Richmond Village Development Corporation – Laffin and Green Lands Integrated Environmental Review

Preliminary Report

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Submitted To:

Zeyad Hassan
Manager, Land Development

Richmond Village Development Corporation
2934 Baseline Road, Suite 302
Ottawa, ON
K2H 1B2

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com
Project Number: CAIV 1015

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List of Acronyms and Abbreviations

ANSI – Areas of Natural or Scientific Interest
cm – centimetres
CRZ – Critical Root Zone
DBH – Diameter at Breast Height
e.g. – *exempli gratia*
EIS – Environmental Impact Statement
ESA – *Endangered Species Act*
ESC – Erosion Sediment Control
i.e. – *id est*
IER – Integrated Environmental Review
ha - hectare
km – kilometre
m – metre
NEIA – Natural Environment & Impact Assessment Study
RVCA – Rideau Valley Conservation Authority

RVDC - Richmond Village Development Corporation
SAR – Species at risk
WDL – Western Development Lands

1.0 INTRODUCTION

This preliminary Integrated Environmental Review (IER), has been prepared by Kilgour & Associates Limited. on behalf of Richmond Village Development Corporation (RVDC) in support of their proposed residential developments in the Village of Richmond in Ottawa, Ontario.

The proposed residential developments will be an extension of their Fox Run community and will be constructed within three areas adjacent to the east, west and south sides of the existing Fox Run development (Appendix A1 – Figure 1). Two of the development areas, collectively referred to as the Green Lands sites, occur north of Perth Street, and consist of 6409 Perth Street and 6363 Perth Street (i.e. to the west the Fox Run community north of Perth Street), and 6295 Perth Street (i.e. to the east of Fox Run north of Perth Street). The third development area, referred to as the Laffin Lands site, is located southeast of Fox Run at 6305 Ottawa Street. The Green Lands sites collectively cover 17.8 hectares (ha); the Laffin Lands site is 7.2 ha. All areas subject to proposed development here are zoned DR – Development Reserve (City of Ottawa, 2020a).

Fox Run is part of a broader area of development within the Western Development Lands (WDL) located on the western edge of Richmond Village. Fox Run, including the Laffin and Green Lands sites specifically addressed within this report, are owned and are being developed by RVDC. For the Green Lands parcels, the residential development concept plan includes a mix of single-family homes (96 units) and townhomes (198 units). For the Laffin Lands parcel, the residential development concept plan includes a mix of single-family homes (42 units) and townhomes (169 units; Appendix A1 – Figure 2).

This IER has been written to meet the requirements of the City of Ottawa Official Plan (OP; 2020b), Section 4.7.1 – "*Integrated Environmental Review to Assess Development Applications*". It is a presented as a preliminary report to accompany the draft plans submission for the proposed development on the Laffin and Green Lands sites. This document presents information from studies completed to-date as part of the planning and approvals process for the proposed development. The studies reviewed will form part of the initial draft plan submission and, as such, have not yet been reviewed or approved by the City of Ottawa. The intent of the report is to summarize the natural heritage information from the various environmental studies and to indicate findings that will influence the detailed design of the proposed site plan.

Herein and as per OP Section 4.7.1 – Integrated Environmental Review to Assess Development Applications, Policy 2:

- a brief overview of the individual technical studies and other relevant environmental background material;
- graphic illustrations, showing the spatial features and functions (e.g. natural vegetation, watercourses,) as have been identified in the individual studies;
- a summary of the potential environmental concerns raised, the scope of environmental interactions between studies, and the total package of mitigation measures, including any required development conditions and monitoring, as recommended in individual studies;

- a summary of how the proposed design complies with the environmental policies contained in Section 4 of the OP;
- a statement with respect to how the recommendations of the support studies and the design with nature approach have influenced the design of the development; and
- an indication that the statement has been reviewed and concurred with by the individual sub consultants involved in the design team and technical studies.

This report has the following structure.

- Section 2.0 provides an overview of the environmental setting, as determined by the component studies.
- Section 3.0 provides a description of the proposed project.
- Section 4.0 discusses the potential environmental effects and required mitigation measures that are proposed by the proponent, or required by a regulating agency.
- Section 5.0 provides a summary of how the project and its proposed design comply with the environmental policies in Section 4 of the OP.
- Section 6.0 provides a statement on how the recommendations of the support studies and the "Design With Nature" approach have influenced the design of the development, per the requirements of Policy 4.7 of the OP.
- Section 7.0 is the statement that this IER has been reviewed and concurred with by the individual sub-consultants involved in the design and delivery of technical supporting studies.
- Appendix A provides figures and supporting documents.
- Appendix B provides a line-by-line review of Section 4.7 of the OP to demonstrate compliance of the proposed RVDC Development Plan with polices therein.

2.0 ENVIRONMENTAL CONDITIONS

The *Natural Environment & Impact Assessment Study* (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010) was a comprehensive study of natural heritage features as they are associated with the broader Fox Run area, including the Laffin and Green Lands sites. Updated studies specific to the Laffin and Green Lands sites were completed between 2018-2020. This section provides an overview of the various technical studies related to the Laffin and Green Lands sites and a summary of the environmental concerns identified.

2.1 Geotechnical

2.1.1 General Geotechnical Assessment

The preliminary geotechnical investigation of the Green Lands sites was carried out by Jacques Whitford (2007), with subsequent geotechnical investigations were carried out by Golder Associates Limited. (2020a). The area as having relatively flat topography, with undeveloped agricultural land usage (Jacques Whitford, 2007). In general, the subsurface conditions in Green Lands East and West consist of silty clay over sandy silt and glacial till (Golder Associates Limited, 2020a). The topsoil ranges in thickness from about 90 to 350 mm. Clay deposits were encountered at all the test hole locations across the Green Lands sites with a stiff crust extending to depths ranging from about 2 to 3 m below the existing ground surface. The depth to groundwater across the sites ranged from 0.4 to 1.1 m. A practical refusal to auguring of boreholes was encountered below the clay layer at a depth of 5.9 m below the ground surface indicating either the bedrock surface or cobbles/boulders in glacial till.

The most current geotechnical investigation for the Laffin Lands site was produced by Golder Associates Limited. (2020b). General site conditions on the Laffin Lands site are similar to the Green Lands sites with relatively flat topography, and undeveloped agricultural land usage (Golder Associates Limited, 2020b). Topsoil ranges in thickness from about 100 to 610 mm across the parcel, with a silty sand to sand and silt layer occurring below topsoil and fill over most of the site. The silty sand layer ranged in thickness from 0.8 to 2.5 m. A glacial till layer of predominantly silty sand to gravelly sand and silt was encountered below the silty sand layer over most of the site. Cobbles and boulders were observed in the till layer in some boreholes. Bedrock was encountered at depths of 2.7 to 3.1 m below ground surface. The bedrock is slightly weathered to fresh, grey limestone. The depth to groundwater across the sites ranged from 0.4 to 1.1 m. It is expected that the groundwater level will be subject to fluctuations both seasonally and as a result of precipitation events.

2.1.2 Soil Quality

A Phase I Environmental Site Assessment completed for the Green Lands sites identified several potentially contaminating activities on the sites including additions of fill to the areas and some limited fuel storage, but concluded that there were no resultant areas of potential environmental concern and that no additional study was required (Golder Associates Limited, 2020c).

A Phase I Environmental Site Assessment completed for the Laffin Lands site identified no potentially contaminating activities on the site and no areas of potential environmental concern. No additional study was required (Golder Associates Limited, 2020d).

2.2 Terrestrial Environment

The terrestrial environments the Green and Lafffin Lands sites were most recently described in the *Environmental Impact Statement - Richmond Village Development Corporation: Laffin and Green Lands* (Kilgour & Associates Limited, 2020a). This report reviewed natural heritage conditions on and near the site and also included the Tree Conservation Report for the proposed development. The area largely consists of agricultural fields (Kilgour & Associates Limited, 2020a). Open areas of both the Green Lands and Laffin Lands sites were planted in 2020 with soybean crops (Appendix A2 – Figure 3). Other vegetation

cover is limited to clusters of trees around the periphery of the crop fields and a small woodland feature on the Laffin Lands parcel.

The small woodlot on the Laffin Lands parcel is a 0.9 ha Fresh Moist Lowland Deciduous Forest Ecosite. This forest type is commonly associated with disturbed sites (Kilgour & Associates Limited, 2020a). The canopy in the woodlot was historically dominated by Green Ash (*Fraxinus pennsylvanica*.; Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010). Emerald Ash Borer infestation has led to the dominant canopy species now being Manitoba Maple (*Acer negundo*), followed by dead Green Ash. The shrub layer and understory of the woodlot is dominated by Manitoba Maple and Green Ash saplings and Common Buckthorn (*Rhamnus cathartica*). There are several signs of historical and ongoing disturbance throughout the woodlot, such as old furniture, sheet metal, rolls of wire, garbage, felled trees, and piles of chopped wood. There are informal footpaths throughout the woodlot. The woodlot also contains some non-native species such as Stonecrop (*Sedum* spp.), likely disbursed from nearby residential gardens. The woodlot is not considered a significant woodland (Kilgour & Associates Limited, 2020).

The tree community in the remainder of the development site (i.e. trees with a diameter at breast height [DBH] >10 centimetres [cm]) consisted of 12 common species of trees (i.e. no rare or at risk species) scattered along the perimeters of agricultural fields (Kilgour & Associates Limited, 2020a).

No other wooded areas (i.e. significant woodlands or otherwise) are located within 180 m of the Laffin or Green Lands sites. No other significant terrestrial features (e.g. valley lands, Areas of Natural or Scientific Interest [ANSI], rural natural features, significant wetlands) are located within 1 kilometre (km; Kilgour & Associates Limited, 2020a; Appendix A1 -Figure 1).

2.3 Aquatic Environment

The aquatic environments of the Green and Lafffin Lands were most recently described in the *Environmental Impact Statement - Richmond Village Development Corporation: Laffin and Green Lands* (Kilgour & Associates Limited, 2020a). One watercourse occurs adjacent to the Laffin Lands site, and two occur adjacent to the Green Lands sites (Appendix A2– Figure 3). An extension of the Moore Branch is located within the Queen Charlotte Street right of way adjacent to the east side of the Laffin Lands site. The feature begins at the northeastern tip of the Laffin Lands parcel, receiving roadway runoff from Queen Charlotte Street and flows into the channel of the Moore Branch (Appendix A2 – Figure 3). The banks and substrate of the Moore Branch channels are dominated by clay and silt. Vegetation in the Moore Branch consisted of terrestrial grasses and herbs with riparian shrubs and trees. Bank-side vegetation provided nearly 100% canopy cover of the channel in summer. Minor woody debris was observed at several locations (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010; Kilgour & Associates Limited, 2020a).

The main channel of the Moore Branch is an intermittent feature that provided habitat for 15 species of fish (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010). The Moore Branch extension closest to the Laffin Lands site briefly contained water during the spring freshet, was heavily vegetated with grasses and raspberry (*Rubus spp*.), and did not appear to directly support a fish community (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010, Kilgour & Associates Limited, 2020a).

The main channel of the Van Gaal Drain is located near the western edge of the eastern Green Lands site (Appendix A2 – Figure 3). The confluence of two tributaries form the main channel of the Van Gaal Municipal Drain (Appendix A2 – Figure 3). The eastern tributary, which has limited intermittent flows, is designated as part of the municipal drain. The western tributary has (near) permanent flows and contributes most of the water to the main channel, but does not have municipal drain status. The main channel is sinuous and flows from west to east through the Fox Run Phase 2 area. The Van Gaal Municipal Drain becomes the Arbuckle Drain south of Perth Street (Kilgour & Associates Limited, 2020b).

The main channel of the Van Gaal Drain and the eastern tributary will be realigned eastward in the summer of 2020 (Appendix B1 – Figure 2). The new channel will be adjacent to the the western edge of the eastern Green Lands parcel. The realignment of the Van Gaal Drain has been reviewed and approved by Fisheries and Oceans Canada and the Rideau Valley Conservation Authority (RVCA; Appendix B3). No wetlands (provincially significant or otherwise) occur on or adjacent to the site (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010).

2.4 Species at Risk

Species at risk (SAR) potential at the Green and Lafffin Lands was most recently reviewed in the *Environmental Impact Statement - Richmond Village Development Corporation: Laffin and Green Lands* (Kilgour & Associates Limited, 2020a). Four SAR ware considered to have some potential to interact with the proposed development: Eastern Wood-pewee (*Contopus virens*), Little Brown Bat (*Myotis lucifugus*), Tri-Coloured Bat (*Perimyotis subflavus*), and Blanding's Turtle (*Emydoidea blandingii*).

Of the four species, only Eastern Wood-pewee, a Special Concern Species under the *Endangered Species Act* (ESA), was considered to have specific habitat on or adjacent to the proposed development area, with the small woodlot on the Laffin Lands parcel providing potential nesting habitat, albeit of low quality (Kilgour & Associates Limited, 2020a). This habitat area will be removed under the proposed development. The ESA does not confer specific habitat protection to the species. Under the ESA, habitat protection for species of special concern is to be provided through individual species management plans, which has not yet been done for this species.

Little Brown Bat and Tri-Coloured Bat could potentially use larger snags on the site or in the broader vicinity during the breeding season in June, or transiently at any point in the active season between April and mid-August (Kilgour & Associates Limited, 2020a). Snags on site will continue to be removed regardless of proposed development in consideration of human safety.

Observations of Blanding's Turtle exist along the Arbuckle Drain and within the urban areas of the Village of Richmond (Kilgour & Associates Limited, 2020a). An observation within the Arbuckle Drain was a carcass found on the banks of the drain in June 2019 (i-Naturalist, 2020). Additional records were of turtles spotted walking along streets of the community. The Van Gaal Drain is a hard-bottomed channel with swift flows during the spring freshet and minimal water levels through the remainder of the season. No vegetation currently remains along the channel adjacent to the Green Lands parcels as preparatory work for the channel realignment was begun in 2019 (Kilgour & Associates Limited, 2020a). The Moore Branch does not retain sufficient wetted width beyond the spring freshet to support turtles (Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited, 2010). Neither feature provides suitable wet space to form a basis for consideration of protected Category 2 habitat areas (general summer habitat),

or Category 3 habitat areas (travel ways; Ministry of Natural Resources and Forestry, 2014). As such, the proposed development is not considered to constitute a negative impact to the habitat of this species.

3.0 PROPOSED UNDERTAKING

The proposed project is an extension of the Fox Run residential community on to the Laffin Lands and Green Lands parcels (Appendix B1 – Figure 2).

For the Green Lands parcels, the residential development concept plan includes a mix of single-family homes (96 units) and townhomes (198 units) on the western parcel, and 42 single family homes on the eastern parcel (David Schaeffer Engineering Limited, 2020) The western parcel includes the development of a 1.1 ha park and ~0.6 ha landscaped area of riparian vegetation. The edge of the eastern parcel extends into the realigned corridor of the Van Gaal Drain, with 1.1 ha landscaped area of riparian vegetation. The residential units within both portions of the Green Lands site will share servicing with the existing Fox Run development. Site preparation is anticipated to begin by mid-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 2023.

For the Laffin Lands parcel, the residential development concept plan includes a mix of single-family homes (42 units) and townhomes (169 units; David Schaeffer Engineering Limited, 2020). The parcel does not include space for parks or stormwater management. The design and construction for servicing for this parcel will be coordinated with that of the adjacent lands being developed by Mattamy Homes Limited. As such, specific dates for commencement and completion of construction for this parcel have not been confirmed.

3.1 Water Supply Servicing

Water servicing for the Green Lands western site was contemplated in the Village of Richmond Water and Sanitary Master Servicing Study (MSS) prepared by Stantec Consulting Limited (2011). The design concept consisted of a new public communal well system connected to the deep aquifer; the facility is now operational within the existing Fox Run community (David Schaeffer Engineering Limited, 2020).

