre (NHIC, 2020);
    - Land Information Ontario (LIO) Make a Topographic Map (MNRF, 2020a);
    - Species at Risk in Ontario (SARO) List (MNRF, 2020b); and,
- SARA, Schedule 1 (Government of Canada, 2002);
- Ontario Breeding Bird Atlas (OBBA; Cadman et. al., 2007);
- Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature, 2020);
- Atlas of the Mammals of Ontario (AMO; Dobbyn, 1994);
- RVCA Mapping Geoportal (RVCA, 2020); and,
- City of Ottawa;
    - Official Plan (City of Ottawa, 2003);
    - GeoOttawa Mapping database (City of Ottawa, 2020); and,
    - Characterization of Ottawa's Watersheds (City of Ottawa, 2011).

4.0 PROPERTY INFORMATION

4.1 Description of the Site and the Natural Environment

The Barrhaven Conservancy Community lands are entirely within the City of Ottawa Urban Boundary (City of Ottawa, 2020). Natural Heritage Features and Core Natural Areas are absent on the Site (City of Ottawa,

2003; NHIC, 2020). Mapping resources identify the Site being a natural corridor, riparian corridor, floodplain with unstable slopes, and Major Open Space (Figure 2; City of Ottawa, 2003; City of Ottawa, 2020). These mapping resources are out of date and do not accurately represent the current conditions on site. A revised 100-year floodplain boundary was approved by the RVCA in the spring of 2020 (RVCA, 2020; Figure 3).

Major Open Spaces within the Barrhaven Conservancy Community generally follow the Jock River and Highway 416 corridor. The City of Ottawa (2003) states that Major Open Spaces are "large parks…., open space corridors along the Ottawa and Rideau Rivers and the Rideau Canal, parkway corridors and corridors reserved for rapid-transit and major roads.". The Major Open Space identified by the City of Ottawa Official Plan are not a park, located along the Ottawa River or Rideau River, nor are they likely reserved for future rapid transit or major roads.

The City of Ottawa further states "Major Open Spaces are a key component of the Greenspace Network (see Section 2.4), which contributes to the quality of life in neighboring communities as well as to the overall integrity of the natural environment". The current conditions within the Barrhaven Conservancy Community contain few natural features.

The immediate corridor of the river is defined as a primary natural area that maintains natural features and functions in an urban context: lands in the flood plain beyond the riparian edge are further flagged as contributing passive recreational lands that can shape the character of communities and the perception of the quality of open space (City of Ottawa, 2006).

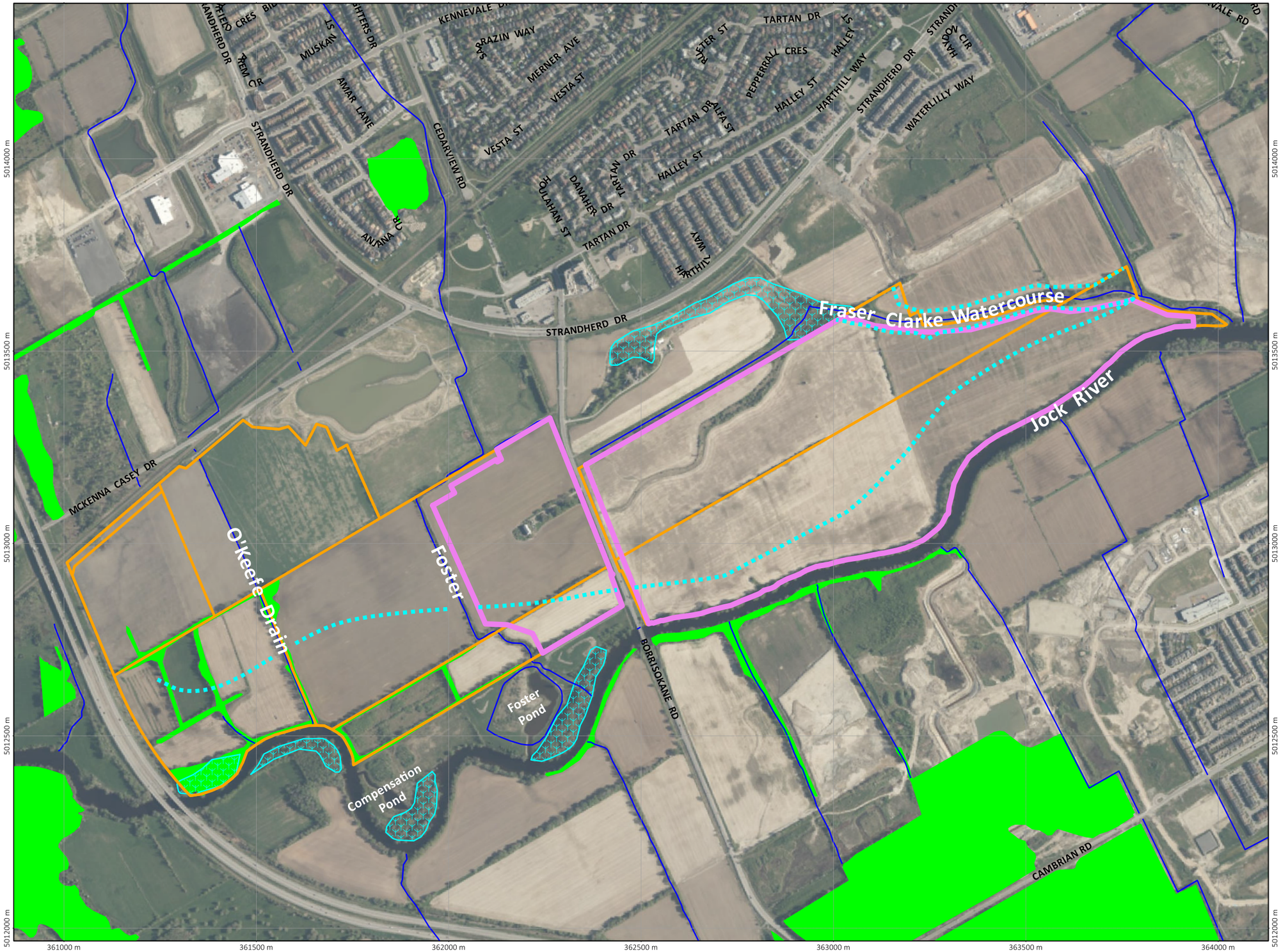
No Provincially or locally Significant Wetlands, wetlands found in association with Significant Woodlands, Significant Valleylands, or Areas of Natural and Scientific Interest occur on or adjacent to the Site (City of Ottawa, 2020; NHIC, 2020). The nearest Provincially Significant Wetland is the Stoney Swamp Wetland Complex, greater than 3 km away.

The City of Ottawa identifies an unevaluated wetland within the City-owned lands on the south of the Site and west of Borrisokane Road adjacent the Jock River (City of Ottawa, 2020). The MNRF identifies wetlands along the southern border of the Site adjacent the Jock River (NHIC, 2020).

The nearest designated natural features to the Site include the Cambrian Road Complex and the Twin Elm Moraine Earth Science Area of Natural and Scientific Interest. The Cambrian Road Complex occurs to the south of the Jock River approximately 250 m west of Highway 416 (Brunton, 1997; City of Ottawa, 2011). The Twin Elm Moraine Earth Science Area of Natural and Scientific Interest (ANSI) is categorized as of moderate significance.

Woodlands occur in the riparian areas along the Jock River and as tree lines separating agriculture fields in the south and west areas of the Site (Figure 2; Figure 3; NHIC, 2020). Riparian buffer areas within the Barrhaven catchment of the Jock River are dominated by natural stream network types with a small amount of altered riparian cover (RVCA, 2016). Stream erosion in this catchment is relatively low with one area of significant erosion adjacent the City of Ottawa lands. Two water courses occur within Barrhaven Conservancy East, i.e., the Fraser-Clarke Watercourse and the Foster Municipal Drain (Figure 3 Current Existing Conditions). City of Ottawa mapping resources still indicate the presence of three other small branch

Figure 2 Results of Agency Database Search



Legend

- Property parcels included within the Barrhaven Conservancy Community
- Barrhaven Concervancy East
- Edge of Regulatory Floodplain
- Watercourses / Drainge Features
- Forest / Treed Areas
- Wetland features (non-evaluated)

N

0 500 m

Project: Barrhaven Conservancy Development Corporation
Created By: AF
MTM Zone 9
(NAD 83)
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Figure 3 Current Existing Conditions

Legend

- Property parcels included within the Barrhaven Conservancy Community
- Barrhaven Concervancy East
- Edge of Regulatory Floodplain
- Watercourses / Drainge Features
- Hedgerow
- Butternut

Wildlife Surveys

- Bird Staion
- Frog Station
- Turtle Station

ELC

- CUT1
- Construction
- FOD3
- MAM2
- OAG
- Retained Hedge
- SWD2
- SWT2

N

0 500 m

Project: Barrhaven Conservancy Development Corporation
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channels on the Site though this inform is out of date; the three branch channels are not present on the Site (City of Ottawa, 2020).

Natural features on the Site include the forested edge of the Jock River (approximately 10-20 m wide), vegetation cover within 30 m of the two drain features on site (i.e., Ditch and the Fraser-Clarke Drain), and the City of Ottawa lands in the southern portion of the Site (Figure 1). All other areas within the Site have been regraded and consist of newly seeded bare soil.

4.2 Landforms, Soils and Geology

The property is located within the Ottawa Valley Clay Plains which are composed of Champlain Sea deposits, and specifically the Piperville, North Gower and Dalhousie soil associations. The Piperville association is a group of soils developed in slightly acid to neutral, moderately coarse to medium-textured, marine, estuarine, and fluvial materials, and are composed of Gleyed Melanic Brunisols, Orthic Humic Gleysols, and Rego Gleysols (Schut and Wilson, 1987). These soils are poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% to 2%).

The Dalhousie association consists of soils developed in fine-textured, modified marine materials with soils profiles that include Gleyed Orthic Melanic Brunisols, Orthic Humic Gleysols, and Rego Gelysols (Schut and Wilson, 1987). These soils are dominantly poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% and 2%).

The North Gower association is made up of soils developed in moderately fine-textured, modified marine parent materials, and includes Humic Gleysols, Rego Gleysols, and Gleyed Gray Brown Luvisols soil profiles (Schut and Wilson, 1987). These soils are poorly drained Orthic Humic Gleysols found on level to very gently sloping topography (between 0% and 2%).

4.3 Surface Water, Groundwater and Fish Habitat

4.3.1 Jock River

The Jock River flows from west to east along the southern boundary of the Barrhaven Conservancy Community, including the Barrhaven Conservancy East lands, for approximately 3 km to its confluence with the Rideau River (Figure 1). The Site is entirely within Reach 1 of the Jock River Subwatershed. The Jock River adjacent to the Site has a meandering channel with moderate macrophyte coverage, and relatively steep banks. The river is largely 'run' habitat with substrate dominated by clay and muck / silt. Water velocities are relatively slow and depths at mid channel are 3 to 4 m. Areas of course substrate (i.e., cobble, boulder, gravel) with shallower depths and higher flow velocities occur on the west end of the Site at Highway 416 and east of the Site at Greenbank Road (KAL, 2018).

Instream vegetation in the Jock River adjacent the Barrhaven Conservancy Community is dominated by algae (RVCA, 2016). Small patches of submerged plants and broad-leaved emergent plants are present at the upstream and downstream ends of the Site.

Riparian features within the Site have been significantly altered by anthropogenic changes. The existing riparian area along the Jock River contains a band of mature forest as a natural riparian buffer. The buffer is

widest on the west side of the Site (approximately 60 m maximum) to approximately 10 m wide on the east side of the Site.

The Jock River is classified as a warm/warm-cool water system that is home to a baitfish and recreational fishery of approximately 40 species (RVCA, 2016). Thirty-six species are known to occur in the section of the Jock River and its tributaries within and adjacent the Site, including eight sportfish species: Bluegill (*Lepomis macrochirus*), Largemouth Bass (*Micropterus salmoides*), Muskellunge (*Esox masquinongy*), Northern Pike (*Esox lucius*), Pumpkinseed Sunfish (*Lepomis gibbosus*), Rockbass (*Ambloplites rupestris*), Smallmouth Bass (*Micropterus dolomieu*) and Walleye (*Sander vitreus*; RVCA, 2016).

Twenty-five fish species were captured during the electrofishing efforts in 2018 with 72% of the individuals caught being from five species: Blacknose Shiner (*Notropis heterolepis*; 34%), Common Shiner (*Notropis cornutus*; 16%), Pumpkinseed (*Lepomis gibbosus*; 11%), Golden Shiner (*Notemigonus crysoleucas*; 6%), Banded Killifish (*Fundulus diaphanus*; 5%; Table 2; KAL, 2018).

