Environmental Impact Statement / Tree Conservation Report for the Proposed Development of 1154 - 1208 Old Montreal Road

February 15, 2018

Submitted To:

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1.0 INTRODUCTION

This report is an Environmental Impact Statement (EIS) prepared by Kilgour & Associates Ltd. (KAL) on behalf of DCR Phoenix Homes (DCR) in support of their proposed development of the properties at 1154 – 1208 Old Montreal Road, Ottawa, Ontario. This EIS was prepared in accordance with the City of Ottawa (the City) Official Plan (Ottawa, 2015); an associated Headwater Features Drainage Assessment (HDFA) is scheduled to be prepared for Rideau Valley Conservation Authority (RVCA) in summer 2018.

There are several triggers for this EIS including: 1) proximity of the site to a Cardinal Creek tributary; and, 2) the presence of potential habitat for species at risk (SAR) including Butternut (*Juglans cinerea*) and Barn Swallow (*Hirundo rustica*).

The specific project supported by this EIS is the development of a new residential subdivision on the northern portion of the site. The southern boundary of the proposed development will be to the north of the Cardinal Creek tributary located there (herein the Cardinal Trib) with the appropriate buffer determined by geological surveys of the valley and in consultation with the City and RVCA.

This report includes the required elements of, and therefore also serves as, a Tree Conservation Report for the proposed project.

2.0 PROPERTY INFORMATION

The subject properties (Cumberland; CON 1 PT LOT 27, 28 OS; PIN 145260027, 145260023, 145260026, 145260024, 145260025) are located at 1154, 1180, 1172, 1176, and 1208 Old Montreal Road and is approximately 18.5 ha. The proposed development will include approximately 5.3 ha on the northern half of the properties.

The full property area crosses multiple rural zones (RR and RU), a parks and open spaces zone (O1) and an agricultural (AG) zone at the south-most end (Ottawa, 2017a). The proposed development spans only the RR an RU zones, and abuts the O1 zone. The purpose of the RR zone is to recognize and permit large-lot residential development in planned subdivisions. The purpose of the RU zone is to accommodate agricultural, forestry, country residential lots created by severance, and other land uses characteristic of Ottawa's countryside. The purpose of the O1 zone is to permit parks, open spaces, and related and compatible uses. These include river/creek corridors such as that of the Cardinal Trib on site.