The Green Lands West area will be serviced internally by 150 mm, 200 mm and 300mm diameter watermains. The internal watermains will connect to watermain stubs that were installed as part of the Phase 1 development of the Fox Run community (a 300mm diameter stub to be extended from Equitation Circle across Perth Street) and the Phase 2 (north) construction from Oldenburg Avenue (and from future watermain installations from extensions of Oldenburg Avenue).

The water supply for the Green Lands eastern site is still under consideration (David Schaeffer Engineering Limited, 2020). While the original design concept for the broader area (per the MSS; Stantec, 2011) generally made use of the communal well for all of the WDL, it did not specially consider the Green Lands eastern site, which is separated from the remainder of the community by the Van Gaal Drain (David Schaeffer Engineering Limited, 2020). The constraint imposed by the adjacent Van Gaal Drain lends to the preference to have the Green Lands eastern site serviced by private wells. Any extension of the communal well distribution network would require a minimum of one directional drilled crossing of the Van Gaal

Drain which increases the potential for future increased maintenance costs for the City that could be avoided (David Schaeffer Engineering Limited, 2020).

Similar to the Green Lands West, the Laffin Lands were considered within in the MSS and are still proposed to be serviced by the communal well (David Schaeffer Engineering Limited, 2020). Watermain services, however, will have to be coordinated with the future advancement of the detailed design of the Mattamy property adjacent to the Laffin Lands.

3.2 Wastewater Management

The Village of Richmond is serviced primarily by City of Ottawa sanitary sewers that convey wastewater to the Richmond Pumping Station located south of the Jock River, on the northwest corner of Cockburn Street and York Street. The Richmond Pumping Station discharges to the Glen Cairn Trunk Sewer just south of Hazeldean and Robertson Road in Kanata (David Schaeffer Engineering Limited, 2020).

The Laffin and Green Lands will be serviced by new gravity sewers designed in accordance with City of Ottawa design criteria which will connect to the existing sanitary sewer infrastructure constructed during the development of Fox Run Phase 1 and Phase 2 (North) areas (David Schaeffer Engineering Limited, 2020).

3.3 Stormwater Management

Stormwater conveyance for the Green Lands and Laffin Lands sites were originally contemplated in the *Stormwater Management Report for Richmond Village (South) Limited* (now known as RVDC; David Schaeffer Engineering Limited, 2013). Stormwater conveyance for the Green Lands sites will conform to this report, however, it is proposed that the Laffin Lands will deviate and pursue an alternate servicing arrangement (David Schaeffer Engineering Limited, 2020).

The western area the Green Lands site will be serviced by a storm sewer system that will ultimately outlet to Storm Water Management (SWM) Pond 1. Pond 1 was designed and approved as a component of the existing Fox Run development south of Perth Street (David Schaeffer Engineering Limited, 2020). The eastern Green Lands site will also be conveyed through to SWM Pond 1. Stormwater discharge from the Laffin Lands site will be subject to coordinated planning with Mattamy Homes as part of their community development site planning on the adjacent lands to the south and west (David Schaeffer Engineering Limited, 2020).

4.0 POTENTIAL EFFECTS AND MITIGATION

4.1 Geotechnical

4.1.1 Anticipated Effects

The Green Lands sites are underlain by compressible silty clay; if the grade is raised excessively, significant consolidation settlement will occur (Golder Associates Limited, 2020a). Following servicing of the site (as will typically occur in advance of house construction), some lowering of the groundwater level is expected (Golder Associates Limited, 2020a)

For the Laffin Lands site, following servicing of the site some lowering of the groundwater level is also expected (Golder Associates Limited. 2020b). Laboratory testing of site soils is ongoing at this and will include moisture contents, and grain size distribution analysis to aid in the classification of the soil.

4.1.2 Required Mitigation

Based on the conditions encountered in the boreholes adjacent to the Green Lands sites, as well as preliminary field results from the current investigation, it is anticipated that the grade raise restrictions will be similar to the adjacent areas currently in development and will likely range from about 1.3 to 1.5 m at houses and about 2 m at roadways (Golder Associates Limited, 2020a). Achieving grade raises within these limits will likely require the use of lighter unit weight grade raise fills (i.e. unit weights ranging from 19.5 to as low as 18 kiloNewtons/m^3; Golder Associates Limited, 2020a)

Conventional houses could be supported on shallow foundations founded on or within the native silty sand or the glacial till deposit in the Laffin Lands site. Strip footing foundations may be designed using a maximum allowable bearing pressure of 125 kPa. As such, the house footings may be sized in accordance with Part 9 of the Ontario Building Code (Golder Associates Limited., 2020b).

As a general guideline regarding the site grading, the preparation for filling of the Laffin Lands site should include stripping the topsoil for predictable performance of structures and services (Golder Associates Limited., 2020b). The site is generally underlain by loose to very dense native silty sand and silty sand till and therefore, grade raises typical for low-rise sub-divisions should not be an issue for this site.

The soils at both the Green Laffin Lands sites are sensitive to disturbance from ponded water, construction traffic, and frost. If construction is carried out during periods of sustained below freezing temperatures, all subgrade areas should be protected from freezing (e.g. by using insulated tarps and/or heating).

A permit to take water may be required depending on proposed construction plan and timing of construction.

4.2 Erosion and Sediment

4.2.1 Anticipated Effects

Soil erosion occurs naturally and is a function of soil type, climate and topography (David Schaeffer Engineering Limited, 2020). The extent of erosions losses is exaggerated during construction where the vegetation has been removed and the top layer of soil is disturbed.

4.2.2 Required Mitigations

An erosion and sediment control (ESC) plan must be developed prior to the commencing construction by the project engineers. The ESC plan must include, at a minimum, the following considerations (David Schaeffer Engineering Limited, 2020):

- Erosion and sediment controls (ESC) must be in place during construction. The following recommendations to the contractor will be included in contract documents.
- Limit extent of exposed soils at any given time.

- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Installation of mud mats at construction accesses.
- Construction of temporary sedimentation ponds to treat water prior to discharging into existing wetlands and watercourses.

4.3 Trees

4.3.1 Anticipated Effects

All trees and other vegetation will be removed from the proposed development areas. This includes the removal of the woodlot on the Laffin Lands site, and ~201 live trees from the remainder of the proposed development areas. The remaining vegetation on the site currently consists of soybean crops. The agricultural fields will be removed.

4.3.2 Required Mitigations

To minimize impacts to trees adjacent to the site, the following general protection measures are recommended as necessary during construction:

- Tree removal on Site should be limited to that which is necessary to accommodate construction.
- To minimize impact to remaining trees during Site development:
    - Erect a fence beyond the critical root zone (CRZ; i.e. 10x the DBH) of trees. The fence should be highly visible (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 trees;
    - Do not attach any signs, notices, or posters to any trees;
    - Do not raise or lower the existing grade within the CRZ of trees without approval;
    - Tunnel or bore when digging within the CRZ of a tree;
    - Do not damage the root system, trunk, or branches of any remaining trees; and
    - Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.

Specific trees to be planted on the site will be identified in the landscape plan for the development, which has not yet been completed. Tree species identified in the landscape plan must be non-invasive and should be both native to the Ottawa area and tolerant of the site's new urban setting. Recommended tree species to consider in the landscaping plan include Red Maple (*Acer rubrum*), White Spruce (*Picea glauca*), Pin Cherry (*Prunus pensylvanica*), White Birch (*Betula papyrifera*), Black Cherry (*Prunus nigra*), Eastern White Cedar (*Thuja occidentalis*) and Serviceberry (*Amelanchier* spp.). Bur Oak may be considered where spacing allows for future showcase trees. Common Juniper (*Juniperus communis*), Maple-leaf Viburnum (*Viburnum acerifolium*), Nannyberry (*Viburnum lentago*) and Northern Bush-honeysuckle (*Diervilla lonicera*) may be considered as appropriate shrub species.

Trees are to be planted at a minimum of one tree per lot, with additional tree plantings to be included where feasible (e.g., in larger single lots, at the ends of rows of townhomes and/or in other public areas such as the proposed park on the Green Lands site) with a target of planting the equivalent of 1.5 trees per lot through the community. Tree planting along the realigned Van Gaal Drain corridor has been planned separately as part the realignment works and will not count towards the required tree count for this project.

In general, weathered silty clay soil has the potential to be sensitive to water depletion by trees of high-water demand during periods of dry weather. When trees draw water from the clayey soil, the clay may undergo shrinkage which can result in settlement of adjacent structures. It should be noted that tree planting restrictions varied across the previously developed areas of the Fox Run community depending of different soil deposits encountered (Golder Associates Limited., 2020a). Planting restrictions have not yet been determined for this project.

Removal of trees can only be undertaken following appropriate consultation with City planning staff.

4.4 Fish and Fish Habitat

4.4.1 Anticipated Effects

No surface water features are located directly within the proposed development areas, though the Moore Branch, the Van Gaal Drain (once it is realigned) and the western tributary to the Van Gaal Drain are located adjacent to the development (AppendixAB1 – Figure 2). The proposed development is set back from all three features by 30 m or more (in accordance with the required setbacks), and the corridors along these channels will be revegetated. All three features currently have active agriculture within 15 m or less of the channels. The proposed development increases the width of the natural riparian buffer along the channels. As such, no negative impacts are anticipated to these features (Kilgour & Associates Limited, 2020).

4.4.2 Required Mitigation

Construction works near water during the development of the residential community will, at minimum, require standard erosion and sediment control mitigation measures to protect receiving waters from sediment-laden runoff, including:

- a multi-faceted approach to provide erosion and sediment control;

- retention of existing vegetation and stabilize exposed soils with vegetation where possible;
- limiting the duration of soil exposure and phase construction;
- limiting the size of disturbed areas by minimizing nonessential clearing and grading;
- minimizing slope length and gradient of disturbed areas;
- refuelling of machinery should occur >30 m from any watercourse;
- maintaining overland sheet flow and avoid concentrated flows; and
- storing/stockpiling all soil away (e.g. greater than 30 m) from watercourses, drainage features and top of steep slopes.

4.5 Species at Risk

4.5.1 Potential Effects

Four species at risk were consider to have some potential to interact with proposed development: Eastern Wood-pewee, Little Brown Bat, Tri-Coloured Bat, and Blanding's Turtle (Kilgour & Associates Limited, 2020a).

A management plan for Eastern Wood-pewee has not yet been produced by either the Ministry of Natural Resources and Forestry or the Ministry of Environment Conservation and Parks directing specific habitat mitigation requirements. Restricting the removal of trees on the site to outside of the active nesting season will prevent negative impacts (harm) directly to individual birds.

Restricting the removal of trees on the site to outside of the active bat season will prevent potential negative impacts (harm) directly to individual bats.

The proposed development does not impact the habitat of Blanding's Turtles, but it is possible that Blanding's Turtles could occur near new residential areas if travelling along the Moore Branch or the Van Gaal Drain. The application of appropriate structural design elements along the channels will prevent turtles travelling through the Village of Richmond from straying from the naturalized corridors, thereby limiting the potential for harm to individuals by traffic. With the application of appropriate mitigation measures, the potential for negative impacts to species at risk can be minimized.

4.5.2 Required Mitigation

4.5.2.1 Eastern Wood-pewee

To protect Eastern Wood-pewee, the removal of trees from the woodlot on the Laffin Lands site is not to occur during the active nesting season for non-stick nesting birds (April 15 to August 15; City of Ottawa, 2015b). The removal of other site trees (i.e. outside of the FOD7 forest on the Laffin Lands) may be completed during the active nesting season only if the absence of nesting birds in trees to be cut has been confirmed by a qualified biologist within five days prior to cutting.

4.5.2.2 Bats

Occurrences of roosts (maternal or otherwise) could occur within any given year the woodlot on the Laffin Lands site. Suitable trees within that feature (i.e. snags), however, provide a human health risk and will be regularly removed regardless. The removal of trees from the woodlot on the Laffin Lands site is not to occur during the maternal roosting season (June to mid-August). The removal of other site trees may be

completed between April 1 August 15 only if the absence of bats in trees to be cut has been confirmed by a qualified biologist within five days prior to cutting.

4.5.2.3 Blanding's Turtles

No turtles were observed on or near the project area during any Kilgour & Associates Limited surveys, but limited potential for transient individuals exists. To prevent potential impacts to Blanding's Turtles, the proponent must implement the following measures during the construction phase:

- All areas subject to active works during the turtle nesting season (May 15-July 15; MNFR 2015) require the installation of temporary exclusion fencing around the perimeter prior to May 15. Properly installed and maintained standard silt fence can function as exclusion fence (Appendix B4);

- Prior to vegetation clearing, pre-construction sweeps of vegetated areas should be undertaken to ensure turtles are not present; and

- If possible, vegetation clearing should be undertaken outside of the active season of Blanding's turtle (generally taken to be April 1st to October 30th).

The fencing behind residential units backing on to either the Van Gaal Drain or the Moore Branch is recommended to be designed and installed as permanent turtle exclusion fencing (Appendix 4) to ensure transient turtles potentially using these features as travel corridors do not stray from those routes while transiting the community. Roadway crossing of these features must be designed to direct turtles under roadways (e.g. oversized culverts with an appropriate openness ratio and with vertical headwalls).

4.5.2.4 Composite Mitigation

Bat, bird and turtle species at risk potentially occurring in the area imposed the need for mitigation measures related to the acceptable timing windows for vegetation and tree clearing. Each group imposes slightly different timing window, though there is considerable overlap. To accommodate all three groups, no vegetation clearing should be permitted in the woodlot on the Laffin Lands site between April 1st and August 30th. Vegetation clearing on other portions of the development area may proceed during this period if the area has been checked for bats and birds by a qualified biologist, prior to clearing, in accordance with recommendations for each species group. Vegetation clearing during the months of April thru October inclusive should begin by pre-stressing the area to be cleared by running loud equipment for several minutes before commencing the clearing work.

4.6 General Wildlife

4.6.1 Potential Effects

Common wildlife species were observed on site, all of which are represented throughout the developed adjacent landscape. With the application of appropriate mitigation measures, the potential for negative impacts to these species can be minimized.

4.6.2 Required Mitigation

The following mitigation measures should be implemented during construction of the project to generally protect wildlife (Kilgour & Associates Limited, 2020a):

- Areas shall not be cleared during sensitive times of the year for wildlife (breeding season; early spring to early summer), unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist.
- Do not harm, feed, or unnecessarily harass wildlife.
- 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.
- Drive slowly and avoid hitting wildlife.
- 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.
- Check the entire work site for wildlife prior to beginning work each day.
- Inspect protective fencing and/or other installed wildlife exclusion measures daily and after each rain event to ensure their integrity and continued function.
- Monitor construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.
- 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).
- Buildings on Site should be inspected to ensure the absence of snakes, bats, and any other wildlife immediately prior to demolition. Bats may day-roost in buildings while snakes may be present in building foundations/walls in search of food, shelter, and/or overwintering habitat. Any wildlife present in buildings should be removed and safely relocated by a qualified person.
- The *Migratory Birds Convention Act* (Government of Canada, 1994) protects the nests and young of migratory breeding birds in Canada. The clearing of trees or vegetation should not take place between April 1 and August 15 unless a qualified Biologist has determined that no nesting is occurring within 5 days prior to the clearing (City of Ottawa, 2015).
- Follow the best practices for the construction and maintenance of bird-safe buildings, such as applying visual markers on windows to prevent birds from colliding with glass and reducing the intensity and direction of night lighting (turn off lights at night if possible). See https://flap.org/workplaces-safe-for-birds/ for more resources and tips on designing and maintaining bird-friendly buildings.

5.0 COMPLIANCE WITH POLICY 4.7 – ENVIRONMENTAL PROTECTION

A number of studies have been required by the City of Ottawa in the completion of an Integrated Environmental Review to assess a development application (Table 1). The study requirements and status for the development application demonstrate compliance to the requirements of the Official Plan.