4.3.2 Tributaries

One municipal drain and two decommissioned municipal drains occur in the Barrhaven Conservancy Community and flow to the Jock River: the Foster Ditch, the Fraser-Clarke Watercourse, and the O'Keefe Drain (Figure 3). The Foster Ditch and the Fraser-Clarke Watercourse occur within the Barrhaven Conservancy East lands. The O'Keefe Drain is located outside of the Barrhaven Conservancy East lands and is not part of the current application. Most of the tributaries to the Jock River support tolerant warm water fishes with some of the larger tributaries, such as the Todd Pond and Channel and Fraser-Clarke Watercourse, supporting more diverse fish assemblages. Fish community surveys identified three species of small-bodied fish in this feature (Table 2; KAL, 2018).

4.3.2.1 Foster Ditch

The Foster Ditch flows approximately 800 m through the Site from a stormwater management pond to the Jock River (Figure 3). The substrate consists of a mixture of clay and silt. Woody debris and submergent vegetation are abundant in this feature. Riparian vegetation is dominated by grasses, with shrubs and trees becoming more prevalent downstream. Land use in this area was historically agricultural crop land.

Thirteen species of common fish were identified in this feature as the result of work completed on the Kennedy Burnett Stormwater Project (Muncaster Environmental Planning Inc., 2009)

4.3.2.2 Fraser-Clarke Watercourse

The Fraser-Clarke Watercourse is a former municipal drain that was decommissioned by the City of Ottawa. It is now a watercourse and no longer subject to the *Drainage Act*. Fish community surveys identified three species of small-bodied fish in this feature (Table 2).

4.3.2.3 O'Keefe Drain

The Approximately 770 m of the O'Keefe Drain abuts the western border of the Barrhaven Conservancy East Community (Figure 3). Land use in this area of the drain is agricultural crop land. Substrate is clay and silt, with sand and gravel deposits in the upstream areas. Woody debris is the dominant cover at the downstream

Table 2 Fish species identified in the Jock River and tributaries within and near the Site (KAL, 2018)

MNRF Species Code	Common Name	Taxonomic Name	Jock River	Todd Channel and Pond	Fraser Clarke Tributary	Fraser Clarke Drain	West Clarke Drain	Drain 2 / Center Drain	Borrisokane Ditch	Foster Drain	Fish Habitat Pond	O'Keefe Drain
131	Northern Pike	*Esox lucius*	X								X	
132	Muskellunge	*Esox masquinongy*	X									
136	White Sucker	*Catostomus commersonii*	X	X			X			X	X	
141	Central Mudminnow	*Umbra limi*	X	X			X			X	X	
182	Northern Redbelly Dace	*Phoxinus eos*	X	X			X					
183	Finescale Dace	*Phoxinus neogaeus*	X									
186	Common Carp	*Cyprinus carpio*	X									
189	Brassy Minnow	*Hybognathus hankinsoni*	X	X								
192	Hornyhead Chub	*Nocomis biguttatus*	X									
194	Golden Shiner	*Notemigonus crysoleucas*	X	X							X	
198	Common Shiner	*Luxilus cornutus*	X	X		X	X			X	X	X
199	Blackchin Shiner	*Notropis heterodon*	X	X			X					
200	Blacknose Shiner	*Notropis heterolepis*	X							X	X	
201	Spottail Shiner	*Notropis hudsonius*		X							X	
206	Spotfin Shiner	*Cyprinella spiloptera*	X									
208	Bluntnose Minnow	*Pimephales notatus*	X	X						X	X	
209	Fathead Minnow	*Pimephales promelas*	X	X			X			X	X	X
210	Blacknose Dace	*Rhinichthys atratulus*	X							X		
211	Longnose Dace	*Rhinichthys cataractae*	X									X
212	Creek Chub	*Semotilus atromaculatus*	X	X		X	X		X	X		X
213	Fallfish	*Semotilus corporalis*	X									
214	Pearl Dace	*Margariscus margarita*	X				X					
233	Brown Bullhead	*Ameiurus nebulosus*	X	X							X	
235	Stonecat	*Noturus flavus*	X									
261	Banded Killifish	*Fundulus diaphanous*	X	X		X				X	X	X
281	Brook Stickleback	*Culaea inconstans*	X	X			X	X		X		
311	Rockbass	*Ambloplites rupestris*	X	X			X			X	X	
313	Pumpkinseed Sunfish	*Lepomis gibbosus*	X	X						X	X	X
314	Bluegill Sunfish	*Lepomis macrochirus*	X				X				X	
316	Smallmouth Bass	*Micropterus dolomieu*	X	X								
317	Largemouth Bass	*Micropterus salmoides*	X									
334	Walleye	*Sander vitreus*	X									
341	Johnny Darter	*Etheostoma nigrum*		X							X	
342	Logperch	*Percina caprodes*	X								X	
361	Brook Silverside	*Labidesthes sicculus*	X	X							X	
381	Mottled Sculpin	*Cottus bairdii*	X	X						X	X	X

end and submergent vegetation is more common upstream. Riparian vegetation is a mix of grasses, shrubs, and trees in the downstream area with grasses dominating the upstream area.

Seven fish species were identified in the O'Keefe Drain (KAL, 2018). The fish community is dominated by small-bodied fish and one Centrarchidae species (i.e., Pumpkinseed; Table 1).

4.3.2.4 Unnamed Drain Features

There were also several smaller drainage channels and roadside ditches on the Site. These features were assessed under the headwater drainage features assessment (KAL, 2017b).

4.3.3 Headwater Drainage Features

Headwater Drainage Features Assessments (HDFA) identified 16 surface water features on the Site (KAL, 2017b). Of these, nine features were classified as small agricultural drains or roadside ditches. Many of these features contained water during the spring and early summer but were mostly dry in July. An additional three wet depressions and swales were observed in the agricultural areas in April, but these were dry in July.

All headwater drainage features were addressed as part of the previous RVCA approved earthworks project (KAL, 2017a).

4.3.4 Groundwater

Indicators of groundwater discharge (e.g., springs/seeps, watercress, iron staining, significant temperature change, rainbow mineral film) were observed in two locations within the Site (RVCA, 2016). The specific locations of the observations are not noted (i.e., south bank, north bank) but do correspond with the City of Ottawa lands along the Jock River. The Jock River-Barrhaven drainage catchment is considered to have a Highly Vulnerable Aquifer (RVCA, 2016).

4.4 Vegetation Communities

The Site was historically agricultural lands with treed hedgerows between fields, a tree buffer along the southern boundary of the property, and some areas of regenerating scrubland in the south west corner (Figure 2; City of Ottawa, 2020). The previously existing hedgerows were primarily composed of deciduous trees species such as: Manitoba Maple (*Acer negundo*), Crack Willow (*Salix fragilis*), Glossy Buckthorn (*Rhamnus frangula*), Trembling Aspen (*Populus tremuloides*), American Elm (*Ulmus Americana*), Green Ash (*Fraxinus pennsylvanica*), Black Cherry (*Prunus serotina*), Sugar Maple (*Acer saccharum*), Bur Oak (*Quercus macrocarpa*), and American Basswood (*Tilia americana*; KAL, 2018). The largest trees were approximately 20 - 50 cm DBH. Many of the American Elm and Green Ash were dead or in visibly poor health.

Most of these hedgerows have been removed as part of the earthworks project (Figure 3).

4.4.1 Site Land Cover

The Site was a mosaic of cultivated cropland bordered by hedgerows and drain features (Figure 2). Land Cover in this reach of the Jock River was 20% Crop & Pasture and 11% Woodland in 2014 with the densities of these Land Covers significantly less than in 2008 (RVCA, 2016). Vegetation diversity within the Site was limited to a

few small wooded areas, shrubland area, and a farmyard. Many of the trees within the hedgerows and wooded areas on site were greater than 40 years old (City of Ottawa, 2020).

There is no Crop and Pasture on the Site and tree cover only occurs along drainage corridors and within floodplain lands (Figure 3). Site trees are further detailed within the TCR for the proposed project (Appendix B).

4.4.2 Ecological Land Classification

Most of the Site is relatively dry with a few lowland areas holding water during spring freshet and immediately after precipitation events. The most abundant habitat type on site was open agriculture (Figure 2). Observed crops on site were primarily corn (*Zea mays*) and soybeans (*Glycine max*), and alfalfa (*Medicago sativa*).

The ELC completed for the Cut – Fill project identified seven distinct vegetation communities within the Site (Table 3). Many of these features no longer occur on the Site since the Cut – Fill Project (Figure 3).

4.4.2.1 Ecological Significance of Site Trees and Site Woodlands

The existing conditions currently on Site are unlikely to provide meaningful habitat for wildlife. The lack of habitat complexity, diverse foraging habitats, and general lack of vegetation and topographic relief are not suitable for many bird and mammal species (Figure 3).

Table 3 Ecological Land Classification vegetation communities within the Site

Ecological Land Classification Type	Community Description
OAG	Agricultural lands remaining on the Site are limited to narrow edges of previously larger fields located between the edges of the Cut-Fill site and site drains. The fields had been used primarily for corn and soybean crops but will not be planted with anything this year.
FOD3 Dry – Fresh Popular – White Birch Deciduous Forest	Dominant trees are Manitoba Maple and Trembling Aspen with subordinate species of American Elm, Basswood, Green Ash, Balsam Poplar (*Populus balsamifera*), and Crack Willow. Trees in this woodland patch were on average between 20 and 50 cm. Some large Green Ash and Trembling Aspen snags (greater than 50 cm) were observed on site, and a few large Manitoba Maple, Crack Willow, and Trembling Aspen were also present.
MAM2 Mixed Mineral Meadow Marsh	Contains various meadow species including goldenrod (Solidago sp.), Swamp Milkweed (*Asclepias incarnata*), Wild Parsnip (*Pastinaca satvia*), Wild Carrot (*Daucus carota*), sedge species (Carex sp.), cattail (Typha sp.), and others.
SWT2 Willow Mineral Deciduous Thicket	Contains willow (Salix sp.), Manitoba Maple, Common apple (Malus sp.), and other shrub species combined with grass and forb species. Butternut saplings were identified in this portion of this ecosite east of the Fraser-Clarke Watercourse and were subject to a *Notice of Impact* submitted to the MNRF in 2018.

Ecological Land Classification Type	Community Description
SWD2 Ash Mineral Deciduous Swamp	Composed mainly of Green Ash and Manitoba Maple, with subordinate species of Bur Oak, Basswood, Crack Willow, and Silver Maple (*Acer saccharinum*). Green Ash, Crack Willow, and Silver Maple were the largest trees observed and on average were between 30 and 50 cm DBH.
CUT1 Mineral Cultural Thicket	An area of approximately 2.6 ha in the southwest corner of the Site. This area was not actively cultivated and had become revegetated with shrubs and saplings mimicking surrounding communities.

4.5 Wildlife

4.5.1 Amphibians

Five species of amphibians were identified during amphibian surveys (Northern Leopard Frog (*Lithobates pipiens*), American Toad (*Anaxyrus americanus*), Green Frog (Rana clamitans*)*, American Bullfrog (*Lithobates catesbeianus*), Gray Treefrog (*Hyla versicolor;* Figure 3; KAL, 2018). Amphibian observations were generally associated with existing drain features, off-property stormwater management ponds, a swale through the west side of the Site. These areas did not support enough individual amphibians and amphibian species to constitute Significant Wildlife Habitat (MNRF, 2015).

4.5.2 Birds

A total of 52 species were observed during the breeding bird surveys (BBS; Table 4; Figure 3Figure 3; KAL, 2018). Most of the birds observed on site were common species and a reasonable likelihood of breeding on or nearby the Site with a few likely limited use of the Site for foraging or refuge. Red-winged Blackbird (*Agelaius phoeniceus*) were the most abundant species on site followed by Song Sparrow (*Melospiza melodia*) and Cedar Waxwing (*Bombycilla cedrorum*).