Table 1. Demonstrated compliance with Policy 4.7 Environmental Protection

OP Section	Studies/Assessment Required	Where Required	Relevant Study and Status	Summary of Issue
4.7.1	Integrated environmental review to assess development applications	Summary of all environmental studies/assessments submitted with development application	This document	
4.7.2	Tree retention and planting	All plans of subdivision and site plans	Kilgour & Associates Limited (2020a)	All existing trees on site will be removed. Trees will be planted at a target density of 1.5 trees per lot. The final landscape plan, however, has not been completed,
4.7.2	Demonstrate no impact on the natural features or on the ecological function for which the area is identified	On lands adjacent to significant portions of the habitat of endangered and threatened species	Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited (2010) KAL (2020a)	No valued woodlands, urban or rural natural areas, rare communities, wetlands, steep slopes or valleys, or ANSIs were observed on the site.
4.7.3	Demonstrate no negative impact on fish habitat; If there is impact – review by Department of Fisheries and Oceans	On or adjacent to fish habitat	Kilgour & Associates Limited (2020a)	The Van Gaal Municipal Drain is to be realigned prior to construction on the Green Lands site as part of a separate project. The channel will be setback >30 m of the rear lot lines.
4.7.3	Erosion and sediment control plan	All development proposals	David Schaeffer Engineering Limited (2020)	ESC Plan requirements are detailed within the Design Brief.
4.7.3	Determine appropriate setback from rivers, lakes and streams	Development proposals adjacent to rivers, lakes and streams	Kilgour & Associates Limited, Parish Geomorphic & Mattamy Homes Limited (2010)	Setback for the Arbuckle Municipal Drain is equal to the 100 yr floodplain.
4.7.5	Hydrogeology/terrain analysis	Subdivisions based on private services	Study not required.	Subdivision based on shared / public services.

OP Section	Studies/Assessment Required	Where Required	Relevant Study and Status	Summary of Issue
4.7.5	Groundwater impact assessment	Groundwater resources areas	Golder Associates Limited. (2020a; 2020b)	Ground water levels may be lowered in the area.
4.7.5	Wellhead protection study	Wellhead Protection Area designated on Schedule K	OP Schedule K (City of Ottawa, 2020b)	The Fox Run development is within a wellhead protection area.
4.7.6	Stormwater site management plans	Site plan and subdivision and zoning amendment applications	David Schaeffer Engineering Limited (2020) SWM Pond Plan – Appendix B4	New community areas within the Green Lands site will connect to the proposed/approved SWM pond with outlet to the Arbuckle Municipal Drain. SWM facilities for development on the Laffin Lands site are still being planned
4.7.7	Assessment of landscape feature	Geomorphic, Geological and Landform feature (designated on Schedule K); Features (e.g. ANSI) identified in other studies	Study not required.	No Features as identified on Schedule K of the City of Ottawa Official Plan.

6.0 INCORPORATION OF DESIGN WITH NATURE PRINCIPLES

Section 4.7 – Environmental Protection of the City of Ottawa Official Plan identifies planning objectives to support natural features and functions in the development of lands within the City (City of Ottawa, 2020b). The stated objectives are:

- Increasing forest cover across the city;
- Maintaining and improving water quality;
- Maintaining base flows and reducing peak flows in surface water;
- Protecting and improving the habitat for fish and wildlife in stream corridors;
- Protecting springs, recharge areas, headwater wetlands and other hydrological areas; and
- Managing resources by using low-maintenance, natural solutions.

The City of Ottawa desires that land developments achieve these objectives through design with nature. The purpose of this section is to demonstrate the compliance of the proposed development with the design with nature principles.

In support of the development application by RVDC, the various studies described above have been completed to identify significant natural resources that may be present on the site.

There were no significant environmental occurring on or being retained on the site.. That being said, the development application does support environmental initiatives identified by the City of Ottawa, as demonstrated above in Section 6. Additional measures are:

- The development area currently has limited tree coverage. While the residential development cannot produce new forest areas, canopy cover will be enhanced through tree plantings;
- Surface water drainage will be routed through City approved stormwater management systems so that objectives for stormwater quality will be met during and post construction; and
- The proposed project is being carried out in an area that does not and has not contained significant wetland habitat, or significant habitat for species considered rare, threatened or endangered species.

6.1 Integration of Energy Efficiency and Sustainable Design

Section 4.7 – Environmental Protection of the City of Ottawa Official Plan (City of Ottawa, 2020b) call for a description of how efficient and sustainable design principles have been incorporated into new developments following a Sustainable Design Checklist (now known as the Green Checklist; Table 2).

Table 2. City of Ottawa Site Plan Control Approval Green Checklist

ID	Question	Response
1a	Does the project proponent intent to seek LEED certification for this project?	No
1b	If yes, which level of LEED certification is the project intended or designed to meet?	None
1c	Will this project be seeking certification under another third-party green building rating system?	No
2	Will this project include renewable energy facilities and pursue a FIT or MicroFIT contract under the Ontario Power Authority's Feed-in Tarrif program?	No
3	Which features is the project designed to incorporate?	None

7.0 CLOSURE

The following persons have read this Integrated Environmental Review and agree that this document provides a reasonable summary of the highlights of their individual component studies.

Natural Environment, Aquatic Habitat, Tree Conservation Kilgour & Associates Limited: Anthony Francis, PhD	**Geotechnical Investigation and Site Environmental Assent** Golder Associates Limited:
Stormwater Management David Schaeffer Engineering Limited: Kevin L. Murphy, P.Eng.	

8.0 LITERATURE CITED

City of Ottawa. 2015. Protocol for Wildlife Protection during Construction. Availalable at: http://ottwatch.ca/meetings/file/309612/_Document_1_Protocol_for_Wildlife_Protection_During_Construction_pdf_Item_PROTOCOL_FOR_WILDLIFE_PROTECTION_DURING_CONSTRUCTION_UPDATED_Meeting_Planning_Committee_Date_2015_09_22_09_30_00

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David Schaeffer Engineering Limited. 2020. Functional Servicing Report for Green Lands West & East, Laffin Lands (Western Development Lands) Richmond Village Development Corporation. July 2020.

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Ministry of Natural Resources and Forestry, 2015. Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario.

Stantec Consulting Limited. 2011. Village of Richmond Water and Sanitary Master Servicing Study. Report date: June, 2011.

Appendix A
Figures and Supporting Documents

Appendix B1 – General Site Plans

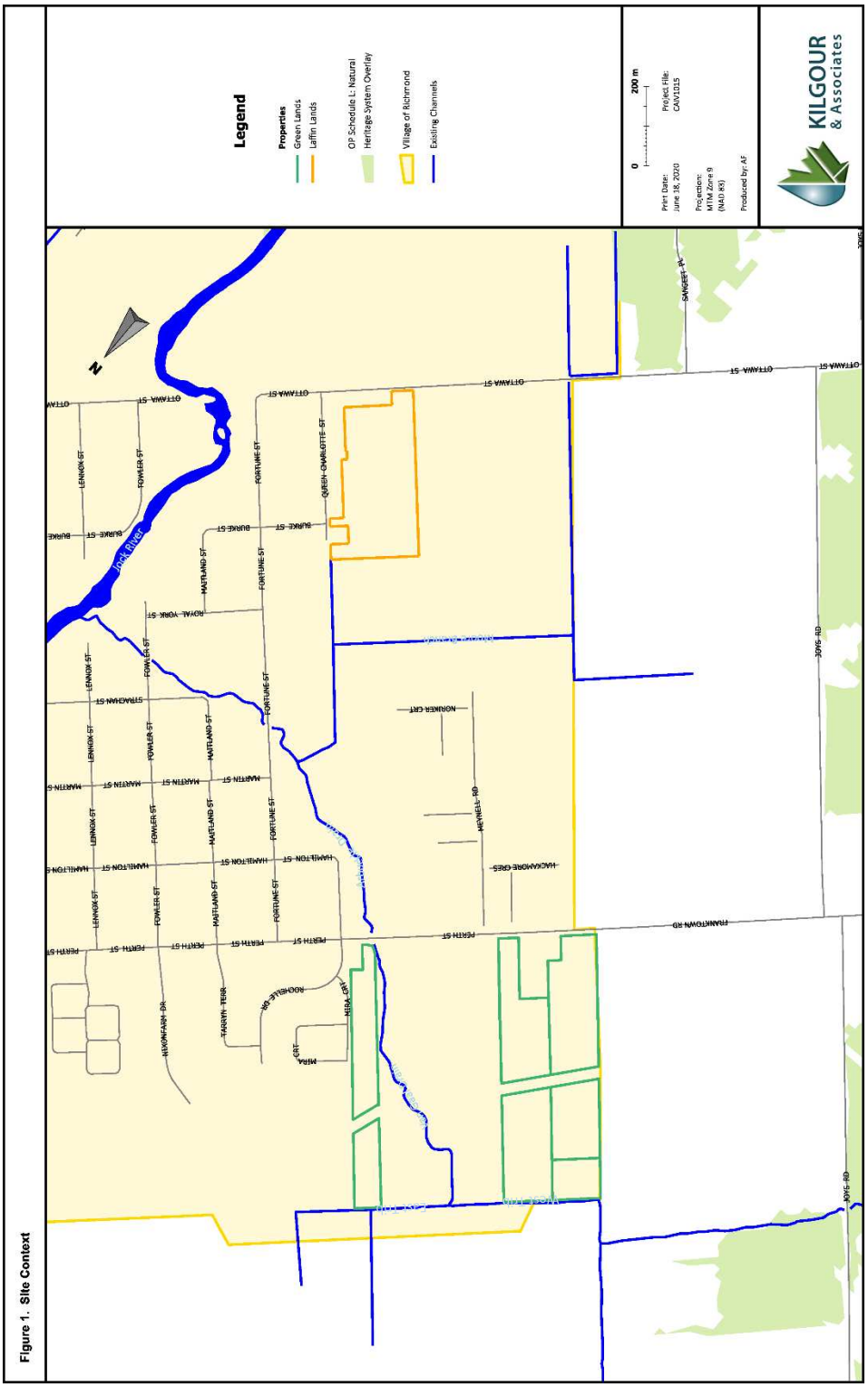


Figure 1. Site context

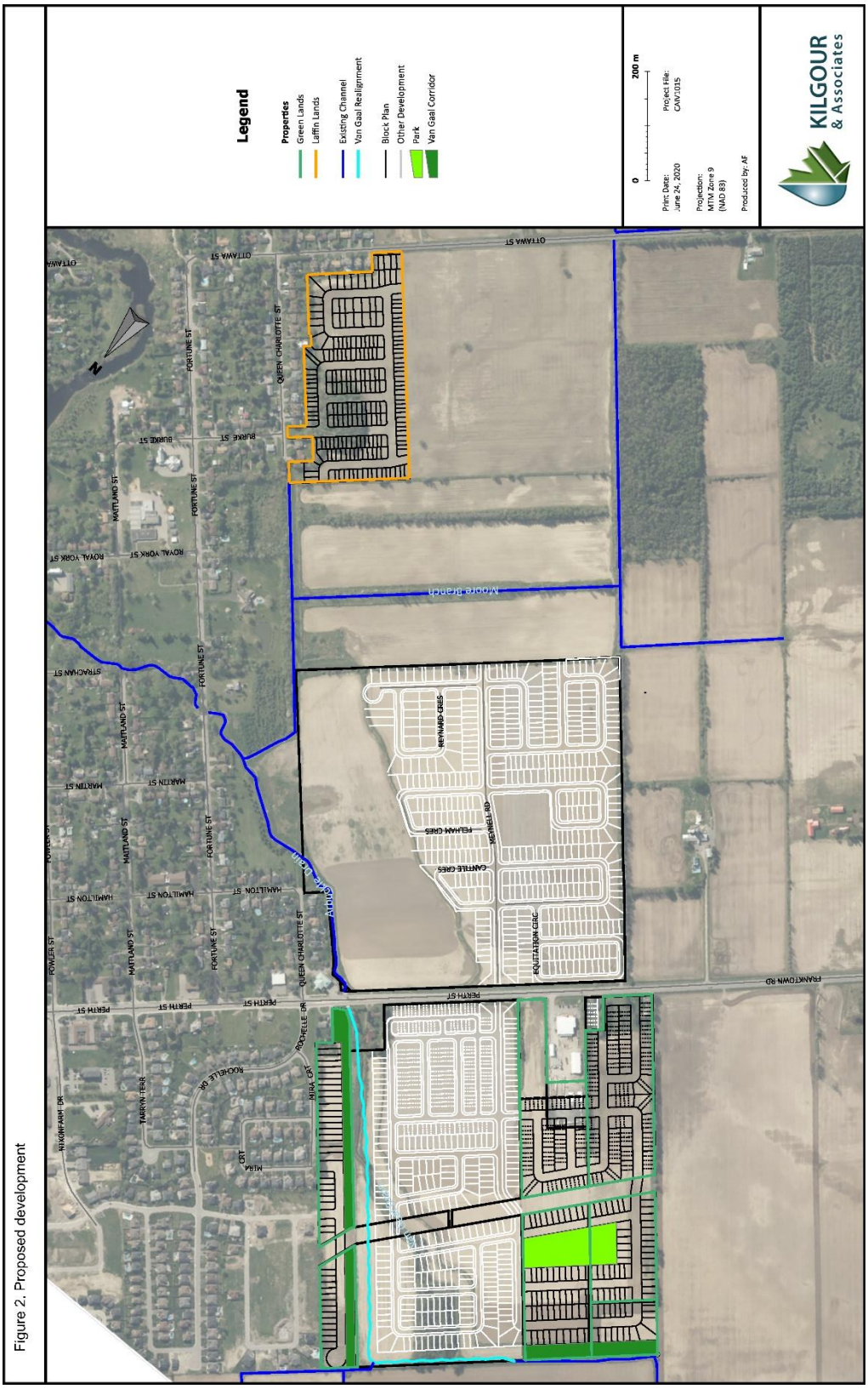


Figure 2. Proposed development

Figure 2. Proposed site development

Appendix B2 - Site natural heritage

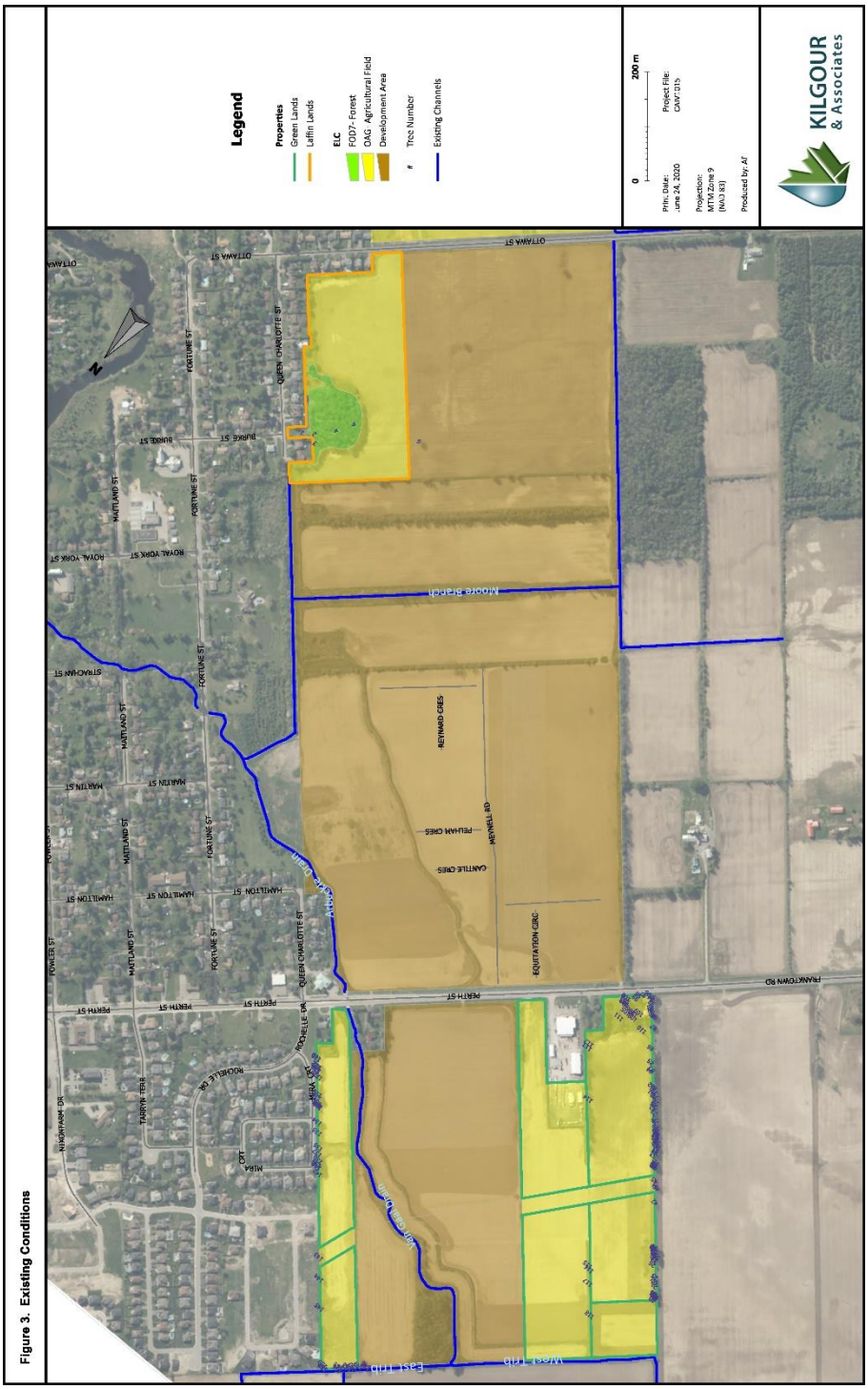


Figure 3. Existing site conditions

Appendix B3 – Permits to Alter the Van Gaal Drain

RVCA Letter of Permission —

Ont. Reg. 174/06, S. 28 *Conservation Authorities Act* 1990, As Amended.

January 23, 2020
File: RV5-2919
Contact: hal.stimson@rvca.ca (613) 692-3571 Ext 1127

Rideau Valley Conservation Authority

3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504
F 613-692-0831 | www.rvca.ca

Mr. David Ryan
City of Ottawa
2155 Roger Stevens Dr.
North Gower, ON
K0A 2T0

Permit to alter a waterway under Section 28 of the *Conservation Authorities Act* for alterations to a municipal drain at Lot 22, Concession 3, Goulbourn Township, now in the Citv of Ottawa.

Dear Mr. David Ryan,

The Rideau Valley Conservation Authority has reviewed your application on behalf of the City of Ottawa and understands the proposal to be for:

> **The realignment of the Van Gaal Municipal Drain in accordance with the amended engineers report as prepared by Robinson Consulting dated January 2019 and approved by Ottawa City Council in June 2019. The watercourse is a tributary of the Jock River and is being relocated to accommodate area development. The new design is features natural channel design principles and upon completion is intended to reconfigure the existing flood plain. Final grades will need to be confirmed and submitted prior to RVCA accepting a change to the regulatory flood plain limits.**

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands, and Alteration to Watercourse and Shorelines*" regulation and the RVCA Development Policies (approved by the RVCA, Board of Directors), specifically Section 3.0 Alteration to Waterways. The proposal is not expected to impact the control of flooding, pollution, erosion or conservation of land providing conditions are followed.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans including:
    - Report titled "Amendments to the Engineer's Report for the Van Gaal Municipal Drain", Project No. B13056 prepared by Robinson Consultants Inc. Consulting Engineers dated January 2019.

- Drawing by NAK Design Strategies entitled Planting Plan III, Revision 9 dated May 30, 2019.
- Drawing by Coldwater Consulting Ltd. entitled Sections, Village of Richmond Channel Re-Alignment, Revision 6, dated May 27, 2019.
- Drawing by Coldwater Consulting Ltd. entitled Village of Richmond Channel Re-Alignment, Revision 6, dated May 27, 2019.

2. **A De-watering Plan and Sediment and Erosion Control Plan must be submitted by the contractor to this office for review prior to construction activities commencing.**

3. Any excess excavated material, as a result of the work or on-going maintenance, must be disposed of off-site in accordance with the Engineers Report or in a suitable location outside any regulatory floodplain and fill regulated area. RVCA must be consulted to ensure fill is not placed elsewhere within a flood plain.

4. It is recommended that you retain the services of a professional engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grade and slopes and confirm all imported fill is of suitable type and has been adequately placed and compacted.

5. **A final as built grading plan shall be submitted upon completion of the approved works prepared by an Ontario Land Surveyor or Professional Engineer licensed to practice in Ontario indicating that grades achieved on the site conform to those indicated on the approved plan and that the proposed flood plain storage volumes are achieved.**

6. Upon completion of the work a post effectiveness monitoring program is to be undertaken with monitoring and reporting after years 1,3 and 5 to ensure the compensation works are functioning as intended. The post effectiveness monitoring plan should contain a contingency plan for any necessary corrective actions.

7. Work in-water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods. Existing stream flows must be maintained downstream of the de-watered work area without interruption, during all stages of the work. There must be no increase in water levels upstream of the de-watered work area.

8. Only clean non-contaminated fill material will be used, and all work is to occur on your property, or if on other property, only with full authorization of the owner(s).

9. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. If the sediment and erosion control methods include silt fence it should be placed along the shoreline to prevent overland flow on disturbed areas from entering the watercourse. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

10. Demolition or construction debris is not to be deposited in the waters of any creek; inert concrete/asphalt debris will be considered a deleterious substance. An emergency spill kit should be kept on site in case of fluid leaks or spills from machinery.

11. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored

regularly by experienced personnel and maintained as necessary to ensure good working order. If the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

12. All materials and equipment used for the purpose of site preparation and project completion must be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris etc.) from entering the water.

13. The waters of the creek are NOT to be considered as machine staging areas. Activities such as equipment refuelling, and maintenance must be conducted away from the water to prevent entry of petroleum products, debris, or other deleterious substances into the water. All in-stream work on the new channel should be completed in the dry.

14. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

15. All disturbed soil areas must be appropriately stabilized to prevent erosion.

16. It is recommended that you ensure your contractor(s) are provided with a copy of this letter to ensure compliance with the conditions listed herein.

17. Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

18. **There will be no in-water works between March 15 and June 30, of any given year to protect local aquatic species populations during their spawning and nursery time periods.**

19. Any aquatic species (fish, turtles) trapped within an enclosed work area are to be safely relocated outside of the enclosed area to the main watercourse downstream of the work zone.

20. The RVCA is to receive 48 hours' notice of the proposed commencement of the works to ensure compliance with all conditions. The applicant agrees that Authority staff may visit the subject property before, during and after project completion to ensure compliance with the conditions as set out in this letter of permission.

21. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after January 23, 2022.

All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Drainage Act, the Endangered Species Act, the Ontario Water Resources Act, Environmental Protection Act, Public Lands Act, or the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson.

Terry K. Davidson

Terry K. Davidson P.Eng
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

c.c. A. Robinson, P. Eng., Robinson Consultants
K. Murphy, P. Eng., DSEL
A. Finnson, Caivan

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- Commencement of the work **and/or** a signed and dated copy of this letter indicates acknowledgement and acceptance of the conditions of the RVCA's approval letter concerning the application and the undertaking and scope of the project.

Name: _____ (print)

Signed: _____ Date: _____

Fisheries and Oceans Canada | Pêches et Océans Canada

Central and Arctic Region
520 Exmouth Street
Sarnia, Ontario
N7T 8B1

Région du centre et de l'arctique
520 rue Exmouth
Sarnia, Ontario
N7T 8B1

Your file *Votre référence*

April 1, 2020

Our file *Notre référence*

19-HCAA-00218

Project Manager
Richmond Village Development Corporation
2934 Baseline Road, Suite 302
Ottawa, ON
K2H 1B2

Attention: May Pham

Subject: Van Gaal Drain channel realignment – *Fisheries Act* Authorization

Dear Ms. Pham:

Pursuant to Paragraphs 34.4(2)(b) and 35(3)(b) for the authorization for work/undertaking/activity resulting in harmful alteration, disruption or destruction of fish habitat under the *Fisheries Act*, Fisheries and Oceans Canada (DFO) authorizes the carrying on of your proposed work, undertaking or activity that results in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*.

The proposed project involves the realignment of approximately 900 m of the Van Gaal Drain that will result in the destruction of approximately 6,940 m^2 of fish habitat. The authorization under paragraphs 34.4(b) and 35(2)(b) of the *Fisheries Act* is attached.

Failure to comply with any of the terms or conditions of the attached authorization may lead to prosecution under the *Fisheries Act*.

A copy of this authorization should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

If you or anyone conducting work on your behalf have any questions please contact Jane Tymoshuk at our Burlington office at 365-292-0537 or by email at jane.tymoshuk@dfo-mpo.gc.ca.

Yours sincerely,

David Nanang, PhD
Regional Director General
Central & Arctic Region
Fisheries and Oceans Canada

CC: Jane Tymoshuk – Fisheries and Oceans Canada
Anthony Francis – Kilgour and Associates

ATTACHMENT: *Fisheries Act* Authorization

Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization

Authorization issued to
Richmond Village Development Corporation *(hereafter referred to as the "Proponent")*
2934 Baseline Road, Suite 302
Ottawa, ON
K2H 1B2

Attention to:
May Pham, Project Manager

Location of Proposed Project
6335 Perth Street
Ottawa, ON
K0A 2Z0

Nearest community (city, town, village): Richmond
Municipality, district, township, county: City of Ottawa
Province: Ontario
Name of watercourse, waterbody: Van Gaal Drain
Longitude and latitude, UTM Coordinates: 18N 433300m E, 5004500m N

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part involves:

To accommodate a new residential community, Richmond Village Development Corporation (RVDC) proposes to realign a portion of the Van Gaal Drain to increase the number of housing units on their property. The new channel will be relocated along the north and east boundaries of the property in a naturalized riparian corridor and reconnected to the existing channel (Arbuckle Drain) downstream at Perth Street in Richmond, Ontario.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the harmful alteration, disruption or destruction of fish habitat:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the harmful alteration, disruption or destruction of fish habitat, are:

- Construction of a realigned channel for approximately 900 m of the Van Gaal Drain.

The authorized work(s), undertaking(s), or activity(ies) are likely to result in the following impacts to fish and fish habitat:

- Destruction of approximately 6,940 m^2 of habitat in the existing Van Gaal Drain as a result of permanent infilling of the existing channel.

Conditions of Authorization

The above described work, undertaking or activity must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the work, undertaking or activity can be carried on:**

   The work, undertaking or activity that is/are authorized to be carried on during the following period:

   From date of issuance to November 30, 2020

   If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. An application for amendment, suspension or cancellation of the authorization should be submitted to DFO.

   The periods during which other conditions of this authorization must be complied with are provided in their respective sections below.

2. Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat:

2.1 Sediment and erosion control: Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.

- 2.1.1 All erosion and sediment controls shall be in place and functioning around the area of planned daily work and offsetting activity prior to work commencing.
- 2.1.2 Erosion and sediment control measures shall be inspected daily and repaired or upgraded as required and temporary measures removed once the sites are stabilized.
- 2.1.3 All in-water works shall be conducted in an isolated area using coffer dams, turbidity curtains, or similar techniques when increased turbidity is anticipated.
- 2.1.4 Construction activities shall be scheduled to avoid rainy periods that may increase erosion and sedimentation.
- 2.1.5 Sediment-laden water from dewatering activities shall be managed to effectively mitigate the entry of sediment into any waterbody.
- 2.1.6 All pumped water shall be released with energy control systems in place to prevent scour.
- 2.1.7 All fill material, including construction rubble, rock, and soil, to be used in construction shall be clean and free of fine materials and debris prior to placement.
- 2.1.8 Clearing of riparian vegetation shall be kept to a minimum and where removal is necessary, proper clearing techniques shall be used.
- 2.1.9 Stockpiled material shall be stored in a manner that prevents its entry into nearby waterbodies.
- 2.1.10 All areas disturbed by any activity associated with the project shall be stabilized through revegetation with native species, suitable for the site, upon completion of the work.

2.2 List of measures and standards to avoid and mitigate impacts to fish and fish habitat:

- 2.2.1 Timing for in-water work(s), undertaking(s), or activity(ies) shall comply with the restricted activity period specified by the Ministry of Natural Resources and Forestry for the

protection of the local fish community during their critical life stages. No in-water works to be conducted from **March 15 to June 30** in any year.

2.2.2 Fish shall be removed from work areas (isolated and dewatered construction areas) by a qualified fisheries professional using standard, non-lethal methodology and multi-pass elimination and shall be relocated immediately into the drain downstream of the work area.

2.2.3 All water intakes used to dewater area(s) that may contain fish shall be screened according to DFO's *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995).

2.2.4 All machinery shall arrive on site in a clean condition and be maintained free of fluid leaks, noxious weeds, and invasive species.

2.2.5 Machinery shall be washed, refuelled, and serviced in such a way as to prevent any deleterious substances from entering the water.

2.2.6 A Spill Management Plan shall be implemented in the event of accidental spill.

2.3 Contingency measures: Described below, and as set out in the Van Gaal Drain Application, shall be put in place if monitoring required in condition 3 below indicates that the measures and standards to avoid and mitigate serious harm to fish are not successful.

2.3.1 Should a breach into the isolated work area occur, fish shall be salvaged using methodology outlined in section 2.2.2. The breach shall be identified and repaired prior to the recommencement of in-water work, with additional mitigation measures being implemented to ensure a breach does not re-occur.

2.3.2 Should monitoring of erosion and sediment control measures show that they are not functioning as intended, all work shall be halted and the issue corrected, or secondary control measure installed, prior to work recommencing.

2.3.3 Should re-suspended sediment be observed migrating outside of the work site, or monitoring of the turbidity identifies that levels are in exceedance of CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life Total Particulate Matter and not settling within the expected timeframe, work shall cease and additional mitigation measures shall be installed to isolate the work area.

2.4 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate impacts to fish and fish habitat shall be implemented prior to the commencement of construction activities and be maintained until project completion.

3. Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat:

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO on a monthly basis until construction is complete and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted according to the conditions of this authorization. This shall be done, by:

3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.

3.1.2 Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.

3.2 Other monitoring and reporting conditions: Not Applicable

4. **Conditions that relate to offsetting**

4.1 Letter of credit: DFO may draw upon funds available to DFO as the beneficiary of the letter of credit provided to DFO ($1,427,393.55) as part of the application for this authorization, to cover the costs of implementing and maintaining the offsetting measures required to be implemented under this authorization, including the associated monitoring measures included in section 5 of this authorization, in instances where the Proponent fails to implement these required measures.