Table 4 Breeding birds observed during field surveys in 2017

Common Name	Scientific Name	Breeding Probability	Common Name	Scientific Name	Breeding Probability
American Crow	*Corvus brachyrhynchos*	Likely	Indigo Bunting	*Passerina cyanea*	Likely
American Goldfinch	*Carduelis tristis*	Probable	Killdeer	*Charadrius vociferus*	Probable
American Kestrel	*Falco sparverius*	Likely	Least Flycatcher	*Empidonax minimus*	Likely
American Redstart	*Setophaga ruticilla*	Likely	Lesser Yellowlegs	*Tringa flavipes*	Possible
American Robin	*Turdus migratorius*	Likely	Mallard	*Anas platyrhynchos*	Possible
Baltimore Oriole	*Icterus galbula*	Likely	Mourning Dove	*Zenaida macroura*	Possible
Barn Swallow *****	*Hirundo rustica*	Probable	Northern Flicker	*Colaptes auratus*	Likely
Belted Kingfisher	*Ceryle alcyon*	Likely	Northern Cardinal	*Cardinalis cardinalis*	Likely
Black-and-White Warbler	*Mniotilta varia*	Likely	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Likely
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Probable	Osprey	*Pandion haliaetus*	Possible
Black-capped Chickadee	*Poecile atricapillus*	Likely	Purple Finch	*Carpodacus purpureus*	Likely
Brown-headed Cowbird	*Molothrus ater*	Likely	Red-breasted Nuthatch	*Sitta canadensis*	Likely

Common Name	Scientific Name	Breeding Probability	Common Name	Scientific Name	Breeding Probability
Canada Goose	*Branta canadensis*	Possible	Red-eyed Vireo	*Vireo olivaceus*	Likely
Cedar Waxwing	*Bombycilla cedrorum*	Likely	Red-winged Blackbird	*Agelaius phoeniceus*	Likely
Chipping Sparrow	*Spizella passerina*	Likely	Ring-billed Gull	*Larus delawarensis*	Unlikely
Common Grackle	*Quiscalus quiscula*	Likely	Rock Pigeon	*Columba livia*	Likely
Common Yellowthroat	*Geothlypis trichas*	Likely	Savannah Sparrow	*Passerculus sandwichensis*	Probable
Double-crested Cormorant	*Phalacrocorax auritus*	Low	Song Sparrow	*Melospiza melodia*	Likely
Downy Woodpecker	*Picoides pubescens*	Likely	Spotted Sandpiper	*Actitis macularius*	Likely
Eastern Kingbird	*Tyrannus tyrannus*	Likely	Swamp Sparrow	*Melospiza georgiana*	Likely
Eastern Phoebe	*Sayornis phoebe*	Likely	Tree Swallow	*Tachycineta bicolor*	Likely
European Starling	*Sturnus vulgaris*	Possible	Turkey Vulture	*Cathartes aura*	Probable
Gray Catbird	*Dumetella carolinensis*	Likely	Warbling Vireo	*Vireo gilvus*	Likely
Great Crested Flycatcher	*Myiarchus crinitus*	Likely	White-breasted Nuthatch	*Sitta carolinensis*	Likely
Green Heron	*Butorides virescens*	Likely	Wild Turkey	*Meleagris gallopavo*	Likely
Hairy Woodpecker	*Picoides villosus*	Possible	Willow Flycatcher	*Empidonax traillii*	Likely
House Sparrow	*Passer domesticus*	Probable	Wood Duck	*Aix sponsa*	Likely
House Wren	*Troglodytes aedon*	Likely	Yellow Warbler	*Setophaga petechia*	Likely

* = Species at Risk under the ESA of Ontario (2007) and SARA of Canada (2002).
Breeding potential = Likely: Species showing breeding behavior and preferred breeding habitat observed. Possible: preferred breeding habitat observed on site. Probable: preferred breeding habitat is possible on or adjacent to site. Unlikely: species not showing breeding behavior and preferred breeding habitat not observed on site.

Barn Swallow (*Hirundo rustica*) is listed as threatened under the ESA and SARA and was observed on site during the BBS. This species was observed foraging occasionally over the hayfields of the northwest corner of the Site as well as the stormwater ponds to the northeast of the Site. No Barn Swallow nest were found on site.

4.5.3 Turtles

Turtle basking surveys associated with the on-site drain features were completed on the Site in 2016 and 2017 (Figure 3; KAL, 2018). Most turtles observed during the surveys were basking on logs along the Jock River bank, or were basking on the bank of the river. Some (Snapping) turtles were observed in mating behavior along the banks for the mainstem river. No turtles were observed at any time nesting in the study area, nor have there been any remnant turtle nests observed. Three species of turtles were identified: Snapping Turtle (*Chelydra serpentina*), Painted Turtle (*Chrysemys picta*) and Northern Map Turtle (*Graptemys geographica*). The Painted Turtle was the most observed species (KAL, 2018). Blanding's Turtles are known to occur in the Jock River closer to (upstream of) the Village of Richmond, but focused studies in 2016 and 2017 (KAL, 2018) did result in observations near the Site.

It is unlikely that the drainage features on Site function as overwintering habitat because they are too shallow and have flowing water. Blanding's Turtles specifically prefer ponds with > 1 m of water and an organic bottom. They need a still (lentic) environment to overwinter otherwise risking being moved by flows (MNR, 2015). Blanding's and other species hibernate in areas that do not freeze (ECCC, 2016), and therefore need free-standing water between the substrate they rest on and the overlying ice. The drainage features on Site, however, may be movement corridors that could be used by any of the four species observed.

4.5.4 Mammals

Three mammals were observed during the site visits: Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethicus*), and Mink (*Neovison vison*). None of these mammals are protected under the ESA but they are regulated under the Fish and Wildlife Conservation Act (Ontario, 1997) as furbearing mammals.

4.6 Habitat for Species at Risk

The City of Ottawa identifies 69 SAR that are known to occur or have historically occurred within the City (City of Ottawa, 2019). Of those, fourteen SAR under ESA and SARA were identified with high or moderate potential interaction with the Project (Table 5). Four species listed on the ESA were observed within the Site.

Table 5 Species at Risk with potential to occur in the vicinity of the Site

Common Name	Taxonomic Name	ESA Status	SARA Schedule 1 Status	Source
Bank Swallow	*Riparia riparia*	Threatened	Threatened	OBBA
Barn Swallow*****	*Hirundo rustica*	Threatened	Threatened	NHIC, OBBA, KAL
Bobolink	*Dolichonyx oryzivorus*	Threatened	Threatened	OBBA
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	OBBA
Eastern Meadowlark	*Sturnella magna*	Threatened	Threatened	OBBA
Eastern Wood-pewee	*Contopus virens*	Special Concern	Special Concern	NHIC, OBBA
Grasshopper Sparrow	*Ammodramus savannarum*	No status	Special Concern	OBBA
Short-eared Owl	*Asio flammeus*	Special Concern	Special Concern	OBBA
Wood Thrush	*Hylocichla mustelina*	Special Concern	Threatened	OBBA
Blanding's Turtle	*Emydoidea blandingii*	Threatened	Threatened	Ontario Nature
Northern Map Turtle*****	*Graptemys geographica*	Special Concern	Special Concern	Ontario Nature, KAL (2018)
Snapping Turtle*****	*Chelydra serpentine*	Special Concern	Special Concern	NHIC, RVCA, KAL (2018)
Western Chorus Frog	*Pseudacris triseriata*	Not at Risk	Threatened	Ontario Nature
Butternut*****	*Juglans cinereal*	Endangered	Endangered	Observed by KAL (2018)

* Species observed on or near the Site.

Grasshopper Sparrow is listed on Schedule 1 of SARA but has no status in Ontario. Migratory bird species that are listed on SARA are protected wherever they occur in Canada. Grasshopper Sparrow will be considered as a SAR in this document.

Western Chorus Frog is listed on Schedule 1 of SARA but has no status in Ontario and is therefore only protected on federal lands. There are no federal lands on the Site and therefore the Western Chorus Frog will not be considered further in this document.

- Bank Swallow - Colonial nesters that build nests near water in steep sand, dirt, or gravel banks, in burrows dug near the top of the bank, including road embankments, materials stockpiles, and other man-made settings. Areas suitable for nesting may occur on Site in association with aggregate (sand, earth) piles.

- Barn Swallow - Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; typically feeds in open country near body of water. There are no suitable structures on the Site.

- Bobolink / Eastern Meadowlark - Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent open grassy areas. The Site has been seeded with a grass mix that will be manicured and maintained leaving no suitable nesting areas on site for these species.

- Chimney Swift - Commonly found in urban areas near buildings; less commonly, nests in large hollow trees (>60 cm diameter at breast height), crevices of rock cliffs, chimneys; highly gregarious; feeds over open water. These features do not occur on Site.

- Eastern Wood-pewee - Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks. This habitat does not occur on site.

- Grasshopper Sparrow - Nests in open grasslands, hayfields, pastures, alvars, and prairies. Preferably areas that are sparsely vegetated. The Site has been seeded with a grass mix that will be manicured and maintained leaving no suitable nesting areas on site for this species.

- Short-eared Owl - Grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; both diurnal and nocturnal habits; ground nester; requires 75-100 ha of contiguous open habitat. This habitat does not occur on site.

- Wood Thrush - Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m. This habitat does not occur on site.

- Blanding's Turtle - Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks. Prefers quiet lakes, streams and wetlands with abundant emergent vegetation; also, frequently occurs in adjacent upland forests. There is potential for this species to occur in or adjacent the Jock River.

- Northern Map Turtle - Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water. Known to occur near the Site.

- Snapping Turtle- The preferred habitat is slow-moving water with a soft mud bottom and dense aquatic vegetation. Nest in soft gravel, including gravel roadside shoulders. Known to occur near the Site.

- Butternut - Mainly encountered as a minor component of deciduous stands, growing best in rich, moist, and well-drained soils often found along streams and often grows in sunny openings and near forest edges. Butternut was observed in the Site and all impacted trees have been subject to Butternut Health Assessments and the MECP notification process. There is currently no potential for Butternut to interact with the project.

The identified SAR with potential to occur on or near the Site, or otherwise interact with the current development project are limited to Bank Swallow, Northern Map Turtle, Snapping Turtle, and Blanding's' Turtle.

5.0 DESCRIPTION OF THE PROPOSED PROJECT

This proposed project, i.e., the Barrhaven Conservancy East Community, consists of two stages. Stage 1 is the residential land development of houses, roadways, and parks. Stage 2 is the restoration of the Jock River floodplain corridor including the establishment of forests and wetland features, with pathways and stormwater management.

5.1 Residential Community Concept

The proposed Barrhaven Conservancy East development will be a residential community consisting of detached and multiple attached dwellings, parkland, walkway blocks and pathways, all of which will be linked and centered around the creation of a large open space corridor along the Jock River. The proposed Jock River open space corridor will feature a mix of walking trails, multi-use pathways, reforested areas, wetlands and ponds. Construction related to the development will be greater than 30 m from the Jock River, its tributaries, and associated floodplain.

5.2 Restoration of the Jock River Floodplain Corridor

The riparian areas of the Jock River corridor on the Site previously consisted of active agricultural lands with a narrow hedgerow separating them from the Jock River. The new regulatory flood plain line along the entire Barrhaven Conservancy Community (East and West) will allow lands between 80 and 400 m wide to be re-established as a natural Jock River open space corridor (Figure 4). While both the secondary plan and JRSWS permit the development of recreational areas within portions of the floodplain (Table 1), the major focus of flood plain redevelopment is on the creation of conservation lands including wetland space. This area will include the development of ~5 ha of wetland and ~32 ha of forest cover. Features to support public recreation will include a recreational pathway system along the northern edge of the floodplain (Table 1), and canoe-launch proposed adjacent to Borrisokane Road (Figure 5). The canoe-launch, and vegetation improvements