4.2 Scale and description of offsetting measures: Offsetting shall be undertaken on the Fox Run Community development property north of Perth Street, Richmond, Ontario. The offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan dated February 23, 2017 (Coldwater, 2017). Measures shall include:

- 4.2.1 As per the Design Brief (Coldwater, 2017) for the proposed project, a new alignment for the west branch of the drain shall be constructed with channel improvements.
- 4.2.2 Similar improvement in the east branch shall occur but with the direction of flow reversed to convey flows from the west branch across the northwest edge of the site so the confluence of the east and west branches shall occur at the north corner of the property.
- 4.2.3 A new channel shall be constructed for the main drain in a southeast direction along the east side of the property and shall reconnect to the original channel immediately upstream of the existing culvert crossing under Perth St in the southeast corner of the site.
- 4.2.4 All segments of the new alignment shall follow natural-channel design principles, within a broader, bankfull channel with a sinuous low-flow channel (with a base width of approximately 1.0 m and side slopes of 2H:1V).
- 4.2.5 Six (6) boulder (300 mm to 600 mm diameter) cross-vanes shall be constructed within the new alignment (two (2) within the west branch and four (4) within the main drain).
- 4.2.6 Four (4) to five (5) boulders (600 mm to 900 mm diameter) shall be embedded in the stream bed as clusters upstream of each cross-vane.
- 4.2.7 Pools shall be excavated (0.5 m deep and 2.0 m long) downstream of the cross-vanes and lined with 300 mm of 'Type A' river gravel.
- 4.2.8 The bend at the confluence of the west and east branches shall be lined with R50 riprap.
  - 4.2.8.1 Live stakes shall be planted in the riprap along the upper slope of the main channel.
  - 4.2.8.2 Along the upper slope, lower slope, and channel bottom, the R50 riprap shall be top-dressed with 'Type A' river gravel.
  - 4.2.8.3 A stilling basin shall be formed at the junction of the west and east branches.
- 4.2.9 Two (2) sedimentation basins (1.0 m depth) shall be excavated in the realignment at the upstream end of the west branch and at the downstream end of the main drain. Basins shall be lined with 300 mm of 'Type A' river gravel.
- 4.2.10 All channel realignment segments shall be situated within a re-naturalized riparian corridor planted with native shrubs and trees as well as seed mixes to increase shading of the channel.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: All fish habitat offsetting measures shall be completed and functioning according to the criteria below and as set out in the Proponents Offsetting Plan:

- 4.3.1 All offset structures and features shall be shown to be constructed as designed and stable, and shall be assessed by visual inspection.
- 4.3.2 The channel realignment shall be constructed by November 30, 2020 and shall be available to fishes immediately after construction. As-built report shall be provided no later than

December 31, 2020. The offsetting channel shall be assessed for fish presence and abundance, including evidence of at least three (3) native fish species (including White Sucker, Common Shiner and Mottled Sculpin) occupying the new channel and habitat features.

4.4 Contingency measures: If the results of monitoring, as required in section 5, indicate that the offsetting measures are not completed by the date specified and/or are not functioning according to the above criteria in 4.3, the Proponent shall give written notice to DFO and shall implement the contingency measures and associated monitoring measures, as contained within the approved offsetting plan (referenced in section 4.2), and, as set out in section 5 of this authorization, to ensure the implementation of the offsetting measures is completed and/or functioning as required by this authorization.

4.4.1 Scale and description of contingency measures: Should the initial offsetting plan not meet the requirements for offsetting associated with the authorization, the Proponent shall conduct the necessary works, undertakings or activities, to ensure the structural stability and ongoing functionality of any contingency offsetting habitat to the satisfaction of DFO.

4.4.2 Monitoring measures to ensure offsetting contingency is completed and/or functioning as required: The Proponent shall conduct monitoring as per the Offsetting Plan with additional requirements as determined by DFO, to document the success of any contingency offsetting habitat to the satisfaction of DFO, to meet the offsetting requirement associated with the Authorization.

4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

4.6 Other conditions related to offsetting: Not applicable.

5. **Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in section 4):**

5.1 Schedule(s) and criteria: The Proponent shall conduct monitoring of the implementation of offsetting measures according to the timeline and criteria in the offsetting plan found in the :

5.1.1 List of timeline(s) and monitoring and reporting criteria:

5.1.1.1 Monitoring shall commence the year following the completion of construction to allow the habitat time to naturalize and become functional.

5.1.1.2 Form and stability of habitat features shall be assessed through visual inspections in spring of 2021 and 2023.

5.1.1.3 Fish habitat offsetting measures and any potential habitat limitations or enhancement opportunities shall be assessed through visual observation in spring of 2021 and 2023.

5.1.1.4 Fish presence shall be monitored at the offsetting features at a minimum of mid-spring in 2021 and 2023.

5.1.1.4.1 Fish sampling efforts (fish presence and abundance assessments) shall focus on the habitat usage by various fish species at various sample points (to be determined by the project biologist) along the length of the realignment.

5.1.1.5 A digital photographic record of pre-construction, during construction, and post-construction conditions shall be compiled using the same vantage points and direction to show that the approved works have been completed in accordance with the offsetting plan including offsetting and enhancement measures, site stabilization and restoration works.

5.2 List of reports to be provided to DFO: The Proponent shall report to DFO on whether the offsetting measures were conducted according to the conditions of this authorization by providing the following:

5.2.1 As-built report shall be due on or before December 31, 2020.
5.2.2 The results of the monitoring and reporting of the implementation of offsetting measures (described above in section 5.1.1) shall be submitted in an annual report to DFO before July 31st of each monitoring year (2021 and 2023).

5.3 Other monitoring and reporting conditions for offsetting: Not applicable.

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein.

This authorization does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

At the date of issuance of this authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified in the vicinity of the authorized works, undertakings or activities.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html).

The failure to comply with any condition of this authorization constitutes an offence under Paragraph 40(3)(a) of the *Fisheries Act* and may result in charges being laid under said Act.

A copy of this authorization should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: ___April 1, 2020_____

Approved by: _____

David Nanang, PhD
Regional Director General
Central and Arctic Region
Fisheries and Oceans Canada

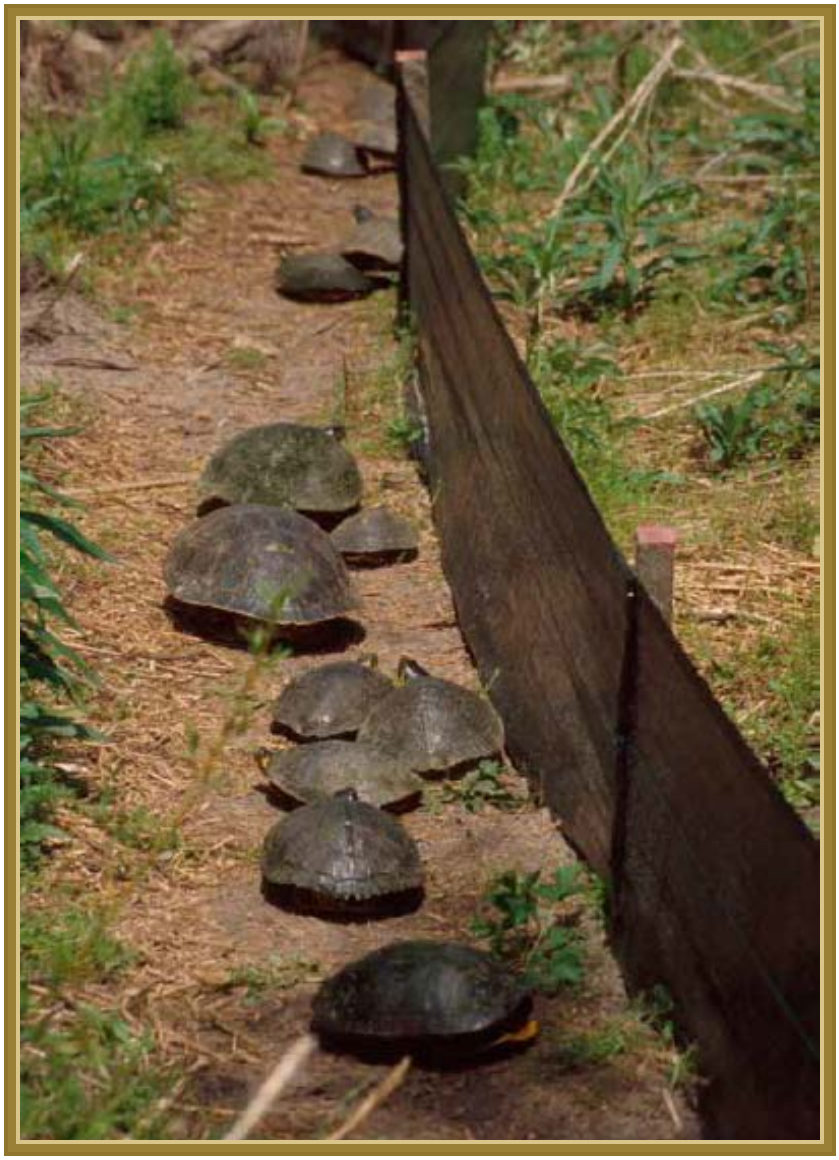
Appendix B4 – Turtle Fencing Guidelines

SPECIES AT RISK BRANCH
BEST PRACTICES TECHNICAL NOTE

REPTILE AND AMPHIBIAN EXCLUSION FENCING

Version 1.1

July 2013



Ministry of Natural Resources

Ontario

July 2013

Ontario Ministry of Natural Resources
Species at Risk Branch

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Cover illustration: Photograph by Matthew J. Aresco, Conservation Director, Nokuse Plantation

Before an activity can be initiated, permissions, approvals or authorizations may be required from MNR (e.g. Endangered Species Act authorization, Wildlife Scientific Collector's Authorization) or other agencies, levels of government (e.g. a conservation authority, municipality, federal or provincial government), or landowners. It is your responsibility to ensure that all necessary permissions, approvals and authorizations are acquired prior to proceeding with your activity.

This document presents information as of the point in time of publication and is meant to be updated through time as improved information becomes available.

Cette publication hautement spécialisée, Reptile and Amphibian Exclusion Fencing Best Practices n'est disponible qu'en anglais en vertu du Règlement 671/92 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère des Richesses naturelles au Pamela Wesley,705-755-5217.

Document History

Revision Number	Revision Date	Summary of Changes	Originated	Reviewed	Authorized
1.1	**June, 2013**	**Pre-publishing edits**	**June, 2013**	**June, 2013**	**June, 2013**

REPTILE AND AMPHIBIAN EXCLUSION FENCING - BEST PRACTICES -

The purpose of this guidance document is to provide an overview of proven design and installation techniques for reptile and amphibian exclusion fencing. Though this document points to site and species-specific design requirements, it is important to recognize that every situation is different. This guidance is not meant to replace site-specific advice obtained from local MNR staff or experienced exclusion fencing contractors. Moreover, exclusion fences are only effective when well planned, properly constructed, and maintained.

Exclusion fencing seeks to eliminate access to specific areas where activities that could harm animals are occurring (e.g. active aggregate operations, construction sites, and roads). The selection and installation of exclusion fencing can present some challenges, particularly if multiple species are being excluded. For example, some reptiles and amphibians are able to dig under fencing while others can climb over. Some may also take advantage of burrows dug by other animals. To maintain effectiveness, the bottom of the fence should be buried or secured firmly to the ground and minimum height recommendations (Table 1) are considered.

Exclusion fence design should consider the target species as well as those that might be unintentionally impacted. Fencing material should not pose a risk of entanglement or permit individuals to pass underneath or between openings. Landscape features such as topography and substrate need to be considered as they may constrain fencing design.

Including plans for fencing in advance of a project can increase efficiency and fence effectiveness. For example, long-term road projects that will include a permanent sound barrier could design the sound barrier such that it also meets the specifications of the required exclusion fence.

EFFECTIVE FENCE CHARACTERISTICS

The fence burial and height recommendations listed in Table 1 below have been compiled from scientific literature, established management practices, and practitioner best advice. These are general recommendations and at times other specifications may be more appropriate. For instance, in areas where the substrate does not permit fence burial, weighing down the fence with heavy items (e.g. sand bags) or backfilling may be acceptable. Where needed, speak with your local MNR staff or experienced exclusion fencing contractor to develop site-specific plans.

If multiple species are being excluded from the same area, and the species-specific fencing specifications differ, the uppermost minimum height and greatest depth recommendation should be used (Table 1). If you are excluding both Blanding's Turtle and Gray Ratsnake, for example, the exclusion fence should be a minimum of 2 m tall (see Gray Ratsnake section below for additional details).

Exclusion fences should be installed prior to emergence from hibernation. A survey of the enclosed/secluded area should be conducted immediately following fence installation to ensure that no individuals have been trapped on the wrong side of the fence.

Table 1. Recommended burial depth and height requirements of exclusion fencing for reptiles and amphibians. Recommended height is the height of the fence after it has been installed including the buried components and any installed overhangs or extended lips.

SPECIES	RECOMMENDED DEPTH OF FENCE BURIED (cm) *	RECOMMENDED HEIGHT OF FENCE (cm) **
Turtles – general	10 – 20	60
Eastern Musk Turtle, Wood Turtle	10 – 20	50
Massasauga, Eastern Hog-nosed Snake, Butler's Gartersnake, Queensnake	10 – 20	60
Gray Ratsnake & Eastern Foxsnake	10 – 20	200
Fowler's Toad	10 – 20	50
Snakes - general	10 – 20	100
Common Five-lined Skink	10 – 20	unknown
Salamanders	10 – 20	30

*** does not include the 10 cm horizontal lip that should extend outward an additional 10 – 20 cm (see Figure 2)**
**** the height of fencing has been provided as an approximate. Fencing materials may in fact not be available in proportions that would allow for these precise measurements. It is most effective, if the height and burial depth recommendations are met.**

DURATION OF ACTIVITIES & DEGREE OF ANTICIPATED DISTURBANCE

The type of disturbance, the proximity to disturbance, and the planned fence longevity are factors that influence which type of exclusion fence is most effective. For short-term activities (i.e. 1 to 6 months) such as minor road repairs, a light-duty geotextile fence is appropriate. Longer term or permanent fencing projects, however, require more durable materials such as – heavy-duty geotextile, wood, concrete, woven-wire, sheet metal, vinyl panels, or galvanized mesh.

GEOTEXTILE FENCES

Geotextile fences (e.g. silt fences) come in many types and qualities. They can be very effective for the temporary exclusion of reptiles and amphibians. For the purposes of this document, temporary use ranges from a few months up to 2-3 years. Winter weather is generally damaging to geotextile materials and the cost of maintenance over the long-term should be considered during the planning phase. Depending upon the quality, geotextile can be resistant to UV degradation and the bio-chemical soil environment.

Light-duty Geotextile Fencing:

Light-duty geotextile fencing is made of nylon material and is typically purchased with wooden stakes pre-attached at 2 m to 3 m intervals (Plate 1). It can also come without pre-attached stakes. Light-duty geotextiles are largely intended for projects with shorter durations of only a few months in duration and up to one season.

Geotextile fencing with nylon mesh lining should be avoided due to the risk of entanglement by snakes.

To use light-duty geotextile fencing:

- Fencing fabric is effective if attached to wooden, heavy plastic or metal stakes using heavy-duty wire staples or tie-wire (Figure 2).
- Secure the fence on posts that are placed at 2 m to 3 m apart. If using the greater recommended distance between posts, additional maintenance may be required to maintain effectiveness.
- Securely drive the stakes into the ground to a recommended depth of 30 cm. The fencing fabric should be buried to the recommended specifications in Table 1 and back-filled with soil.
- For snakes, supporting posts should be staked on the activity side (e.g. on the side facing the aggregate stock pile or the road - Figure 2).
- Light-duty geotextile fences are not effective where rocks or other hard surfaces prevent proper anchoring of fence posts and burial of the fence fabric.
- Light-duty geotextile fences are not effective where a large amount of concentrated run-off is likely or to cross streams, ditches or waterways without specific modifications.
- Contact your local MNR staff or experienced exclusion fencing contractor for advice and recommendations.
- See general best practices section below for additional details.

Generally, light-duty geotextile fences are not effective if they exceed 1 metre in height unless purposely manufactured for greater height (e.g. stakes placed at closer intervals or cross braces). If greater height is required consider using heavy duty geotextile, hardware cloth or other fencing materials.

Plate 1. Light-duty geotextile fencing with pre-attached wooden stakes used to exclude turtles from a road as seen on a regular maintenance check (photo credit: Brad Steinberg).

Heavy-duty Geotextile Fencing:

Heavy-duty geotextile fencing is typically constructed of a thick felt-like fabric. It may also be called 'double row' or 'trenched' fencing. For support, this fencing uses a woven wire fence (e.g. chain link) or some other structure (Plate 2). It is recommended that a minimum density of 270R or equivalent woven geotextile fabric is used.

Heavy-duty geotextile material can be effective for up to 2 or 3 years with proper maintenance. This type of fencing can be damaged by small mammals chewing through or torn by heavy debris (e.g. tree branches). Therefore, it may be best suited to turtles, which are less likely to take advantage of holes or tears in the fabric. If

used to exclude snakes or other animals, more maintenance may be required.

Heavy-duty geotextile fencing:

- The wire fence should be installed on the activity side to prevent animals from leveraging and climbing into the exclusion area while allowing the animal to escape if they find themselves on the wrong side (Figure 2).
- Geotextile fences across streams, ditches or waterways should have case-specific modifications.
- Contact your local MNR staff or experienced exclusion fencing contractor for advice.
- See light-duty geotextile section above and general best practices below for additional details.

Plate 2. Example of a heavy-duty geotextile fencing used to exclude snake species (photo credit: Jeremy Rouse).

HARDWARE CLOTH FENCES

Hardware cloth (also known as galvanized mesh or Birdscreen) is durable, cost effective and useful for excluding reptiles and amphibians. The fence should be made of heavy galvanized hardware cloth with a ¼ inch mesh. For fences intended to exclude small snakes, a ⅛ inch mesh may be more effective. In contrast, fencing intended to exclude turtle species can have a larger mesh size (e.g. ½ inch). Larger mesh may have a longer lifespan as it is constructed from a thicker material compared to smaller mesh sizes.

To use hardware cloth fencing:

- Secure the fence on posts placed a recommended 2.5 m apart with the stakes on the activity side (Figure 2).
- Pull the mesh taught and staple or secure with screws and a metal stripping to prevent the mesh from being ripped when pressure is applied.
- Installing a top rail or folding the mesh over a taut smooth wire reduces tearing (Plates 3 and 4).
- An outward facing lip installed on the species side ensures that snakes and amphibians are unable to climb or jump over the fence (Figure 2; Plate 4)
- Tears can be mended with 18-gauge galvanized wire.
- See general best practices section below for additional details.

Plate 3. Example of a galvanized mesh fencing used for the long-term exclusion of snakes and turtles from the adjacent highway (photo credit: Megan Bonenfant).

Plate 4. Long-term to permanent exclusion fencing using galvanized mesh with over-hanging lip to prevent animals from climbing or jumping over (photo credit: Megan Bonenfant).

WOOD LATH SNOW FENCING

In certain circumstances, wood lath snow fencing can be effective at excluding turtles. This fencing is typically constructed from soft wood slats that have been woven together with 13-gauge wire and is then attached to steel fence posts which have been driven into the ground.

Wood lath fencing is cost effective and can easily be laid down during the winter to prevent damage. The durability of the material, however, is not meant for very long-term use (e.g. more than 3 years), unless regular maintenance occurs.

To use wood lath snow fencing:

- The fencing should be attached to heavy plastic or metal stakes using heavy-duty wire staples or tie-wire.
- The stakes are recommended to be placed at 2 to 3 m intervals and securely driven into the ground 30 cm or more.
- Wood lath snow fencing across streams, ditches or waterways should have case-specific modifications.
- Wood lath snow fencing lends itself well to being combined with other types of material to ensure complete exclusion.
- See general best practices section below for additional details.

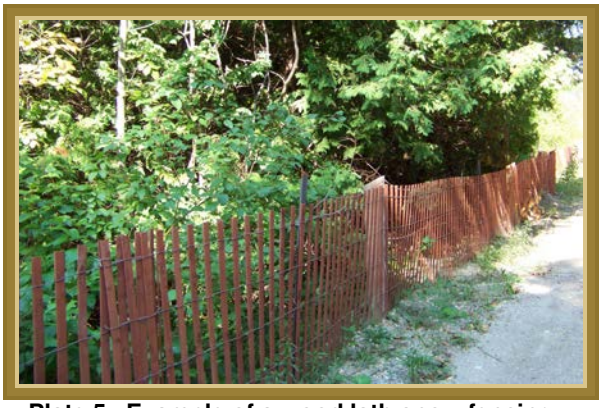

Plate 5. Example of a wood lath snow fencing used to exclude turtles (photo credit: Karine Beriault).

EXCLUSION FENCING FOR GRAY RATSNAKE AND EASTERN FOXSNAKE

Gray Ratsnake and Eastern Foxsnake are the largest snakes in Ontario - reaching nearly 2 m in length. They are also excellent climbers. For this reason, fencing intended to exclude either of these species has additional recommended design specifications.

- The fence should be at least 2 m high.
- The material on the species side (Figure 2) should be smooth to prevent the snakes from climbing into the excluded area.
- Stakes should be on the activity side of the fence (Figure 2).
- Due to the increase in fence height, it is valuable to decrease the distance between posts or install diagonal braces.
- See general best practices section below for additional details.

CONCRETE, SHEET METAL & VINYL WALLS

Concrete, metal or vinyl walls can stand alone or be combined with woven wire or chain link fences. They are durable, require minimal maintenance and are effective in excluding target species from high risk areas and guiding them to crossing structures or other desired locations (Plates 6 and 7). This fence type is comprised of a continuous vertical face of concrete, metal or vinyl sheeting with no gaps. Concrete walls can be installed as either pre-cast sections or pour directly in place.

Plate 6. Stand-alone continuous concrete wall used to exclude salamander species installed as pre-cast forms (photo credit: Steven Roorda).

Plate 7. Pre-formed vinyl sheeting fence intended to exclude salamanders for a construction site (photo credit: Herpetosure Ltd.)

The wall height depends upon the target species, but they are usually between 45 and 60 cm tall and buried 25 cm. Concrete, metal or vinyl exclusion fencing is most appropriate for salamanders, skinks, small snakes, and small turtles. For large turtle species, a chain link fence can be installed directly on top of the concrete wall for complete exclusion.

HABITAT CONNECTIVITY

Habitat connectivity is the connectedness between patches of suitable habitat or the degree to which the landscape facilitates animal movement. Exclusion fencing installed along roads or other large projects can effectively reduce or eliminate habitat connectivity for animals. In these scenarios, exclusion fencing should be considered with eco-passages in order to maintain connectivity. Fencing in isolation should be viewed as a temporary method to reduce mortality until species movement can be restored. Where eco-passages are not feasible they should be identified for consideration with any future road work or development to improve connectivity.

During the installation of fencing with an eco-passage, it is important that the fencing sits flush with the passage to ensure that

there are no gaps where animals can squeeze through.

Plate 7. A wood turtle travelling through a dry eco-passage. Ecopassages such as this help to ensure the long-term connectivity of seasonal habitat for this and other reptile and amphibian species (photo credit: Amy Mui).

GENERAL BEST PRACTICES:

- To deter digging, bury the fence 10 cm down with an additional 10 cm horizontal lip (Figure 2).
- Backfill and compact soil along the entire length on both sides of the fence (Figure 2).
- Once the fence is installed, a survey should be done to ensure that no individuals have been trapped inside (speak with MNR for survey advice).
- Exclusion fencing intended to exclude snakes should have the stakes installed on the activity side (opposite the normal requirement for sediment control fencing) to prevent snakes from using the stakes to maneuver over the fencing.
- For snakes and toads, the fence should have an overhanging lip on the species side (Figure 2).
- Fences should be inspected after spring thaw and at regular intervals throughout the active season, especially following heavy rain events. This is particularly important for geotextile fences. Any damage that affects the integrity of the fence (e.g. tears, loose edges, collapses, etc.) should be fixed promptly.
- Tall or woody vegetation on the species side of the fence should be managed if there is a risk that it may enable the animals to climb over. This is most important during spring and fall. Proceed cautiously to not harm animals protected plant species during vegetation removal.
- When installing an eco-passage, fencing or exclusion walls should be used as a guiding system to direct animals to passage openings.
- Natural screens such as trees or shrubs can help to reduce road access and can be combined with fencing to provide protection of individuals from predation.
- Install fences with a turn-around at the ends furthest from the wetland habitat and at any access areas to assist in redirecting animals away from any fence openings (Figure 1).
- Curving the ends of the fencing inward (i.e. away from the road or construction site) may help to reduce access to these locations. The ends may also be tied off to natural features on the landscape such as trees or rock cuts.

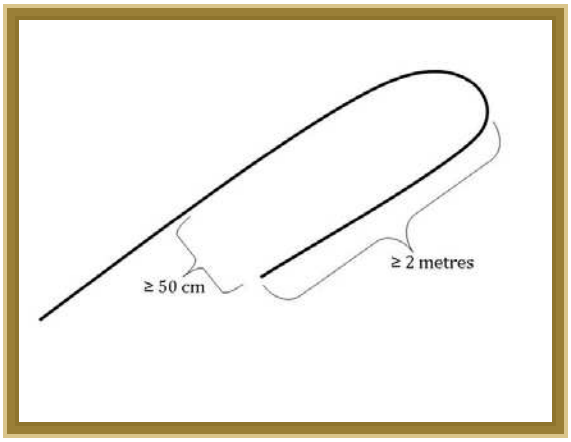

Figure 1. Diagram of the ends of the fence designed to curve inward in order to direct animals away from the area of exclusion.

WATER MOVEMENT & DRAINAGE

- In areas where surface water run-off may erode a soil-based backfill, consider using rocks or sand bags. Ensure these materials cannot be used by animals to climb over the fence.
- Where possible, minimize the number of water crossings: when necessary, it should occur where flow is minimal.
- Fence posts in waterways or areas prone to seasonal flooding should be driven rather than dug – unless following established best practices.
- Fencing should be placed above the high water mark anticipated for high water events such as spring freshet or periods of heavy or continuous rainfall.

TOPOGRAPHY:

- Fence posts should be closer together in undulating topography.
- Fences installed on slopes have a different effective height depending upon whether the animal will be approaching from the up or down slope. The fence height can be adjusted accordingly.

Improvements or questions regarding exclusion fencing can be brought to the local MNR Species at Risk Biologist or other MNR staff.

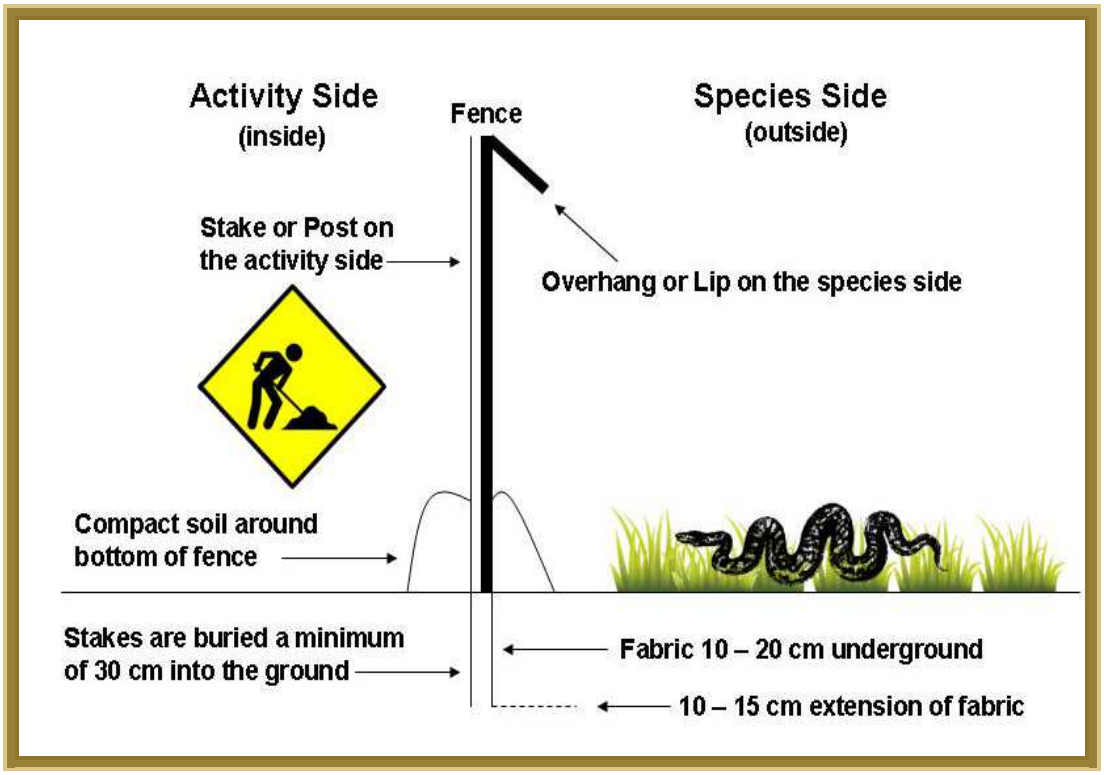

Figure 1. A side view of a basic exclusion fence including an overhang or flexible lip to deter animals from climbing or jumping over the fence. Placement of the stake on the Activity Side or on the inside of excluded area is also illustrated. This is particularly important for snake species which may use the stakes to maneuver over the fence.

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Sarell, M, 2006. Living in Nature Series: How to Snake-proof you House and Yard. South Okanagan-Similkameen Stewardship

Program. The Land Conservancy of BC, Penticton, BC. 8 pp.

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For additional information:

Visit the species at risk website at
ontario.ca/speciesatrisk
Contact your MNR district office
Contact the Natural Resources Information Centre
1-800-667-1940
TTY 1-866-686-6072
mnr.nric.mnr@ontario.ca
ontario.ca/mnr

Appendix B
Detailed Analysis of Compliance of the RVDC Development Plan with Section 4.7 of the City of Ottawa Official Plan

Detailed Analysis of Compliance with Section 4.7 of the City of Ottawa Official Plan

This appendix provides a detailed examination of the requirements of Policy 4.7 of the City of Ottawa Official Plan as it pertains to subject development plan by RVDC. Each of the policy requirements is provided verbatim, with a short discussion of the approach taken by RVDC to comply with the specific policy, where relevant. The City Policy statements are *italicized*, while the RVDC approach to compliance is in regular font.

Policy 4.7.1 – Integrated Environmental Review to Assess Development Applications

A comprehensive understanding of the relationship between the natural environment and the built environment is the foundation of site design and subdivision planning, as well as planning for the larger areas subject to community design plans. The integrated environmental review considers as a whole the significant findings from individual support studies (i.e. tree preservation and protection plans, environmental impact statements, stormwater site management plans, Phase I Environmental Site Assessments). It also ensures that development proceeds in keeping with the analysis and recommendations of any watershed and subwatershed studies and federal or provincial environmental assessments documents, where applicable. The integrated environmental review ensures that development design complies with the environmental policies contained in Section 4, and that the principles of design with nature have been applied. [Amendment 13, September 8, 2004]

4.7.1(1)Subdivisions, and major site plans and major rezoning applications, will be accompanied by an integrated environmental review statement demonstrating how all the studies in support of the application influence the design of the development with respect to effects on the environment and compliance with the appropriate policies of Section 4. The appropriate policies and studies will be identified through pre-consultation at the beginning of the design and review process. [Amendment #76, OMB File # PL100206, Ministerial Modification # 48, April 26, 2012.]

4.7.1(2) The integrated environmental review statement will provide:

a. *A brief overview of the results of individual technical studies and other relevant environmental background material;*
b. *A graphic illustration, such as an air photo, summarizing the spatial features and functions (e.g. natural vegetation, watercourses, significant slopes or landform features, recharge/infiltration areas) as identified in the individual studies;*
c. *A summary of the potential environmental concerns raised, the scope of environmental interactions between studies, and the total package of mitigation measures, including any required development conditions and monitoring, as recommended in individual studies;*
d. *A statement with respect to how the recommendations of the support studies and the design with nature approach have influenced the design of the development;*
e. *An indication that the statement has been reviewed and concurred with by the individual sub consultants involved in the design team and technical studies.*
f. *A description of how the principles of Design Objective 7 (Section 2.5.1) to maximize the energy-efficiency of development and to promote sustainable design that reduces consumption, energy use and carbon footprint of the built environment have been considered. A sustainable design checklist will be prepared to assist in this description. [Amendment #76, OMB File # PL100206, Ministerial Modification # 49, April 26, 2012.*

RVDC Approach to Compliance

This document, i.e., the Integrated Environmental Review, satisfies this requirement. Note that the sustainable design checklist referred to in 4.7.1(2f) is now referred to as the green checklist.