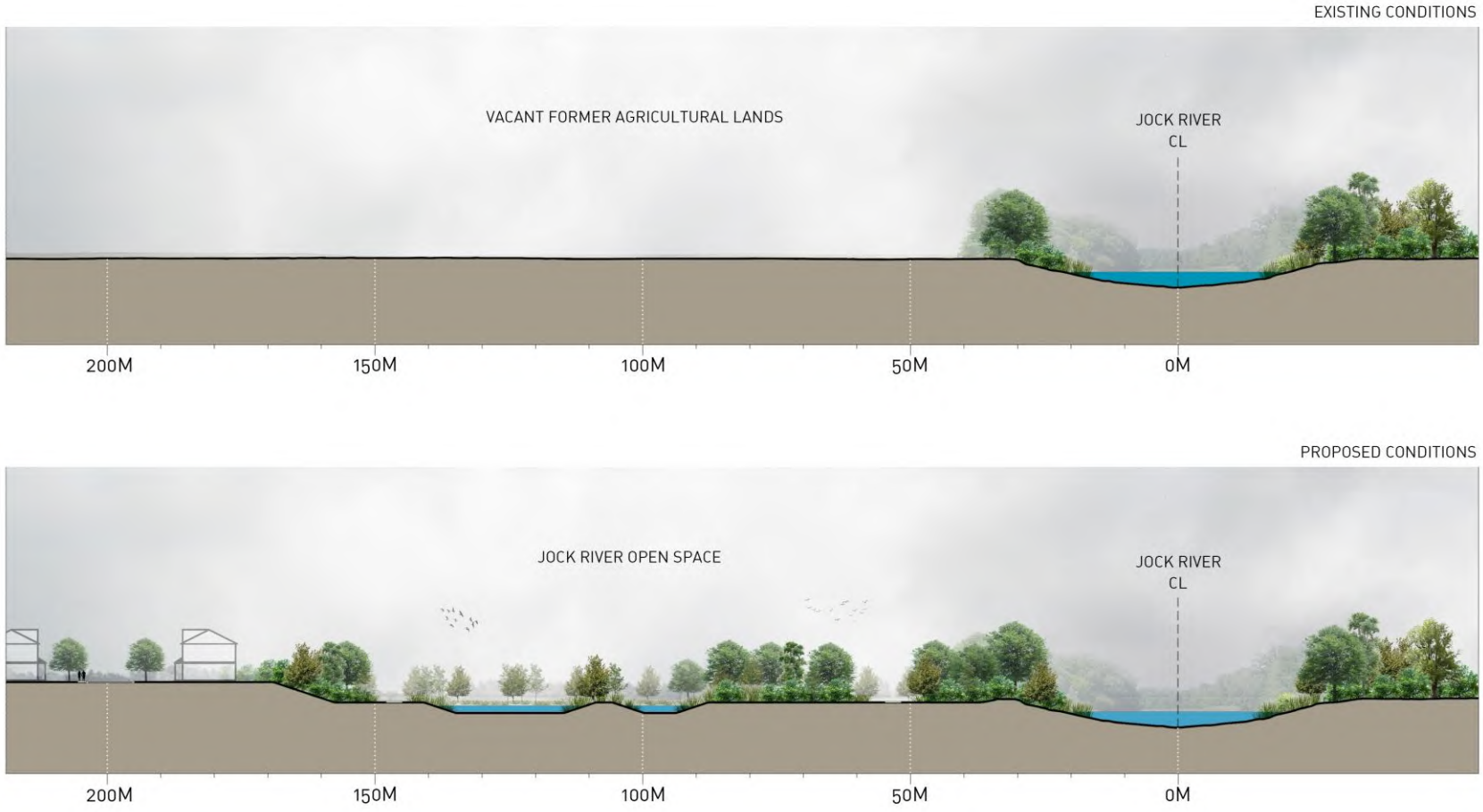

Figure 4 Plan View of Conceptual Jock River Open Space

Note: Figure provided by NAK Design based on input by Kilgour & Associates Ltd. staff. CL = centreline

Figure 5 Conceptual Plan for the Jock River Riparian Corridor

Notes: Figure provided by NAK Design based on input by Kilgour & Associates Ltd.

immediately adjacent to the feature, are the only alterations proposed on the City-owned lands that include the Compensation Pond and the Foster Pond. All other enhancements discuss below will occur on lands owned by BCDC. No site alterations will occur within in >30 m of fish habitat compensation projects completed in accordance with JRSWS (Table 1).

Wetland areas will include two major types of features: three large naturalized ponds covering ~3 ha, and a ~2 ha Silver Maple swamp, in accordance with the RVCA recommendations for increased wetland space. Naturalized pond features will be connected directly to the Jock River via deeper channels. The ponds and main inlet and outlet channels to the ponds would be approximately 2.5-3 m deep, with gently rising grades to the shoreline. The depth of these features is anticipated to ensure they remain accessible with open connections to the Jock River for aquatic life (e.g., fish, turtles, and amphibians) throughout the year. A forested buffer will occur between the natural ponds and the Jock River. Woody material could be included on the banks of the natural ponds and their outlet channels at the Jock River. This landscape design is intended to protect and enhance critical fish habitat and spawning areas along the Jock River in accordance with JRSWS (Table 1).

Pathways around the natural ponds may extend to the river to provide a lookout area. The north shore of the natural pond features (Ponds 1 and 3; Figure 5) will include grassy meadow with areas specifically designed to support Northern Pike. The pike spawning habitat will be within grassy meadow areas with branching finger channels extending outward from the bank. The fingers would be ~40 cm below grade. The pike habitat would have the elevation of normal summer water levels at the pond edge and the grassy meadow would gently rise to the 2-3 year flood level. Shrub species including Speckled Alder (*Alnus incana*), Ninebark (*Physocarpus opulifolius*) and Elderberry (*Sambucus canadensis*) would be planted around the periphery of the fingers.

The north shore of the Pond 2 will include a sand and gravel bank constructed to support turtle nesting. Trees or shrubs would be discouraged from growing in this area to allow maximum sunlight to reach the sand and gravel bank.

Each of the three ponds will receive water inputs from stormwater water quality treatment units that provide water quality control for stormwater runoff from the adjacent community. Water from the water quality treatment units will be conveyed to the ponds, or directly to the Jock River (for water quality treatment units west of Borrisokane Road), via drainage channels constructed following principals of natural channel design. The channels will generally include meadow habitat associated with pathways and at two points along the Jock Corridor east of Borrisokane Road providing access to lookouts along the Jock River.

The topography of the eastern end of the Jock River riparian area will be lowered further to allow the forest there to develop as a Silver Maple swamp ecosite. The elevations would slope along the centerline of its length from the two-year flood level at the west end, down to summer water levels at the east end. Being open to the river at the downstream end, the feature will be a seasonal backwater area sufficient to support frogs, but with the upper portions excluding fish.

Other forested areas beyond the swamp feature will be planted with native tree species to support the development of Red Maple dominant stands with Trembling Balsam Poplar, Balsam Fir, White Elm, Basswood, White Birch, White Spruce and Eastern White Cedar. The Silver Maple swamp should also

include Red Maple, Yellow Birch Bur Oak, Black Willow, and Black Spruce, Eastern White Cedar, and Eastern Hemlock. Final details of plant selection are to be included within the overall landscape plan for the development area in accordance with JRSWS (Table 1).

Forest areas will take time to mature but can provide considerable canopy cover while encouraging natural regeneration throughout the newly forested areas. Native tree species should be planted with forested areas to include Red Maple (*Acer rubrum*) dominant stands with Trembling aspen, Balsam Poplar, Balsam Fir (*Abies balsamea*), White Elm (*Ulmus americana*), Basswood, White Birch (*Betula papyrifera*), White Spruce (Picea glauca) and Eastern White Cedar (*Thuja occidentalis*). The Silver Maple swamp should also include Red Maple, Yellow Birch (*Betula allegheniensis*), Bur Oak, Black Willow (*Salix nigra*), and Black Spruce (*Picea mariana*), Eastern White Cedar, and Eastern Hemlock *(Tsuga canadensis*).

The proposed forested areas (including the swamp) would be approximately 32 ha of new forest cover for the catchment, which equals approximately 24% canopy cover for the whole site. By incorporating an additional 6% tree cover (at maturity) in the remainder of the community, the development will achieve the City of Ottawa Target of 30% canopy cover for the entire development area.

Other than where required for pond or channel cleanouts and lookouts, the pathways should be located along the northern edge of the floodplain. The only access to the Jock River besides the lookouts would be consideration for a small gravel parking and unloading area at a canoe launch entry point (Figure 5). Gravel parking lots near or adjacent to the Jock River would be buffered by a riparian setback that ensures minimal interaction between parking and the river shoreline.

The habitat restoration features are currently being designed with input from the various stakeholders (e.g., City of Ottawa, RVCA, MECP).

5.3 Constraints

Constraints associated with the natural environment are limited due to the lack of natural features on the Site. The terrain around the Site has been stabilized with a suitable seed mix to limit wind and water erosion. This ground covering vegetation will be manicured and maintained to limit potential use by wildlife and SAR.

5.3.1 Species at Risk

Fourteen SAR have been identified with the potential to occur on the Site and four of those species were observed on the Site prior to the earthwork project. In its current condition the Site has potential to interact with five of those species.

5.3.1.1 Bank Swallow

Nesting habitat of Bank Swallow is frequently associated with flowing water. Though the species has not been observed nesting anywhere on the BCDC East Site, Bank Swallow had been documented by KAL biologists nesting at former aggregate quarry sites located ~1.5 km south the Site. These quarries have now been closed and regraded, removing their nesting potential. New Bank Swallow nests may be dug near the top of steep sand, dirt, or gravel banks along the edge of inland waterways, in gravel pits, and in road embankments. This suggests that future occurrence of the species on the Site is not impossible. The

banks of the Jock River adjacent to the BCDC East Site, however, have maximum a height of under 3 m and are thus considered very unlikely to support the species should they search for new nest sites in vicinity. Road edges along Borrisokane Road are similarly limited in their nest-supporting potential. The greatest likelihood of new nesting colonies occurring on Site are associated with fill pile that may be unintentionally created during construction activities.

Suitable mitigation measures including rounding fill piles (i.e. avoiding the creation of vertical edges) will be provided to address Bank Swallow and other migratory birds.

5.3.1.2 Butternut

The Site was surveyed for Butternut trees and five were identified on site prior to the previous earthworks. Those trees were addressed through the MECP notification process and have been removed.

Additional Butternut were identified on the City of Ottawa lands along the Jock River (Figure 3). Butternut Health Assessments have not been completed on these trees as they occur greater than 50 m from the limits of construction and therefore will not be impacted by the project.

No additional Butternuts occur on the Site.

5.3.1.3 Turtles

Northern Map Turtle and Snapping Turtle have been observed near the Site in the mainstem river (KAL, 2018).

Blanding's Turtle prefers shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks (MNR, 2015). The species prefers quiet lakes, streams and wetlands with abundant emergent vegetation. There is potential for this species to occur in or adjacent the Jock River. The species has been documented in the Jock River near (upstream of) the Village of Richmond (Rob Hallett, KAL Biologist, personal observation).

5.3.2 Setbacks and Buffers

Development around waterbodies (e.g., watercourses, ponds, lakes) has the potential to impact the waterbodies. In defining setback requirements, the City of Ottawa defers to setbacks provided within council-approved subwatershed studies where one exists. Setbacks on the Foster Ditch and Fraser-Clarke Watercourse are defined by the JRSWS as 30 m from the normal high water mark (Table 1; Figure 5, Stantec, 2007). The required setback for the Jock River corresponds with the edge of the 100-year floodplain (Table 1; Figure 5).

The 30 m setbacks to the Foster Ditch and Fraser-Clarke Watercourse provide for corridors that span ~65 m of total width. These corridors extend onto land areas that were former agricultural fields (Figure 3). The corridors will revegetated and re-naturalized following recommendations in the JRSWS under landscape plans to be developed as part of the detailed design phase of the proposed development (Table 1; Stantec, 2007).

5.3.3 Conservation Areas

South Nepean Urban Area Secondary Plan identifies conservation lands between the Jock River and the regulatory flood line (City of Ottawa, 2020).

The known constraints considered in this EIS are largely limited to the natural environment. Information related to additional potential constraints (e.g., geotechnical, cultural heritage features) will be addressed in other documents.

6.0 IMPACT ASSESSMENT

The assessment of impacts here is based on the proposed development compared to the Site conditions since the earthworks project (Figure 3).

6.1 Impacts to Surface Water Features

No development work will occur within the newly defined floodplain or within 30 m of the normal high-water mark of the Jock River. The two existing drain features will be protected with setbacks of 30 m from the normal high-water mark (see Figure 4 and Figure 5). Existing roadside ditches will be maintained but do not require setbacks.

The uppermost reach of the Fraser-Clarke Watercourse (adjacent to the northern site boundary east of Borrisokane Road) is currently situated approximately 15 m beyond the edge of the proposed development. This portion of the channel had previously been hydrated by overland flows from the west side of Borrisokane but is now dry beyond of the spring freshet. The proposal for a realignment will include considerations for how to improve the hydration of the channel (e.g. lot level drainage) and increase riparian vegetation, and, as such is anticipated to provide a net improvement to the overall habitat of the feature. A permit to realign the channel will be required and obtained from the RVCA.

We do not predict any negative impacts to surface water features during site development given application of conventional construction-phase mitigations.

6.2 Impacts to Trees/ Significant Woodlands

All hedgerows have been removed as part of the earthworks undertaken in preparation for site development. There are few trees remaining on the Site and no unique treed habitats or tree species are currently present. Of the few remaining trees on the Site, none are anticipated to be impacted by the development. Trees along the three municipal drains were retained within the 30 m buffer surrounding these features (Figure 3). Riparian forest areas along the Jock River remain intact and are unlikely to be impacted by the project (Figure 4) given conventional construction-phase mitigations.

A tree planting plan will be created as part of the landscape plan for the development. The resulting canopy cover within the entire development area will exceed 30% at maturity and meet the City of Ottawa target for this area. The implementation of suitable mitigation measures will minimize the risk to existing trees.

6.3 Impacts to Species at Risk

Three SAR have potential to be impacted by the development project: Bank Swallow, Butternut, and Snapping Turtle.