4.7.2 – Protection of Vegetation Cover

Preserving vegetation on sites subject to development not only contributes to the urban and rural forest and the overall environmental health of the area, but also helps improve the visual appeal of newly developed areas. However, development proposals may necessitate removal of existing vegetative cover in some instances. Development proposals will be required to preserve vegetative cover or propose compensation measures, through the following policies. [OMB decision #1754, May 10, 2006]

Policy 4.7.2 (1) *In order to support the Official Plan objective for 30% tree cover, applications for subdivision or site plan approval will be supported by a tree preservation and protection plan and a landscape planting plan. [Amendment #76, OMB File # PL100206, April 26, 2012.]*

RVDC Approach to Compliance 4.7.2 (1)

A Tree Conservation Report was prepared by KAL (2020a) following City of Ottawa Guidelines.

Policy 4.7.2 (2) *The Tree Conservation Report constitutes part of a complete application and may be submitted early in the design and development review process. It should be submitted before any tree removal occurs on development lands. The report will be completed in keeping with the Tree Conservation Report guidelines and in summary will: [Amendment #76, August 04, 2010]*

a. *Retain as much natural vegetation as feasible, especially along surface water features, on steep slopes, in valued woodlots and in areas linking green spaces, with a particular emphasis on high quality or rare vegetative communities; [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, April 26, 2012.]*
b. *Identify the presence of endangered or threatened species or their habitat as identified in the Endangered Species Act, 2007 and provide recommendations for protection measures to be used. [Amendment #76, OMB File # PL100206, April 26, 2012.]*
c. *Demonstrate how components of the proposed development, such as grading plans and the location of buildings, roads, and infrastructure, support tree conservation. [Amendment #76, OMB File # PL100206, April 26, 2012.]*
d. *Determine which stands of trees or individual trees warrant retention based on a preliminary assessment;*
e. *For those trees or stands of trees being retained, outline measures for their protection during construction and over the long term;*

RVDC Approach to Compliance 4.7.2 (2a,b,c,d,e)

The Tree Conservation Report (KAL, 2020a) and NEIA (KAL, Parish Geomorphic & Mattamy Homes, 2010) confirmed that there were no significant specimen trees rare vegetation, Areas of Natural and Scientific Interest, significant wetlands, natural areas, and no woodlands greater than 50 years within the development areas. No endangered or threatened species or their habitats were present on property.

Policy 4.7.2 (2,f)

f. Describe the area and nature of tree loss and compensation measures proposed;

RVDC Approach to Compliance on Policy 4.7.2 (2f)

All existing site trees will be removed KAL (2020a). Trees are to be planted at a minimum of one tree per lot, with additional tree plantings to be included where feasible (e.g. in larger single lots, at the ends of rows of townhomes and/or in other public areas such as the proposed park on the Green lands) with a target of planting the equivalent of 1.5 trees per lot through the community. Tree planting along the realigned Van Gaal corridor has been planned separately as part the realignment works there and will not count towards the required tree count for this project.

Policy 4.7.2 (2g)

g. Where there is substantial alteration of the natural vegetation cover on the site, the impact on fauna or rare species during and after construction will be considered and mitigation measures proposed.

RVDC Approach to Compliance on Policy 4.7.2 (2g)

Site alteration includes the removal of a small woodlot (KAL, 2020a). No portion of this woodlot will be conducted during the months April thru October inclusive.

Policy 4.7.2 (2h)

h. Provide strategic recommendations to guide the landscape plan. [Amendment #76, June 24, 2009] [Amendment #76, August 04, 2010]

RVDC Approach to Compliance on Policy 4.7.2 (2h)

The site Landscape Plan is still being developed.

Policy 4.7.2 (3) *The landscape plan will:*

f. Indicate tree planting or vegetation cover required to provide protection for surface water features or steep slopes;
g. Investigate the appropriateness of the use of native species in tree planting strategies;
h. Provide a reference document for future residents on the importance and care of trees on their property.

RVDC Approach to Policy 4.7.2 (3)

The site Landscape Plan is still being developed.

Policy 4.7.3 – Erosion Prevention and Protection of Surface Water

Protecting stream corridors and the surface water environment serves the dual purpose of preserving and enhancing the environmental quality of stream and river corridors and their aquatic habitat, as well as reducing risks from natural hazards associated with watercourses. Ensuring that development is set back an appropriate distance from watercourses helps serve these purposes by ensuring a healthy, natural riparian zone and providing a margin of safety from hazards associated with flooding and unstable slopes.

Council has adopted Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004, to guide slope stability assessments and requirements for setbacks. Slope stability assessments identify the geotechnical limit of the hazard lands, which includes the stable slope allowance plus, where appropriate, an allowance for future erosion and in some cases, an additional allowance to permit access in the event of future slope failure. Sites where slope stability issues are a concern were identified in the report, Slope Stability Study of the Regional Municipality of Ottawa-Carleton, 1976 (Ontario Misc. Paper MP 68) and are shown on Schedule K. Schedule K provides for early identification of slope stability concerns but is not sufficiently detailed to assess constraints on specific sites. [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, July 21, 2011.]

RVDC Approach to Policy 4.7.3

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (1)

1. *Except as otherwise provided for in this section, Council will establish minimum setbacks from rivers, lakes, streams and other surface water features in watershed, subwatershed and environmental management plans and in these plans identify any additional studies needed to refine the setback through the development review process as well as any site-specific measures needed to protect the setback. [OMB decision #1754, May 10, 2006] [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (1)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (2)

2. *Where a Council-approved watershed, subwatershed, or environmental management plan does not exist, the minimum setback will be the greater of the following:*

    a. *Development limits as established by the regulatory flood line (see Section 4.8.1);*

    b. *Development limits as established by the geotechnical limit of the hazard lands;*

    c. *30 metres from the normal high water mark of rivers, lakes and streams, as determined in consultation with the Conservation Authority; or*

d. 15 metres from the existing top of bank, where there is a defined bank. [OMB decision #1754, May 10, 2006]

RVDC Approach to Policy 4.7.3 (2)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (3)

2. *The setback provided for in policies 1 and 2 will be implemented through the zoning by-law and any change in the setback will require a zoning by-law amendment or variance that is consistent with the policies in this section of the Plan. [Amendment #76, OMB File # PL100206, April 26, 2012.]*

RVDC Approach to Policy 4.7.3 (3)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (4)

3. *No site alteration or development is permitted within the minimum setback, except as otherwise provided for in this section. Site alteration is defined as activities, such as fill, grading and excavation that would change the landform and natural vegetative characteristics of a site. Development is defined as the creation of a new lot or the construction of buildings and structures requiring approval under the Planning Act or the issuance of a Building Permit under the Building Code Act. Exceptions to this policy are:*

    a. Activities that create or maintain infrastructure within the requirements of the environmental assessment process or works subject to the Drainage Act;
    b. Alterations necessary for recreation, environmental restoration, or slope stability works that are approved by the City and the Conservation Authority. [OMB decision #1754, May 10, 2006]

RVDC Approach to 4.7.3 (4)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (5)

4. *The geotechnical limit of hazard will be determined in keeping with the Slope Stability Guidelines for Development Applications in the City of Ottawa 2004. Sites where slope stability issues are a concern were identified in the report, Slope Stability Study of the Regional Municipality of Ottawa-Carleton, 1976 (Ontario Misc. Paper MP 68) and are shown on Schedule K. Schedule K provides for early identification of slope stability concerns but is not sufficiently detailed to assess constraints on specific sites. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to 4.7.3 (5)

All residential development on site will occur beyond the geotechnical limit of hazard.

Policy 4.7.3 (6)

5. *Exceptions to the setbacks in policy 2 will be considered by the City in consultation with the Conservation Authority in situations where development is proposed:*

    a. *On existing lots where, due to the historical development in the area, it is unreasonable to demand or impossible to achieve minimum setback distances because of the size or location of the lot, approved or existing use on the lot, or other physical constraint;*

    b. *Adjacent to a minor tributary that serves primarily a surface water function and that may have only an intermittent flow. This provision includes situations where a watershed, subwatershed or environmental management plan exists but does not provide guidance on a minor tributary;*
    c. *Adjacent to an existing top of bank where the regulatory flood line and the geotechnical limit of the hazard lands are within 15 metres from the existing top of bank [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (6)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (7)

6. *Where an exception to the setback is requested, an alternate setback will be considered by the City in consultation with the Conservation Authority on the basis of a study that addresses the following criteria:*

    a. *Slope of the bank and geotechnical considerations related to unstable slopes, as addressed in Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004;*

    b. *Natural vegetation and the ecological function of the setback area;*

    c. *The nature of the abutting water body, including the presence of a flood plain;*
    d. *The need to demonstrate that there will be no negative impacts on adjacent fish habitat. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (7)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (8)

7. Notwithstanding policy 3, lot creation by subdivision may be considered which includes land within the required setback in Villages adjacent to a minor tributary that serves primarily a surface water function and that may have only an intermittent flow, subject to the following criteria:

a. Where slope stability is an issue, the lot area outside the geotechnical limit of hazard is sufficient to meet the required minimum lot size and Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004 are satisfied; and
b. The lot area outside the setback is sufficient to accommodate all structures and water and wastewater services. [OMB decision #1754, May 10, 2006]

RVDC Approach to Policy 4.7.3 (8)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (9)

8. Notwithstanding policy 3, lot creation by subdivision may be considered which includes land within the required setback in the rural area outside Villages, subject to the following criteria:

a. Where slope stability is an issue, the lot area outside the geotechnical limit of hazard is sufficient to meet the required minimum lot size and Council's Slope Stability Guidelines for Development Applications in the City of Ottawa, 2004 are satisfied; and
b. The lot area outside the setback is sufficient to accommodate all structures and water and wastewater services. [OMB decision #1754, May 10, 2006]

RVDC Approach to Policy 4.7.3 (9)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (10)

9. Notwithstanding policy 3, a lot created by severance in the rural area may include land within the required setback provided the criteria in policy 7 are satisfied. The new lot created by severance in the rural area should be located outside the setback to the extent possible. [OMB decision #1754, May 10, 2006]

RVDC Approach to Policy 4.7.3 (10)

All residential development will occur outside of all required setbacks to the Van Gaal Municipal Drain and the Moore Branch (KAL, 2020a).

Policy 4.7.3 (11)

10. *Under the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation, pursuant to the Conservation Authorities Act of Ontario, the approval of the Conservation Authority is required for works such as site grading, the placement of fill, the alteration of existing channels of watercourses, and certain construction projects. The Conservation Authority should be consulted for any project near a lake, river, stream or wetland regarding the need for a permit. The Rideau Canal is a federal waterway and as such all shoreline and in-water works along the canal system will also require approval of Parks Canada. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (11)

There are no natural wetland areas on or adjacent to the development area.

Policy 4.7.3 (12)

11. *Where development is proposed on private services, no septic tank or distribution piping may be located closer than 30 m from the normal high water mark of a river, lake or stream or other watercourse unless an alternative setback has been permitted by the City in consultation with the Conservation Authority, for example, as may be required for existing lots in the rural area. [OMB decision #1754, May 10, 2006]*

RVDC Approach to Policy 4.7.3 (12)

No part of the development will include servicing on private services.

Policy 4.7.3 (13)

12. *An erosion and sediment control plan will be provided that shows how erosion on the site will be minimized during construction through application of established standards and procedures. Measures to maintain vegetative cover along the slope during and after construction will be addressed.*

RVDC Approach to Policy 4.7.3 (10)

The Design Brief for the project (David Schaeffer Engineering Limited, 2020) provides a site Erosion and Sediment Control (ESC) Plan.

Policy 4.7.3 (14)

13. *Natural watercourses should be maintained in their natural condition. Where an alteration is assessed as being environmentally appropriate and consistent with an approved subwatershed plan, environmental management plan or a storm water site management plan or, in the case of public projects, through a Class Environmental Assessment, watercourse alterations must follow natural channel design. Watercourse alterations must also meet any other applicable provincial and federal regulations, as amended from time to time, such as the Lakes and Rivers Improvement Act, Public Lands Act and Fisheries Act and may require written approval from the appropriate Conservation Authority under the Fill, Construction and Alteration to Waterways regulations.*

RVDC Approach to Policy 4.7.3 (14)

The Van Gaal Drain and Moore Branch adjacent to the development area will remain untouched aside from approved connections.

Policy 4.7.3 (15)

14. *Development and site alteration will not be permitted in fish habitat except in accordance with federal and provincial requirements. Development applications near or adjacent to water bodies that provide fish habitat will be required to demonstrate that the proposed development will not have a negative impact on fish habitat. Fish habitat is defined as those areas on which fish depend directly or indirectly to carry out their life processes. Fish habitat includes spawning grounds, nursery and rearing areas, areas that supply food, and features that allow migration. In the event that a negative impact is unavoidable, the proposal must be reviewed and authorized by the federal Department of Fisheries and Oceans, or its designate, which may or may not, under the federal Fisheries Act, authorize the work depending on development circumstances and type of habitat. [Ministerial Modification 45, November 10, 2003] [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (15)

The Van Gaal Drain and Moore Branch adjacent to the development area will remain untouched aside from approved connections.

Policy 4.7.3 (16)

15. *In addition to the provisions for setbacks described in this section, development proposals adjacent to municipal drains and other works under the Drainage Act must also maintain clear access to the legal working space adjacent to the drain. This working space is defined in the Engineer's Report adopted through a By-law approved by Council under the Drainage Act for the construction and future maintenance of drainage works. Many drains also provide fish habitat. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.3 (16)

The Van Gaal Drain and Moore Branch adjacent to the development area will remain untouched aside from approved connections with access to be fully preserved.

Policy 4.7.3 (17)

16. *In support of the policies of this Plan, the City will:*

    a. *Support initiatives of the Ministry of Agriculture and Food, other provincial ministries, farming organizations, Conservation Authorities and others, which encourage sound agricultural land management and soil conservation practices and other measures that minimize or eliminate the amount of pesticides, nutrients, silt and other contaminants that*

can enter the ground and surface water systems of Ottawa; [Ministerial Modification 46, November 10, 2003]

b. *Investigate means to control land alteration in significant wetlands and natural areas, and the removal of top soil and peat extraction, by applying the provisions of the Conservation Authority Act, or the Municipal Act as amended from time to time, in partnership with the Conservation Authorities;*

c. *When reviewing its own practices, serve as a model and ensure that the development of its properties and the provision of its infrastructure take advantage of opportunities to design with nature;*

d. *Initiate an annual recognition program to recognize innovative projects that design with nature.*

RVDC Approach to Policy 4.7.3 (17)

No response required.

4.7.4 – Protection of Endangered Species

Endangered and threatened species are those species either listed under the regulations of the Ontario Endangered Species Act *or are considered by the provincial government to be at risk of becoming endangered through all or a portion of its Ontario range. The habitat of these species is identified and protected by the Ministry of Natural Resources. Wildlife habitat generally is protected through environmental designations in this Plan.*

Butternut (Juglans cinerea) is an endangered tree whose main threat is a fungal disease that kills the infected trees. Butternut trees have special policies under the Ontario Regulation 242/08 of the Endangered Species Act 2007, administered by the Ministry of Natural Resources. The identification of butternut (and other trees) on a site will be required under the policies in Section 4.7.2 of this Plan. Where butternut is identified, the health of the tree(s) will be assessed by a certified Butternut Health Assessor and a permit from the Ministry of Natural Resources is required to remove a healthy tree.

Policy 4.7.4 (1)

1. *Endangered and threatened species are those listed under Ontario Regulation 230/08 of the Endangered Species Act, 2007.*
2. *Significant habitat of endangered and threatened species is defined as the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or recovery of naturally occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part of its life cycle. Significant habitat of endangered and threatened species will be identified by:*
    a. *Regulations made under the Endangered Species Act, 2007;*
    b. *An Environmental Impact Statement in areas where there is potential for significant habitat to exist; or,*

   c. *Other studies as approved by the City and Ministry of Natural Resources (e.g. subwatershed studies or environmental management plans).*
3. *The Ministry of Natural Resources has mapped areas with potential for significant habitat, based on known occurrences of endangered and threatened species. These maps will be consulted during pre-consultation to determine the need for an EIS and its scope as described in Section 4.7.8. The requirements of the Environmental Impact Statement will vary depending on such matters as the scale of proposed development, the nature of the site, the availability of comprehensive studies for the area and other matters identified in Section 4.7.8.*
4. *Environmental Impact Statements that address the potential for significant habitat of endangered or threatened species will be reviewed by the Ministry of Natural Resources. The Ministry of Natural Resources will approve the extent of significant habitat for endangered and threatened species.*
5. *No development or site alteration, as defined in Section 4.7.8, will be permitted in significant habitat of endangered and threatened species. [Ministerial modification #50, December 24, 2009]*
6. *Development and site alteration will not be permitted within 120m of the boundary of identified significant habitat of endangered and threatened species unless the ecological function of the adjacent lands has been evaluated and the Environmental Impact Statement demonstrates that there will be no negative impact (as defined in Section 4.7.8) on the significant habitat of endangered and threatened species or on its ecological functions. [Ministerial modification #50, December 24, 2009]*

RVDC Approach to Policy 4.7.4

The EIS for the project by KAL (2020a) provides mitigation measures prevent negative impacts to the species at risk potentially occurring in the vicinity.

4.7.5 – Protection of Groundwater Resources

In order to safeguard the integrity of groundwater resources, the City will ensure that new development can be accommodated within the system without affecting supplies available to other users. Some uses however, are not appropriate in areas where residents rely on groundwater and are more appropriately located in a fully serviced industrial park probably within the urban area. [Amendment #76, August 04, 2010]

Policy 4.7.5 (1)

1. *When reviewing development applications, the City will consider the potential for impact on groundwater resources.*
   a. *A groundwater impact assessment may be required where the City has identified that the lands play a role in the management of the groundwater resource or the need is indicated in other available information such as subwatershed plans or local knowledge, and*
   b. *A groundwater impact assessment may be required where the proposed use has the potential to negatively impact the groundwater resource. [Amendment #76, August 04, 2010*

In either case, the proposed use will not be permitted without a favourable impact assessment.

RVDC Approach to Policy 4.7.5 (1)

Water Supply servicing for the subject site was contemplated in the Village of Richmond Water and Sanitary Master Servicing Study prepared by Stantec Consulting Limited, July 2011 (MSS). The preferred design concept indicated by the MSS, for development of the WDL, consists of a new public communal well system connected to the deep aquifer. Design of the Communal Well system has been underway concurrently with the subdivision design, and other supporting infrastructure (sanitary trunk and stormwater pond) to service the WDL. The "Groundwater Vulnerability Study, Richmond Village Well System" prepared by Golder Associates Limited. (March 2012) concluded minimal risk to groundwater.

Policy 4.7.5 (2)

2. *When evaluating a non-residential land-use in a rural land-use designation reliant on private, individual services, Council will consider whether or not it would be better located in a fully serviced part of the City because of its potential impact on groundwater quality and quantity. [Amendment #76, August 04, 2010]*

RVDC Approach to Policy 4.7.5 (2)

No part of the development will include servicing on private services.

Policy 4.7.5 (3)

3. *Regardless of the provisions in policies 1 and 2 above, an application to amend the zoning by-law to permit a high risk industrial use will not be permitted in the rural area. In this regard, high risk means an industrial use;*
    a. *Which requires the use of water in an processing operation and;*
    b. *Which has as a by-product water-borne wastes requiring municipal waste treatment.*

[Amendment #76, August 04, 2010]

RVDC Approach to Policy 4.7.5 (3)

The proposed development is not high risk industrial land use.

Policy 4.7.5 (4)

4. *Where wellhead protection areas have been identified, the policies in Section 4.8.2 will apply.*

RVDC Approach to Policy 4.7.5 (4)

The Fox Run community is within a potential wellhead protection area though the final designation has not been approved. The community well has been designed accordingly regardless.

4.7.6 – Stormwater Management

The City's commitment to plan on a watershed and subwatershed basis is outlined in Section 2.4.3. The City will implement the recommendations of the watershed, subwatershed and environmental management plans through the implementation mechanisms of this Plan or other appropriate mechanisms. In reviewing applications, the City will require that stormwater site management plans be submitted in accordance with the guidance set out in the environmental management, subwatershed and watershed plans.

Policies

Policy 4.7.6 (1)

1. *A stormwater site management plan will be required to support subdivision and site-plan applications.*

RVDC Approach to Policy 4.7.6 (1)

The *Functional Servicing Report for Green Lands West & East, Laffin Lands* (David Schaeffer Engineering Limited, 2020) provides a stormwater management plan for the project.

Policy 4.7.6 (2)

2. *Stormwater site management plans will be prepared in accordance with the guidance set out in a subwatershed or watershed plans (see Section 2.4.3). Generally, stormwater site management plans will include details on subdivision management, specific best management practices for stormwater, erosion and sediment control, and details for enhancement and rehabilitation of natural features. Where no subwatershed plan or environmental management plan exists, the City will review stormwater site management plans to ensure that:*

    a. *Watercourse flows are not altered in a way that would increase the risk of downstream flooding or channel erosion;*

    b. *Base flow in the watercourse is not reduced;*

    c. *The quality of water that supports aquatic life and fish habitat is not adversely affected;*

    d. *The quality of water that supports water-based recreational uses is not affected;*

    e. *Natural habitat linkages that are located in or traverse the site are maintained or enhanced;*

    f. *Groundwater is not negatively impacted;*

    g. *Any other impacts on the existing infrastructure or natural environment are addressed in a manner consistent with established standards and procedures;*

    h. *Objectives related to the optimization of wet weather infrastructure management are realized.*

RVDC Approach to Policy 4.7.6 (2)

David Schaeffer Engineering Limited (2020) is preparing the final stormwater management plan for the project.

4.7.7 – Landform Features

Landform features are geomorphic, geological and other landform features that are distinctive to Ottawa. Many of these features were described in a 1975 study Geological Sites and Features in the Regional Municipality of Ottawa-Carleton, undertaken in partnership with the Ministry of Natural Resources. The MNR has identified some of these features, such as Hog's Back Falls as provincially significant Earth Science Areas of Natural and Scientific Interest that are part of the City's natural heritage system. Geomorphic, Geological and Landform Features are shown on Schedule K. [Amendment #76, August 04, 2010]

Policy 4.7.7 (1)

1. *When reviewing development proposals or when designing or reviewing public works, the City will ensure that the educational, scientific and landscape value of the Geomorphic, Geological and Landform Features, as shown on Scheduled K, will not be impaired. Only permitted development that is sympathetic to the unique characteristic of the resource, its setting and its interpretation value will be considered. Earth Science ANSIs are subject to the policies of Section 2.4.2 [Amendment #76, August 04, 2010]*

RVDC Approach to Policy 4.7.7 (1)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (2)

2. *Development and site alteration within provincially significant Earth Science Areas of Natural and Scientific Interest or on land within 50m of these features will not be permitted unless it is demonstrated through an Environmental Impact Statement that there will be no negative impact on the feature or its ecological functions. These features are shown on Schedule K. Definitions of these terms and the policies regarding Environmental Impact Statements are provided in Section 4.7.8. [Amendment #76, OMB File # PL100206, Ministerial Modification # 51, July 21, 2011.]*

RVDC Approach to Policy 4.7.7 (2)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (3)

3. *The City will encourage the protection of other significant landform features, such as rock outcrops, escarpments, knolls, valley or other features identified in such studies as provincial ANSI studies, or municipal subwatershed studies and community design plans.*

RVDC Approach to Policy 4.7.7 (3)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

Policy 4.7.7 (4)

4. *When considering subdivision or site plan applications, the City will ensure the protection of landform features by encouraging owners or developers to implement such measures as:*

    a. *Selective grading to minimize topographic change;*

    b. *Orienting buildings and roads parallel to topographic contours;*

    c. *Setting back development from the bottom and top of steep slopes;*

    d. *Flexible setbacks;*

    e. *Providing flexibility for road layouts and right-of-way requirements.*

RVDC Approach to Policy 4.7.7 (4)

On the basis of the various studies commissioned by RVDC, there are no significant natural features within or adjacent to the proposed development area.

4.7.8 – Environmental Impact Statement

Development within or adjacent to woodlands, wetlands, and other natural features has potential to impact the feature and its functions by removing vegetation, increasing the amount of paved or other impermeable surfaces, changing the grading of the site, or making other changes. The Environmental Impact Statement serves to identify the natural features of a site early in the development process and consider ways to avoid or mitigate these impacts, and enhance natural functions. [Amendment #76, OMB File # PL100206, April 26, 2012.]

Almost all of the city's natural heritage system, defined in Section 2, is contained within areas designated as Rural Natural Features, Urban Natural Features, Significant Wetland, and Natural Environment Areas. The requirements for an Environmental Impact Statement for development proposed within Rural Natural Features or on lands adjacent to these designated areas are described in Section 3. An Environmental Impact Statement is also required for development proposed within or adjacent to significant woodlands, significant valleylands, significant wildlife habitat and other components of the natural heritage system, regardless of their designation in the Plan. [Amendment #76, OMB File # PL100206, Ministerial Modification #52, April 26, 2012.]

Policy 4.7.8 (1 & 2)

0. *An Environmental Impact Statement is required for development and site alteration proposed within and adjacent to natural heritage features designated as Rural Natural Features and adjacent to land designated as Urban Natural Feature, Significant Wetland, and Natural Environment Area. It is also required for development and site alteration within or adjacent to other elements of the natural heritage system, as required in Section 2, that are not designated on Schedule A or B. [Amendment #76, OMB File # PL100206, April 26, 2012]*
1. *No development or site alteration will be permitted within the natural features described in policy 1 above, where permitted by the policies of this Plan, or on adjacent lands unless an Environmental Impact Statement indicates it will have no negative impact, defined as degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities. [Amendment #76, OMB File # PL100206, April 26, 2012]*

RVDC Approach to Policy 4.7.8 (1 & 2)

No Rural Natural Features or Urban Natural Features as designated or identified in the City's Urban Natural Areas Environmental Evaluation framework are present on or adjacent to the proposed development area.

Policy 4.7.8 (3, 4, 5, 6)

2. *Development is defined as creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the Planning Act, but does not include activities that create or maintain infrastructure authorized under an environmental assessment process; or works subject to the Drainage Act. [Amendment #76, OMB File # PL100206, April 26, 2012]*
3. *Site alteration is defined as activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site. [Amendment #76, OMB File # PL100206, April 26, 2012]*
4. *Ecological function are defined as: the natural processes, products or services that living and nonliving environments provide or perform within or between species, ecosystems and landscapes, including biological physical and socio-economic interactions. [Amendment #76, OMB File # PL100206, Ministerial Modification #53, April 26, 2012]*
5. *The requirements for an EIS adjacent to natural heritage features designated on Schedule A and B in this Plan are described in Section 3. The requirements for an EIS adjacent to the significant habitat of endangered and threatened species and Earth Science Areas of Natural and Scientific Interest are described in Section 4. [Amendment #76, OMB File # PL100206, April 26, 2012]*

RVDC Approach to Policy 4.7.8 (7)

No response required.

Policy 4.7.8 (3, 4, 5, 6)

6. *Where significant woodlands, significant wildlife habitat, significant valleylands or other natural heritage features are not designated, development and site alteration will not be permitted for:*

a. *any development permitted under the policies of this Plan within the feature;*
b. *any development permitted under the policies of this Plan within 120 metres of the feature in the rural area;*
c. *any development permitted under the policies of this Plan within 30 metres of the feature in the urban area;*

RVDC Approach to Policy 4.7.8 (7)

No significant woodlands, significant wildlife habitat, significant valleylands or other natural heritage features occur within the proposed development area.

Policy 4.7.8 (8 & 9)

7. *The need for an Environmental Impact Statement and its scope will be confirmed through preconsultation with the City early in the development review process, based on a preliminary screening for natural environment features within and adjacent to the study area. Aerial photographs, watershed and sub-watershed studies, field investigations and other information sources such as the Natural Heritage Information Centre may be consulted. The screening should consider the potential for endangered or threatened species habitat, significant woodlands, valley lands, wetlands and wildlife habitat that are not designated in the plan, in accordance with the Provincial Policy Statement definition of significant and the relevant identification and evaluation factors specified in the Natural Heritage Reference Manual for the Provincial Policy Statement. [Amendment #76, OMB File # PL100206, Ministerial Modification #53, April 26, 2012]*
8. *There are different types of Environmental Impact Statements:*
    a. *Full site-impact statements to assess the effects of large-scale development proposals, such as a subdivision proposal. They are prepared by a qualified professional with expertise in assessing impacts on the natural environment, but reviewed and approved by the municipality;*
    b. *Impact statements for lands adjacent to Urban Natural Features where the emphasis will be on managing the interface or transition zone between urban developments and natural features in an urban context. This would include such concerns as surface drainage adjacent to the feature; natural infiltration and soft edges adjacent to features such as wetlands, wet meadows and moist forests; protection of woodland edges (drip-line setbacks, soil compaction, removal and stock-piling); and management of access and other potential issues related to uses along the edge of the feature;*
    c. *Scoped site-impact statements to assess the potential impacts of smaller development proposals, such as single-lot severances, where impacts would be minor. A scoped impact study can be as simple as a checklist of matters to be addressed as part of the application process, and can be completed by the applicant. Scoped site-impact studies may also be appropriate to address the potential impacts of larger proposals if more detailed studies, such as a comprehensive impact study, are available.*

RVDC Approach to Policy 4.7.8 (8 & 9)

No response required.

Policy 4.7.8 (10)

9. *No development or site alteration will be permitted within the natural features described in policy 1 above, where permitted by the policies of this Plan, or on adjacent lands unless an Environmental Impact Statement indicates it will have no negative impact, defined as degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities. [Amendment #76, OMB File # PL100206, July 21, 2011.]*

RVDC Approach to Policy 4.7.8 (10)

This project was reviewed and assessed under an EIS by KAL (2020), which concluded the project would have no significant negative impacts.

Policy 4.7.8 (11)

10. *Environmental Impact Statements will include:*
    a. *A map drawn to scale identifying the location and extent of the feature, a description of the environmental values within the environmental feature or designation which could potentially be adversely affected by the proposed development, a description of the terrain/topography, vegetative cover and types, soil type and depth, and surface water movement patterns;*
    b. *Where the potential for significant habitat of endangered and threatened species has been identified, a description of the habitat present on the site and its suitability for the specific endangered and threatened species that potentially may use the area, as required in Section 4.7.4. [Amendment #76, August 04, 2010]*
    c. *A description of the proposed development;*
    d. *A description of the impacts on the environmental feature that might reasonably be expected to result from the proposed development;*
    e. *A description of the actions that may be reasonably required to prevent, change, minimize or mitigate impacts on the environmental feature as a result of the proposed development, including the identification of opportunities for ecological restoration, enhancement and long-term conservation of the feature;*
    f. *A description of the flora and fauna present on the site and how the development may impact on the flora and fauna within the site or natural feature and proposed mitigation measures to be taken during and after construction;*
    g. *An evaluation of the cumulative effects of the proposed development and other existing or proposed activities or development within or adjacent to the study area. For the purpose of this policy 'proposed activities or development' refers to applications that have been lodged with and which are waiting or have received City approval. The evaluation will assess residual effects following mitigation on the natural features and ecological functions identified in the area; [Amendment #76, OMB File # PL100206, April 26, 2012]*
    h. *A professional opinion on whether negative effects on the natural features and ecological functions will occur, and the significance of these impacts in the context of the evaluation of the natural area (i.e. the natural features and functions for which the area was originally identified as significant and the residual impact of the proposed development on the general significance rating of the larger natural area);*
    i. *Identification of monitoring needs and recognition of parties to be responsible for assessing and reporting on these needs over a prescribed period of time.*

RVDC Approach to Policy 4.7.8 (11)

No response required.