Bank Swallow have not been observed nesting on the Site. However, landscape conditions created during the cut-fill for the area, and subsequent construction activities may result in suitable nesting habitats. There is therefore some potential (in the absence of mitigation) for the project to interact with Bank Swallow. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts to Barn Swallow.

Butternut trees were observed on the City of Ottawa lands to the south of the development. The Butternut trees here are more than 50 m from the currently proposed work and are not anticipated to be impacted by the project.

The Snapping Turtles are most likely to occur in the Jock River or the drain features on the Site. The development will be at least 30 m from any water feature and is not anticipated to alter any of these features. The planned pond, wetland, and nesting features will provide an increased amount of higher quality habitat for turtles. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts to Snapping Turtle (or other species of turtle; i.e., Blanding's, Map, Painted).

6.4 Impacts to Wildlife

The agricultural composition of the Site makes it unlikely to support wildlife. Amphibian habitats occur in the Foster Ditch and the Fraser-Clarke Watercourse. The development will be at least 30 m from any water feature and is not anticipated to alter any of these features. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts to amphibians.

Migratory birds have limited potential to occur and nest on the Site. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts to migratory birds.

Wildlife species common to the Ottawa area were observed on site during the field surveys. These species may continue to use or cross the Site. The riparian forest along the Jock River functions as a wildlife corridor and will remain in place during and after site development. The implementation of suitable mitigation measures will minimize the risk resulting in no impacts to wildlife.

6.5 "No Negative Impact"

Historical land uses on the Site were largely agricultural and contained few natural features that had marginal function in the ecosystem. The recent earthworks project has resulted in the clearing and alteration of the marginal habitats (e.g., hedgerows) within the Site. Consideration of features of higher importance (e.g., Jock River and associated drain features, SAR) were included in the EIS for the earthworks project to ensure these features were protected appropriately.

Protection of the remaining natural features within the development will be carried forward for this project with minimal impacts from the post earthworks conditions. Additionally, natural feature enhancements will be incorporated into the development to meet or exceed the City of Ottawa targets

for the natural environment, where and as they exist. These enhancements will include diverse environmental conditions to support multi-trophic habitats such as constructed wetlands, grasslands, and forests, resulting in a "net positive" impact to the environment.

7.0 MITIGATION

General mitigation measures to consider for all existing features include:

- Ensure machinery is in good working condition, free of fluid leaks
- Refueling of equipment should be conducted away from slopes and at least 30 m away from any surface water. A designated refueling area should be implemented for the Site
- Operate, store and maintain (e.g., re-fuel, lubricate) all equipment and associated materials in a manner that prevents the entry of any deleterious substance to the waterbody
- Ensure the Site and all disturbed areas are stabilized following construction
- Vegetation that is removed should be replaced with an appropriate native mix of vegetation endemic to the area and compatible with the existing land features
- Temporarily store, handle and dispose of all materials used or generated (e.g. organics, soils, woody debris, temporary stockpiles, construction debris such as concrete, sheet pile, wood forms, etc.) during site preparation, construction and clean-up in a manner that prevents their use by ground nesting birds (e.g., cover with sheeting)
- Ensure Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) on-site at all times for implementation in event of accidental spill during construction

7.1 Mitigation for Surface Water Features

Surface water features on site include the Fraser-Clarke Watercourse and Foster Ditch. These features will not be altered by the project and a 30 m buffer shall be placed around them. There is potential for indirect impacts via sediment deposition and overland erosion from the Site.

All impacts to surface water features can be managed with the implementation of appropriate mitigation measures, such as:

- Implementation of natural channel design principals in the design process
- Design and implement erosion and sediment controls to contain/isolate the construction zone, manage site drainage / runoff and prevent erosion of exposed soils and migration of sediment
- An Erosion and Sediment Control Plan outlining mitigation measures to limit potential for sediment and erosion to enter these watercourses. Mitigation measures will include silt fence, stone and / or straw bale check dams, monitoring frequency, and reporting requirements

7.2 Mitigation for Trees

There are few remaining trees on the Site. The following recommendations are to minimize impact to any trees remaining on the Site:

- Tree removal on site should be limited to that which is necessary to accommodate site construction.
- To minimize impact to remaining trees during future site development:
    - Erect a fence beyond the critical root zone (CRZ; i.e., 10 x the trunk diameter) of trees. The fence should be highly visible (e.g. orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment
    - Do not place any material or equipment within the CRZ of the tree
    - Do not attach any signs, notices or posters to any tree
    - Do not raise or lower the existing grade within the CRZ without approval
    - Tunnel or bore when digging within the CRZ of a tree
    - Do not damage the root system, trunk or branches of any tree
    - Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy

Tree planting plans will be created as part of the landscape plan for the development (KAL, 2020). The tree planting plan for floodplain areas of the Site to subject renaturalization is to include directives that will lead to ~15 ha of forested cover (i.e. within both forest and swamp features) at maturity. The tree planting plan for the residential areas of the Site is to include directives that will lead at least 6% canopy cover at maturity (i.e. considering trees planted on private lots and in common areas). Trees species identified in landscape plans must be non-invasive and should be native to the Ottawa area.

7.3 Mitigation for Species at Risk

- All on-site staff should undergo environmental awareness training to be able to identify the potential SAR that may be encountered
- If the proposed works are to occur between April 1st – October 30th, consider isolating the Site with suitable fencing prior to commencing work
- Removal of vegetation suitable as nesting habitat should occur outside of the breeding bird season (April 1 to August 31)

- Perform daily pre-work searches of the construction area to ensure no wildlife has entered the work area overnight.

Bank Swallows and turtles may occur on the Site. General wildlife mitigation measures will be sufficient to protect these species.

The Butternuts remaining on site are far enough away from proposed work areas that no specific mitigation is required to project the species.

7.4 Mitigation for Wildlife

The following mitigation measures shall be implemented during construction of the project on site:

- Isolate work areas to prevent wildlife from entering the active work area
- Perform daily pre-work searches of the construction area to ensure no wildlife has entered the work area overnight
- Construction activities should not occur during sensitive times of the year for wildlife, unless appropriate mitigation measures are implemented and/or the habitat has been inspected by a qualified biologist
- If removal of vegetation must occur within the breeding bird season (April 1 to August 31), a qualified biologist should be retained to provide guidance on how to avoid impact to breeding birds. If active migratory bird nests are discovered within the construction area, further alteration should be postponed allowing young birds time to fledge
- Do not harm, feed, or unnecessarily harass wildlife
- Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the Site (especially in warm weather)
- Cove and / or contain piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife
- Checking the work area for wildlife prior to beginning work each day
- Inspecting protective fencing or other installed measures regularly and after each rain event to ensure their integrity and continued function
- Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements

8.0 SUMMARY AND RECOMMENDATIONS

8.1 Concordance with Jock River Reach One Subwatershed Study

No discrepancies occur between the proposed development and recommendations in the Jock River Reach One Subwatershed Study (Stantec, 2007; Table 6)

Table 6 Natural Environment Planning Recommendations from the Jock River Reach One Subwatershed Study (Stantec, 2007)

Recommendation Number	Recommendation	Concordance
Foster Catchment		
JRSWS-1	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	The drain will be retained in its current form. It situated within a 65 m wide corridor with enhance riparian vegetation.
JRSWS -	Setback greater of the 100-year flood line elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	The setback to the drain is set at 30 m from the normal high-water mark
Fraser-Clarke Catchment		
JRSWS-3	Preserve and enhance the aquatic habitat and riparian zone of the tributary through future restoration opportunities.	The lower reaches of the Fraser-Clarke Watercourse are currently subject to an approved realignment program under a separate development project to enhance aquatic habitat along the channel. Under the current project, the new lower channel will be retained and situated within a 65 m wide corridor with enhance riparian vegetation. The corridor of the upper half of the Fraser-Clarke Watercourse will subject to enhancements of the riparian vegetation there subject to further negotiation with the City and RVCA regarding the corridor, the channel, and land development to the north.
JRSWS-4	Setback greater of the 100-year flood line elevation/meander belt/aquatic setback (i.e. geotechnical, 15 m top of defined bank or 30 m from normal high-water mark)	The setback to the watercourse is set at 30 m from the normal high-water mark
Jock River Corridor		
JRSWS-5	Maintain the regulatory floodplain by not permitting active development within its limits. Some reduced risk uses such as sports fields and trails may be considered subject to RVCA	Development is not proposed within the floodplain. The floodplain corridor will be naturalized.

Recommendation Number	Recommendation	Concordance
	approval.	
JRSWS-6	Prepare a Jock River Corridor Riparian Planting Plan to improve and enhance riparian vegetation coverage along the banks and shoreline of the river.	A detailed planting plan will be developed as part of the final landscape plan for the area to fully detail the proposed design for new forest and wetland areas along the floodplain.
JRSWS-7	Protect critical fish habitat and spawning areas along the Jock River and tributary mouths.	The banks of the Jock River and the tributaries to it have been and will be maintained as intact retaining their existing vegetation. Riparian areas previously consisting of bare soil and/or agricultural crops will be revegetated.
JRSWS-8	Create pike spawning habitat area adjacent to Foster Dry Pond as compensation for loss of fish habitat in tributaries within Barrhaven South.	The Compensation Pond and Foster Pond, previously developed as compensatory fish habitat, are located on City-owned land and will not be altered by the proposed development.
JRSWS-9	Development setback for the Jock River will be the greater of: floodplain, meander belt width, geotechnical, 15 m top of defined bank or 30 m from normal high water mark	The setback to the Jock River defined by the 100-year floodplain, which corresponds to setback of 80-400m from the top of defined bank.
JRSWS-10	Provide recreational trail along the Jock River as per OP and Greenspace Master Plan.	The proposed re-naturalization of the Jock River floodplain includes trail system along its northern boundary.

8.2 Conclusions

The proposed residential development and corridor restoration was designed to be consistent with the goals of the Jock River Subwatershed Study. Key features of the design that are consistent with the subwatershed study goals include 30 m setbacks for the Foster Ditch and Fraser-Clarke Watercourse, a naturalized corridor along the Jock River of between 80 and 400 m width, a significant increase in wetland habitat, and recreational pathways within the corridor.

The development of this community will support a re-established and re-naturalized riparian corridor in the floodplain lands that is between 80 and 400 m wide. This area will include the creation of ~5 ha of wetland and ~32 ha of forest cover, with a recreational pathway system along its northern edge, and a proposed canoe-launch entry point adjacent to Borrisokane Road.

Drainage features through the proposed community (i.e. the Foster Ditch and the Fraser-Clarke Watercourse) will be retained and protected with 30 m setbacks from their normal high-water marks. The retained corridors, which extend over areas that are currently barren, will be replanted and re-naturalized. Requirements from the subwatershed study related to stormwater management will be addressed under functional servicing studies for the area.

Previously developed natural features (i.e., fish habitat compensation pond and the Foster Dry pond) will not be impacted by the proposed residential or corridor restoration designs, but rather can be a focus for integration with the restored corridor. The proposed restoration development will represent a significant increase the diversity of natural features within the Site, as well as for the broader communities of Barrhaven and the City of Ottawa. The natural feature improvements to the existing ecological features (e.g., wetlands, meadow habitats, fish habitat) and the creation of new features (e.g., habitat for Species at Risk), will benefit the ecological diversity of the Site while simultaneously creating a recreational opportunities for the public.

The identified species at risk with some potential to interact with the proposed development project are: Bank Swallow, Northern Map Turtle, Snapping Turtle, and Blanding's' Turtle. The risk of harm to transient individuals during construction can be mitigated through the appropriate and conventional mitigations and there is currently no suitable habitat for these species on the site, therefore the proposed project is not anticipated to impact species at risk. The restored corridor has the potential to provide habitat for turtle species that previously did not exist.

It is our professional opinion that no significant negative impacts are anticipated to species-at-risk or their habitats, or to significant natural heritage features present in the broader project vicinity under the proposed project.

9.0 CLOSURE

This report was prepared for exclusive use by Barrhaven Development Corporation and may be distributed only by Barrhaven Development Corporation. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

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Appendix A- Agency Correspondence

Minutes of the February 13, 2020 Pre-consultation meeting

SAR Screening Letter to MECP

Anthony Francis

From: Gervais, Melanie <Melanie.Gervais@ottawa.ca>
Sent: February 13, 2020 1:53 PM
To: Hugo Lalonde
Cc: Rehman, Sami; Shillington, Jeffrey; Rogers, Christopher; Xu, Lily; Krabicka, Jeannette; Giampa, Mike; Simpson, Colin; Eric Lalande
Subject: Barrhaven Conservancy pre-consult

Good afternoon Hugo,

As a follow up to the pre-application consultation meeting held in December, please find below a recap of the requirements. The list of required plans and studies is attached.

I. Planning:

a. The following application will be required: plan of subdivision application with a current fee of $91,031.11 plus the Initial Engineering Fee ($5,000 or $10,000) and the Conservation Authority Fee ($3,760).

b. Ensure that the Enhanced Planning Rationale addressed policies from the OP, the secondary plan, Building Better and Smarter Suburbs (BBSS), Greenfield development guidelines, Collectors Design Guidelines and all applicable design guidelines. Notable BBSS elements that we will look for include: a fully-connected street grid; a Parking Options plan that emphasizes the retention of as much curbside parking as possible; and an outline of how dwelling types are proposed to be mixed within blocks to avoid having entire blocks of a single typology.

c. Part of the Planning Rationale should take the form of a Concept Plan(s) for all conservancy lands to identify and illustrate (but not limited to): General land use and density; Greenspace network; Transportation facilities – transit, cycling, and pedestrian; Public facilities – schools, library, etc.; Street network and hierarchy; and other elements as applicable.

d. The Planning Rationale must include statistical information – land use distribution, block areas, a total number of dwelling units, a breakdown of the potential units by type, overall density in units per net hectare.

e. Include Community Design Guidelines with guiding principles for the physical built form of all the Conservancy land, can be included in the Planning Rationale or as a separate document with the Concept Plans.

f. Include an Existing Conditions component which should consolidate findings of existing conditions that are related to (but not limited to) land use context, approval context, natural environment, geotechnical, hydrogeology, transportation, and infrastructure, etc.

g. Bring in all the master plans/reports conclusions into one document.

h. Please note that the City is no longer encouraging 16.5m cross-sections as they create too many conflicts between trees & utilities and trees & sidewalks. Local streets should be shown with an 18-metre right-of-way.

i. Please specify if proposed rear lanes are intended as publicly or privately owned. If privately owned, the City will welcome narrower (6-metre) cross-sections than the standard width of 8.5 m for City-owned lanes. We encourage the use of rear lanes for residential blocks as a way to eliminate curb cuts and façade garages and maintain a high capacity of curbside parking to accommodate visitors and other temporary parking needs, in addition to providing more soft surface landscaping and tree planting potential along streets.

j. Please identify proactive traffic calming measures for the entire community (including 30 km/h local streets, bulb-outs, intersection narrowings, etc.) which will be built as part of the development.

k. I recommend that you reach out to the four school boards to identify their preliminary needs before you submit an application.

II. Infrastructure:

a. As discussed during the meeting, Infrastructure Planning Unit requires the consultant to prepare a Terms of Reference (TOR) for a Master Servicing Study (MSS) which should cover a broader area beyond the Conservancy land for City/CA staff to review and approve. The TOR should include but not limited to the following key tasks:
   - Identify appropriate study area
   - Inventory of existing conditions
   - Identify development context scenarios
   - Evaluation of servicing alternatives for different development scenarios
   - Selection of preferred servicing alternative

   Please feel free to contact staff for clarification on the TOR requirements.

b. Following the TOR, a Master Servicing Study will be required, plus any other items identified through the TOR. Please note that the study must also satisfy Class EA requirements for the infrastructure recommendations.

c. Infrastructure Services are expecting that there will likely be a lot of submerged sewers due to the lack of available grade to stormwater outlets on the Jock River. The evaluation of alternatives should consider options to minimize the length and depth of submerged sewers, as well as an impact mitigation plan to address the operational challenges that the City will be stuck with, i.e. sediment build-up that reduces effective capacity of the system. Mitigation could include infrastructure to make clean out easier.

   Note that the City's design guidelines include the following:
   Outfalls to natural watercourses should discharge at or above the normal water elevation of the watercourse. If high water levels cause the submergence of the outlet, the impact of the submergence on the sewer system must be assessed… When assessing the HGL in the system, the design must also check the impact on the system assuming that these pipes are 25% filled with sediment.

d. Please note that the infrastructure supporting the development is not in the current Development Charges By-law nor the Background Study. Caivan is required to identify infrastructure costs and funding strategies, which need to fit into the City's spending plan. Various options will need to be suggested and examined, e.g. area specific DC charges, DC by-law amendment, etc.

III. Environmental (Environmental Planner and Natural Systems Unit):

a. This is a unique project which warrants unique requirements. While the other City departments are requesting a Master Studies, we don't think an Environmental Management Plan (EMP) is required. However, we are requiring a comprehensive and integrated environmental study that exceeds the normal requirements for a subdivision. This Enhance Environmental Impact Statement (EEIS) will need to address several matters that are typically dealt with in EMPs, Integrated Environmental Studies (IER) and usual Environmental Impact Statements (EIS). Central for this study will be to explain, how the proposed development will achieve the Jock River Reach One Subwatershed Study's (2007) objectives for the area, and to demonstrate no negative impacts to the ecological features and functions.

b. This study will address and include:
   - a section or table explaining the discrepancies between the propose development and SWS's recommendations, by including 1) rationale for each and 2) how the goals of the SWS will still be achieved through the changes.
   - protection of previous compensation works for development south and north of the river (e.g. the fish habitat compensation).
   - appropriate setbacks around natural features and surface water resources
   - the usual components of an EIS (identifying existing conditions, assessing environmental impacts, informing design and recommending mitigations to demonstrate no negative impacts)

c. Based on the presentation at the meeting, it appears that the proposed development's large scale, diverse issues and many competing interests/goals may require trade-offs. Suggest including a set of trade-off principles to help navigate analysis and decision making towards the best sustainability recommendations.

d. For next steps, staff recommends the proponent draft a terms of reference (TOR) for the proposed EEIS to share with City staff. We anticipate the proponent and City staff will work iteratively to finalize the study's scope and breadth to ensure a common understanding of expectations. A proper study area should cover lands beyond the Conservancy lands as will be discussed with staff.

IV. Transportation:

a. A Transportation Master Study (TMS) or similar as agreed upon with transportation staff will be required. A larger study area is required, similar to the following Cambrian, Greenbank, Strandherd, Dealership Way. This can be done through the forecasting phase of the TIA. We also need confirmation that the work already done as part of the initial TIA is still valid. Ensure that the Chapman Mills Drive EA is included in the TIA. The EA only shows a grey arrow west of Borrisokane. How it will continue past Borrisokane Rd must be determined. You will need to identify solutions given the

transitway extension and widening of Borrisokane is not in our Long Range Financial Plan.

b. CGH has already started the TIA process, please respond to the forecasting comments while proceeding to Step 4.

V. Parks :

a. Please provide an overall Parkland Strategy to identify parkland provision (size and location), hierarchy, potential programs and phasing of all parklands within all Conservancy lands. This can also be combined with Planning Rational.

b. Parkland Dedication:

As part of the Planning Rationale to be submitted for circulation, please include a separate section titled “Parkland Dedication” in the document. This section is to provide an explanation of how the proposed development will address the Parkland Dedication requirements, as per the City of Ottawa Parkland Dedication By-law No 2009-95.

To be included :

- the number and type of residential units proposed;
- the gross land area of all apartment blocks proposed;
- the gross land area of all commercial/industrial blocks proposed;
- the gross land area and type of all other development blocks proposed;
- the total area of Parkland Dedication (in square meters) that is required for the subdivision as calculated using the Parkland Dedication By-law; and
- the total area of parkland conveyance (in square meters) that is being proposed in the Plan of Subdivision.

Please note:

- Parks and Facilities Planning will be looking for full land conveyance of the required parkland dedication.
- Land within the floodplain and other required environmental and/or constrained lands will not be counted towards the parkland dedication requirements.

c. Information required for land conveyance of a park block:

Please include, in the First Submission for Draft Plan Approval, for each park block proposed:

- A brief rationale regarding the proposed location of the park block.
- A preliminary grading plan of the proposed park block – showing proposed elevations on all sides of the park, as well as spot elevations, in an appropriately spaced grid pattern, within the park block. Grading must show positive surface drainage of the park block. This plan must also include any existing and proposed 100-year floodplain mapping, if applicable.
- A discussion on the Geotechnical Report, and how it affects the park block. Ensure that the text includes the suitability of the soils for construction and load bearing, and any potential required amendments to make it suitable (if required).
- If tree preservation is proposed, delineate the area on a plan and include a discussion of why the tree preservation is being proposed.

- A plan showing the pedestrian connections to the park block within the proposed development, as well as the existing pedestrian connections throughout the greater neighbourhood.
- Confirmation that there are no existing or proposed encumbrances on the proposed park block.

d. Developer Requirements for Land Conveyance of a Park Block

Parks and Facilities Planning will be reviewing the suitability of the proposed park block(s) using the criteria as set out by the City of Ottawa Park Development Manual, 2nd edition. The Owner is encouraged to review this document.

Below is brief summary of some of the required park location criteria to be considered when developing the Plan for Draft Approval:

- A minimum of 50% street frontage.
- A continuous sidewalk is required along all park street frontages.
- Designed with safety in mind, and adhering to CPTED principles.
- Have multiple entry points located for convenient access.
- Should be a focal point in the neighbourhood.

As per the standard conditions, a park block must also:

- Have no encumbrances (ex: retaining walls, utility lines or easements of any kind) which are located on, or in front of, dedicated park blocks.
- Be fully developable for its intended use based on a geotechnical report (soils testing must be done for both the contamination of the soils, as well as the structural stability of the soils
- Be rough graded to match the final elevations of the surrounding proposed neighbourhood (providing positive surface drainage to the perimeter of the park block; and generally not exceeding slopes of 5%, or as approved by Parks and Facilities Planning).
- Have the required services installed at 2.0m inside the park property line. The services must be shown on the subdivision servicing and/or composite utility plans; their locations are to be discussed with, and approved by, the Park Planner during the development of the drawings. The required services are to be:
    - 300mm diameter storm sewer CB / MH
    - 150mm diameter sanitary sewer and MY
    - A 120/240 volt, 200 ampere single phase hydro service.
    - 50mm diameter water line complete with standpost.

e. Area Parks Plan & Fit Plans
An Area Parks Plan will be required for Draft Approval of the proposed development. Please refer to the Park Development Manual (2nd Edition) for more information.

VI. RVCA :

a. The RVCA has approved a cut/fill permit for the subject lands. The RVCA will be looking for permit conditions to be completed prior to draft approval, or through conditions included as part of any draft approval process. The RVCA will be providing input into proposed draft conditions, as per normal review procedures.

b. Stormwater Management: The RVCA requires a water quality protection of 80% TSS removal. Additionally, O'Keefe Creek is identified as a cold-water system, which will require thermal mitigation.

c. Wetland Creation: The RVCA will look for the opportunity to provided comments into the proposed creation of wetlands/open space, as part of this proposal through the required "Enhanced EIS".

d. RVCA permits/clearance: RVCA permits will be required for alteration to water courses, for creation of new outlets, and any modifications proposed to accommodate.

e. The RVCA reserves the opportunity to provide additional comments as we work through the process.

Staff will continue to consult with RVCA on the progress with the cut/fill permit and related activities and approvals prior to deeming the development applications complete.

Regards,

Mélanie Gervais *MCIP, RPP*
Planner / Urbaniste
Development Review /
Examen des demandes d'aménagement
Planning, Infrastructure and Economic Development Department /
Services de la planification, de l'infrastructure et du développement économique
City of / Ville d'Ottawa
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Ed Malindzak <emalindzak@kilgourassociates.com>

Preliminary SAR screening for the Barrhaven Conservancy Residential Development

Ed Malindzak <emalindzak@kilgourassociates.com> Tue, May 5, 2020 at 1:36 PM
To: SAROntario@ontario.ca
Cc: Bruce Kilgour <bkilgour@kilgourassociates.com>, Anthony Francis <afrancis@kilgourassociates.com>

Good afternoon,

Please find attached a letter outlining a preliminary species at risk (SAR) screening in support of a proposed development in the Barrhaven area of Ottawa, Ontario. The attached letter outlines the project background and our findings with respect to SAR to date. We are seeking confirmation of the identified potential SAR as well as input related to potential restoration works.

We look forward to hearing from you soon. Please do not hesitate to contact us if you have any questions or concerns.

Kind regards,

Ed

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BCDC MECP SAR Screening Letter_20200505_fnl.pdf
522K

May 5, 2020 **Our File: BCDC977**

Carolyn Hann, Management Biologist
Ontario Ministry of Environment, Conservation and Parks
10-1 Campus Drive
Kemptville, ON K0G 1J0

Reference: Preliminary Species at Risk screening for the Barrhaven Conservancy Residential Development

Ms. Hann:

1.0 INTRODUCTION

Kilgour & Associates Ltd. (KAL) have been retained by Caivan Communities to undertake agency consultations and provide input into their proposed redevelopment plan for lands along the north side of Jock River, located between Ontario Highway 416 and the Fraser Clarke watercourse (~400 m west of Greenbank Road) in the Barrhaven area of Ottawa, Ontario (i.e., "the site", Figure 1).

The new residential subdivision, named the Barrhaven Conservancy, will include three broad areas, each currently subject to different planning efforts. Lands located adjacent to the Jock River (i.e., ranging to within 70 - 250 m of the north bank) are proposed to be re-naturalized with the inclusion of some recreational infrastructure (e.g. pathways). Plans for the re-naturalization are currently being developed. Lands north of the riparian corridor and located east of the Foster Municipal Drain (situated approximately 350 m west of Borrisokane Road), will be subject to residential development in the near future. Lands to the west of the Foster Municipal Drain have also been proposed to be developed as a residential community, though planning of for this area is still in the conceptual phase. We are submitting these Species at Risk (SAR) screening results for the proposed developments.

Review of natural areas within this area for potential development was initiated in 2017 and consultation related to SAR was completed through the Ministry of Natural Resources and Forestry (MNRF) at that time. Since then the Ministry of Environment, Conservation, and Parks (MECP) has assumed the role of administrator for SAR in Ontario. The site, which was predominantly used for agriculture, had previously been considered to be undevelopable as the entire area was within the regulatory floodplain of the Jock River. A cut-and-fill program was approved by the City of Ottawa and by the Rideau Valley Conservation Authority in 2019. That program was approved independently of the current application for development. Under that program the land elevations across most of the

site have been altered. The cut-and-fill works will allow the regulatory floodplain line to move southward and allow lands on the north side of the site to be considered for development, though no development of the site has yet been approved. If development is approved here, the full build-out would take approximately 10 years to complete.

The objectives of this letter are to: (1) notify the MECP of the project; (2) provide a summary of the proposed project; and (3) request confirmation that we have identified known SAR concerns associated with the site. Additionally, as KAL is providing input into the planning for the re-naturalization of the Jock River riparian corridor, we would welcome and appreciate any input from the MECP with regards to enhancements the MECP would consider a priority for this area.

1.1 Site Overview

The site is approximately 168 ha in size and is in the Barrhaven area of Ottawa, Ontario (Figure 1). The Barrhaven Conservancy site covers seven contiguous property parcels: 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey. The site is bordered by the Jock River to the south and Highway 416 to the west. The eastern border is bounded by the Frasier-Clarke Drain on the south east edge, Borrisokane Road in the mid-east edge, and a stormwater management facility on the north east edge. The northern border includes the Canadian National Smiths Falls Rail Corridor, a stormwater management facility, and the future Chapmans Mills Bus Rapid Transit Corridor. The site is zoned Developmental Reserve (DR) with a small portion zoned as Parks and Open Space Zone (O1).

Three municipal drains occur in the site (i.e., Foster Drain, O'Keefe Drain, and the Fraser-Clarke Drain) and most of the site is within the 100-year floodplain for the Jock River.

The site was historically dominated by agricultural uses but has now largely been cleared under the cut-and-fill program with very almost no natural land-cover remaining on the site. The banks of the Jock River and the band of trees located there (generally within ~10-20 m of the water's edge) have been retained. Vegetation cover within 30 m of drains crossing the site has similarly been preserved as has the land west of Borrisokane Road (Figure 1), which is owned by the City. All other areas are currently being regraded and consist of bare dirt (though they are being seeded with a grass mix for stability as part of the erosion sediment control plan for cut-and-fill program).

Kilgour & Associates Ltd. has undertaken the following studies in support of the cut-and-fill program:

- Barrhaven Conservancy Cut and Fill Environmental Impact Statement (November 20, 2019)
- Barrhaven Conservancy Phase 1 Integrated Environmental Review (August 27, 2019)
- Butternut Health Assessment report number 731-001 (August 8, 2019)

- Request for Review of works associated with the Fraser Clarke Tributary Restoration at 3285 Borrisokane Rd., Ottawa, ON (January 9, 2019)
- Jock River Restoration Project: Aquatic and Ecological Site Assessment Supporting Document (September 28, 2018)
- Barrhaven Conservancy Headwater Drainage Feature Assessment (September 8, 2017)

Those studies will ultimately support the development proposal.

1.2 Project Overview

The resulting development at full build out is proposed to include single family homes, commercial properties, greenspace, and park lands with enhanced ecological features meant to re-create environments that are under-represented in this part of the City. The ecological feature enhancements along the Jock River will be developed in consultation with various stakeholders (e.g., City of Ottawa, Rideau Valley Conservation Authority, MECP) to develop opportunities to advance regional targets (e.g., forest cover, wetlands) while providing access and recreation opportunities to the local communities.

2.0 SPECIES AT RISK RESOURCES REVIEW AND RESULTS

The following resources were reviewed to identify potential SAR species that may interact with the project.

- Aquatic Species at Risk Map (Fisheries and Oceans Canada, 2020)
- Make a Map: Natural Heritage Areas (MNRF, 2020)
- Land Information Ontario (Government of Ontario, 2020)
- Atlas of the Breeding Birds of Ontario (OBBA; Bird Studies Canada et al., 2009)
- Ontario Nature (2020)
- eBird (Cornell Lab of Ornithology, 2020)
- iNaturalist (California Academy of Sciences and National Geographic Society, 2020)
- Rideau Valley Conservation Authority (2016)

We note that the *Client's Guide to Preliminary Screening for Species at Risk* (MECP, 2019) recommends consulting the Ontario Reptile Amphibian Atlas (Ontario Nature, 2019) as a SAR resource. This Atlas was discontinued in December 2019 and now operates via the 'Herps of Ontario' project on iNaturalist.

Figure 1 Jock River Restoration Approximate Extent of Construction

Table 1 Identified Species at Risk with potential to occur in the vicinity of the Site

Common Name	Taxonomic Name	Source
Bank Swallow	*Riparia riparia*	OBBA
Barn Swallow	*Hirundo rustica*	NHIC, OBBA
Bobolink	*Dolichonyx oryzivorus*	OBBA
Chimney Swift	*Chaetura pelagica*	OBBA
Eastern Meadowlark	*Sturnella magna*	OBBA
Eastern Wood-pewee	*Contopus virens*	NHIC, OBBA
Grasshopper Sparrow	*Ammodramus savannarum*	OBBA
Short-eared Owl	*Asio flammeus*	OBBA
Wood Thrush	*Hylocichla mustelina*	OBBA
Blanding's Turtle	*Emydoidea blandingii*	Ontario Nature
Northern Map Turtle	*Graptemys geographica*	Ontario Nature
Snapping Turtle	*Chelydra serpentine*	NHIC, RVCA
Western Chorus Frog	*Pseudacris triseriata*	Ontario Nature
Butternut	*Juglans cinereal*	Observed by KAL

3.0 ANTICIPATED IMPACTS TO SPECIES AT RISK

The site was previously used for agricultural purposes and contained few natural features, including habitat suitable for Species at Risk. The project is currently under construction and will contain even fewer natural features upon completion.

KAL has completed extensive studies on the site to identify Species at Risk and habitat suitable for Species at Risk. Butternut (*Juglans cinereal*) was identified on City-owned land along Jock River, west of Borrisokane Road and south of the ongoing groundworks. Trees that were impacted by the groundworks were subject to Butternut Health Assessments. Appropriate mitigation measures are in place to limit interaction between the project and other Species at Risk.

4.0 CLOSURE

We look forward to any comments you may have related to Species at Risk as well as input for enhancements for future developments. Questions relating to the contents of this letter can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

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cc: Bruce Kilgour (KAL)

5.0 REFERENCES

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Appendix B- Tree Conservation Report

City of Ottawa Tree Conservation Report for the Barrhaven Conservancy East

July 29, 2020

Submitted To:

Hugo LaLonde, Director, Land Development
Caivan Communities
2934 Baseline Road, Suite 302
Ottawa, ON K2H 1B2

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com

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List of Acronyms and Abbreviations

BCDC – Barrhaven Conservancy Development Corporation
CRZ – Critical Root Zone
DBH – Diameter at Breast Height
EIS – Environmental Impact Statement
KAL – Kilgour & Associates Ltd.
TCR – Tree Conservation Report

1.0 INTRODUCTION

Barrhaven Conservancy Development Corporation (BCDC) is proposing a new residential subdivision, named the Barrhaven Conservancy East (the "Site") located in the Barrhaven Conservancy Community area of Ottawa, Ontario. The Site is divided into two sections divided by Borrisokane Road. The east parcel is bordered by the Jock River to the south and the Fraser-Clarke Watercourse and future Chapmans Mills Bus Rapid Transit Corridor to the north. The west parcel extends out to the Foster Ditch to the west and is bounded on the south by a City of Ottawa property along the Jock River and the Foster stormwater management facility on the northeast edge.

This report by Kilgour & Associates Ltd. (KAL) is the Tree Conservation Report (TCR) for the proposed Barrhaven Conservancy East development.

2.0 TREE CONSERVATION REPORT

2.1 Inventory of the trees currently on site

Descriptions of trees within this report are per the Environmental Impact Statement (EIS) supporting the Barrhaven Conservancy cut and fill project (KAL, 2019) that was completed in the spring of 2020. During the cut and fill, trees over much of the property were removed, though trees occurring along the Jock River, the Foster Ditch, and the south edge of BCDC lands west of Borrisokane were preserved (Figure 1). These trees are addressed in this report. The Fraser Clarke Watercourse is located beyond the eastern edge of the project area. Existing trees within the corridor of this feature are all situated sufficiently back from the edge of development area such that their critical root zones (CRZ) do not extend into proposed work areas. As such trees along this feature are not addressed within this report.

Remaining trees on or near the site are associated with five hedgerows (Figure 1).

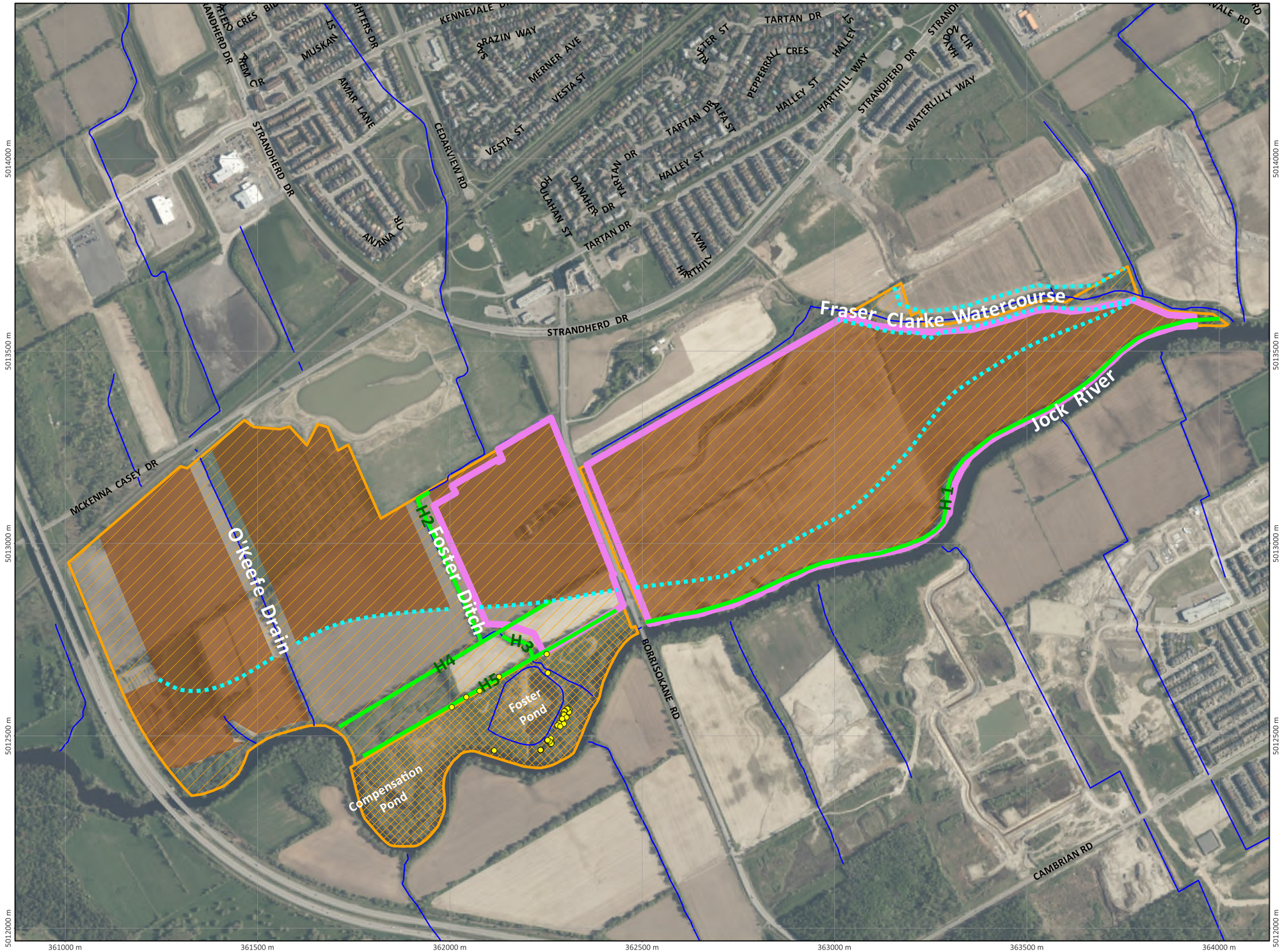
2.1.1 Hedgerow H1

Hedgerow H1 runs for 1.7 km along the north bank of the Jock River east of Borrisokane Road. The southern boundary of groundworks associated with the cut and fill program was set to beyond the northern edge of the drip line of all trees within this hedgerow so that the feature was fully retained. This feature is similar in composition to other hedgerows on site consisting of mainly Green Ash (*Fraxinus pennylvanica*) and Manitoba Maple (*Acer negundo*), with subordinate species of Bur Oak (*Quercus macrocarpa*), Basswood (*Tilia americana*), Crack Willow (*Salix fragilis*), and Silver Maple (*Acer saccharinum*). No Butternuts (*Juglans cinerea*) are present within this feature.

2.1.2 Hedgerows H2 and H3

Hedgerows H2 and H3 are associated with the Foster Ditch. Tree growth along this ~575 m corridor is more sparse than along other site hedgerows, consisting of small patches of trees with grasses and forbs growing in between. Manitoba Maple and Green Ash are dominant with a few American Elm (*Ulmus americana*) and a Silver Maple also present. The majority of the trees were small at a range of 20 to 40 cm diameter at breast

Figure 1 Existing Conditions



Legend

- Property Parcels
- BCDC
- City of Ottawa
- Barrhaven Concervancy East
- Edge of Regulatory Floodplain
- Lands cleared through cut/fill
- Watercourses / Drainge Features
- Hedgerow
- Butternut

N

0 500 m

Project: Barrhaven Conservancy Development Corporation
Created By: AF
MTM Zone 9
(NAD 83)
Printed on: 2020-07-29

KILGOUR & Associates

height (DBH) with small numbers of saplings present. Larger Green Ash along the corridor all showed signs of significant dieback. No Butternuts are located along these hedgerows.

2.1.3 Hedgerows H4 and H5

Hedgerows H4 and H5 (640 m and 760 m in length, respectively) are located along the north and south edges of a former farm field on the southern edge of BCDC-owned lands, though only the eastern-most ends of the features extend into Site. Green Ash and Manitoba Maple are the dominant species, with subordinate species of American Elm, Basswood, and apple (*Malus* sp.). Small numbers of Crack Willow, Silver Maple, and Trembling Aspen (*Populus tremuloides*), were observed in both hedgerows. Five Butternuts occur along H5. Four of the Butternuts are saplings and are located in the central portion of the hedge, more than 100 m from the edge of the Site. A single Butternut with two stems (15 cm and 16 cm DBH) is located near within 5 m of the Site boundary. All of the Butternuts are located more than 50 m from the planned cut-fill work.

A survey of trees by KAL within City of Ottawa- owned lands south of the Site on August 14 and 19, 2019, noted the presence of 27 additional Butternut trees. All of these trees are located more than 50 m from the edge of the Site (Figure 1).

3.0 OTHER NATURAL ELEMENTS CONSIDERED

3.1 Surface water features, including wetlands and watercourses

The Foster Ditch is located on the west side of the Site. The Fraser Clarke Watercourse is located on the east side of the Site. Both features will have setbacks of 30 m from the normal high water mark. The Jock River is located along the southern boundary of the Site, east of Borissokane Road. The floodplain of the river extends >80 m on to the Site (Figure 1).

3.2 Steep slopes, including valleys and escarpments

No steep slopes are identified within the City of Ottawa Officail Plan and none were observed on or directly adjacent to Site.

3.3 Valued woodlots

There are no valued woodlots designated as Urban Natural Features or Natural Environment Areas, areas evaluated in the Urban Natural Areas Environmental Evaluation Study (UNAEES), or other areas that meet the criteria used in the UNAEES

3.4 Significant Woodlands

There are no significant woodlands on or adjacent the Site.

3.5 Greenspace linkages

The Jock River plain is considered a greenspace linkage.

3.6 High quality, specimen trees

None of the Site trees, other than the observed Butternuts, are considered high-quality specimen trees. Most trees are less than 40 cm DHB and no uncommon species are a present. The largest trees on Site are Green Ash, though these trees have mostly been negatively impacted by Emerald Ash Borer (*Agrilus planipennis*; EAB).

3.7 Rare communities or other unique ecological features

None present on or directly adjacent to Site

3.8 Species at Risk and their habitat

A single Butternut is situated adjacent to the Site. A BHA has not been completed for this individual. This individual, however, is located ~160 from the edge of the regulatory floodplain. Lands on the Site between that tree and the floodplain edge (i.e. former farmland) will be subject to tree planting as a part of a renaturalization program, but will not otherwise be developed. As such, the Butternut will be retained with no negative impacts.

4.0 PROPOSED DEVELOPMENT (WITHIN AREAS OF EXISTING TREE COVER)

The riparian areas of the Jock River corridor on the Site previously consisted of active agricultural lands with a narrow hedgerow separating them from the Jock River. The new regulatory flood plain line along the entire Barrhaven Conservancy Community (east of the Foster Ditch currently and, in subsequent development phases, to the west) will allow lands between 80 and 400 m wide to be re-established as a natural Jock River open space corridor (Figure 2). The major focus of flood plain redevelopment is on the creation of conservation lands including wetland space. This area will include the development of ~5 ha of wetland and ~32 ha of forest cover. All other enhancements discuss below will occur on lands owned by BCDC. No site alterations will occur within in >30 m of the Foster Ditch or Fraser Clarke Watercourse.

Wetland areas will include two major types of features: three large naturalized ponds covering ~3 ha, and a ~2 ha Silver Maple swamp, in accordance with the RVCA directives for increased wetland space. Naturalized pond features will be connected directly to the Jock River via deeper channels. The ponds and main inlet and outlet channels to the ponds would be approximately 2.5-3 m deep, with gently rising grades to the shoreline. The depth of these features is anticipated to ensure they remain accessible with open connections to the Jock River for aquatic life (e.g., fish, turtles, and amphibians) throughout the year. A forested buffer will occur between the natural ponds and the Jock River. Woody material could be included on the banks of the natural ponds and their outlet channels at the Jock River. This landscape design is intended to protect and enhance critical fish habitat and spawning areas along the Jock River.

4.1 Vegetation to be retained

Existing trees on the Site all occur within areas subject to renaturalization and will be almost fully retained. The only proposed areas of tree removal will occur within Hedgerow H1 where entrance channels will need to excavated to provide hydrological connections between new pond features and the Jock River.

Figure 2 Proposed development

4.2 How will the design conserve vegetated areas

All areas currently including trees are will be subject to reanaturalization. Anticipated canopy cover across the site is expected to exceed 30% at tree maturity.

4.3 Description of the area and nature of vegetation loss.

No currently-vegetated areas will be subject to vegetation loss And there will be no affect the natural systems on site and on the surrounding landscape.Impact of the development on the conserved portions of vegetation

should be examined and outlined, including and not limited to the impacts of grade change, changes to drainage patterns, effects of impervious surfaces and new buildings, and changes in the water table.

Areas outside of the floodplain proposed for residential development, and much of the floodplain area, are currently devoid of vegetation. The proposed renaturalization of the floodplain will provide and expanded natural buffer between the Jock River and new residential communities. There are no anticipated impacts of the development on the conserved portions of vegetation related to grade change, drainage patterns, impervious surfaces and new buildings, and the water table.

5.0 MITIGATION MEASURES

The proposed renaturalization of the floodplain will provide an expanded natural buffer between the retained trees along Jock River and new residential communities, resulting in the long-term survival of retained trees and woodlands.

5.1 Protection measures during construction for trees and woodlands

Vegitation being retained may be impacted by the proposed construction.

The following standard measures area to be applied during construction when working near retained trees:

- erect a fence at the CRZ is established as being 10 cm from the trunk of a tree for every cm of trunk DBH. The CRZ is calculated as DBH x 10 cm.) of trees;
- do not place any material or equipment within the CRZ of the tree;
- do not attach any signs, notices or posters to any tree;
- do not raise or lower the existing grade within the CRZ without approval;
- tunnel or bore when digging within the CRZ of a tree;
- do not damage the root system, trunk or branches of any tree;
- ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.

5.2 Protection of fauna or rare species during and after construction

Common wildlife species were observed on the Site, all of which are represented throughout the developed adjacent landscape. The following mitigation measures shall be implemented during construction of the project to generally protect wildlife:

1. Areas shall not be cleared during sensitive times of the year for wildlife (i.e. breeding season, which for species potentially occurring on the Site is April 15th to August 15th); unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist within five days of clearing (City of Ottawa, 2015).
2. Do not harm, feed, or unnecessarily harass wildlife.
3. Manage waste to prevent attracting wildlife to the Site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the Site, especially during warm weather.
4. Drive slowly and avoid hitting wildlife.
5. Manage stockpiles and equipment on Site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.
6. Check the entire work site for wildlife prior to beginning work each day.
7. Inspect protective fencing and/or other installed wildlife exclusion measures daily and after each rain event to ensure their integrity and continued function.
8. Monitor construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.
9. If SAR are encountered on the worksite, immediately stop all work and comply with the project-specific SAR protocol (where applicable; e.g., contact project Biologist to determine next steps).

5.3 Tree planting recommendations

The landscape plan will be developed as part of the detailed design. The EIS for this project (KAL, 2020), however, addresses the following:

- The species to be used for the given site conditions;
- The required use of native tree species;
- Where tree planting is required to provide protection for watercourses and steep slopes; and
- Proposed tree planting across the site.

The landscape plans for the floodplain areas of the Site to subject reanturalization are to include tree planting directives that will lead to at least 14.8 ha of forested area (including the swamp) at maturity. The landscape plans for residential areas of the Site are to include tree planting directives that will lead to 6% canopy cover at maturity (i.e. considering trees planted on private lots and in common areas).

6.0 OTHER REQUIRED INFORMATION

6.1 Owner contact information

Barrhaven Conservancy Development Coronation
2934 Baseline Road, Suite 302
Ottawa, ON K2H 1B2

Representative Contact:
Hugo LaLonde, Director, Land Development
Phone: 613-518-1864 ext. 503
Email: hugo.lalonde@caivan.com

6.2 Applicant contact information

Same as the owner

6.3 Consultant contact information

Kilgour & Associates Ltd.
Contact: Anthony Francis, Senior Ecologist

2285C St. Laurent Blvd. Unit C16
Ottawa, ON
K1G 4Z6

613-277-4027
afrancis@kilgourassociates.com

6.4 Contractor contact information

Not applicable.

6.5 Municipal address and legal description of the land

The full Barrhaven Conservancy Community is comprised of seven contiguous property parcels at 3285, 3288, 3300, and 3305 Borrisokane Road, and 4305, 4345, and 4375 McKenna Casey Drive are located on Concession 3 Lots 13 – 14 and Concession 4 Lots 13-15, and covers approximately 168 ha. The Site itself includes all portions of this area east of the Foster Ditch, covering an area of approximately 79 ha.

6.6 Official Plan and zoning designations, and the status of any planning applications on the property

The Site is zoned Developmental Reserve (DR) with a small portion along the Fraser Clarke corridor zoned as Parks and Open Space Zone (O1)

6.7 Purpose of this Tree Conservation Report

This report is a TCR prepared by KAL in support of the proposed residential development on the Site by BCDC.

6.8 Schedule of the proposed works

Site preparation is anticipated to begin by late summer of 2020, with home construction to begin in the fall of the same year. House closing will begin by spring of 2021 with final house sales to be completed by 2025.

6.9 Applications affecting the land

None.

7.0 CLOSURE

This report was prepared for exclusive use by Barrhaven Development Corporation and may be distributed only by Barrhaven Development Corporation. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

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Project Scientist

Bruce Kilgour, PhD
Principal

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8.0 LITERATURE CITED

Kilgour & Associates Ltd. 2019. Environmental Impact Statement - Barrhaven Conservancy Cut and Fill. November 20, 2019.

Kilgour & Associates Ltd. 2020 City of Ottawa Environmental Impact Statement for the Barrhaven Conservancy Development, July 22, 2018. Submitted to Barrhaven Conservancy Development Corporation.