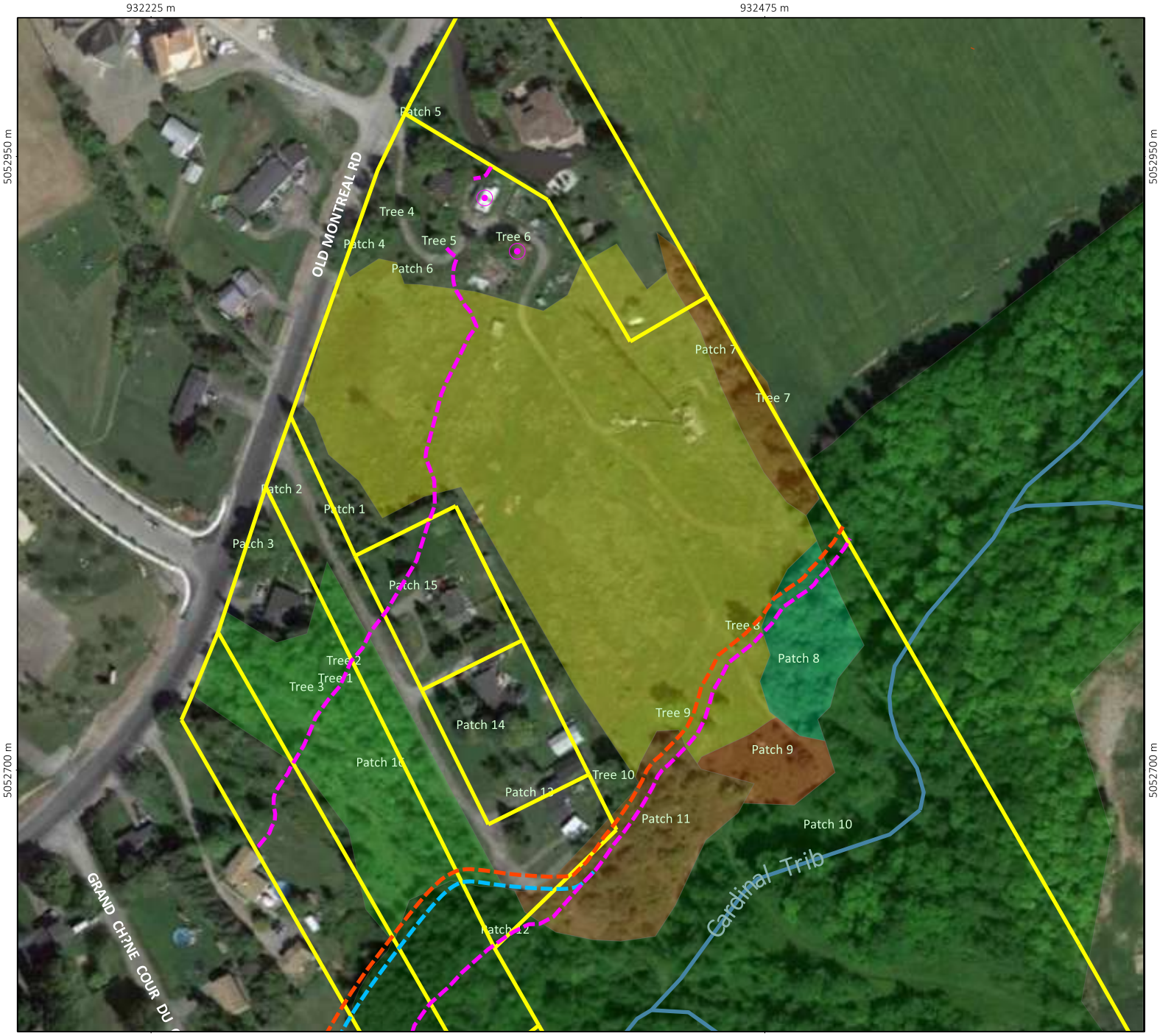

Figure 1 Existing site conditions.

Legend

Property Lines

ELC

- CUM
- FOD 2-1
- FOD3
- FOM7
- THDM2
- THDM3
- THM

Geotech.

- Crest of Slope
- Geotechnical Setback
- Erosion Allowance

Barn Swallow Nest

N

0 50 m

Project: DCRP 715 Trees and ELC2
Created By: TH
Checked By: AF
Universal Transverse Mercator - Zone 17 (N)
Printed on: 2018-02-15

KILGOUR & Associates

3.0 SITE AND THE NATURAL ENVIRONMENT

3.1 Methodology and Area of Detailed Assessment

The City of Ottawa Official Plan (Ottawa, 2015) provides zone and land cover information for the site and adjacent lands. This was used in combination with Google Earth and geoOttawa (Ottawa, 2017b) and field visits of the property to determine natural heritage features, habitat coverage, and species potentially present on the site.

Additional information on natural heritage features and wildlife species for the site was obtained from online sources, which include but are not limited to:

- Natural Heritage Information Centre (NHIC, 2017);
- Rideau Valley Conservation Authority (RVCA, 2017);
- Species at Risk Public Registry (Canada, 2017);
- Ontario Species at Risk List (MNRF, 2017);
- Breeding Bird Atlas of Ontario (OBBA) (Cadman *et al*. 2007);
- Bat Conservation International species profiles (BCI, 2017); and,
- Reptiles and Amphibians of Ontario (Ontario Nature, 2017).

During site visits, KAL biologists surveyed for potential presence of SAR and SAR habitat within and adjacent to the development area, and identified and described other natural heritage features there.

3.2 Landform, Soils and Geology

The broader site area is underlain by two soil associations: Grenville and Rideau (Schut and Wilson, 1987). Topography within and near the proposed development area varies from nearly level to highly sloping. The development area abuts a steep valley containing a significant tributary to Cardinal Creek (herein the Cardinal Trib). The southern section of the property, i.e. south of the Cardinal Trib, is composed of cultivated cropland, but is not part of the proposed development.

The majority of the property, and the area designated for project development, is composed of the Rideau association. Rideau soils occur on level marine clay plains deposited by the Champlain Sea, on sloping banks and abandoned channels cut into marine clay deposits by the ancestral Ottawa River (Schut and Wilson, 1987). Soil textures range from clay to silty clay loam, with subsurface beds of clay and silty clay present.

The south portion of the property, i.e. south the Cardinal Trib, is underlain by the Grenville association. Grenville soils developed in stony glacial till from isolated drumlinoid ridges or larger areas of nearly level to hummocky till plains (Schut and Wilson, 1987). Soil materials are medium to moderately textured with

coarse fragment content that increases with depth. Texture is commonly sandy loam or loam, with sandy loam textures most frequent.

The north slopes of the Cardinal Trib valley, located just south of the development area, were examined by geotechnical engineers from exp Services Inc. (exp 2017) to determine the presence of erosion issues and slope stability. Their report noted that the ravine slopes were heavily vegetated and the that the ravine generally conveys very little water, except possibly during spring run-off. The crest of the slope (i.e. the edge of the valley top) as determined by exp is indicated in Figure 1. Setbacks to protect the valley slope stability (i.e. erosion allowance) are measured from the crest of the slope, except along the eastern end of the development area, where the geotechnical set back is pulled back an additional ~24 m from the crest, encompassing a raised, forested area there.

The exp geotechnical report identifies an additional area of slope located adjacent to the north property boundary, i.e. down to Montreal Road. The crest of this slope is also indicated in Figure 1. This north slope was considered to be stable. The geotechnical report notes that vegetation and trees present on the slopes provide stability to the slopes here.

3.3 Surface Water, Groundwater and Fish Habitat

The site lies within the Cardinal Creek Catchment (RVCA, 2014). The Cardinal Trib crosses the property south of the site, but adjacent development will be restricted by buffers along this feature.

The Cardinal Creek Catchment is home to both warm and cool water fish species. The report lists 40 species of recreational and bait fish with in Cardinal Creek (RVCA, 2014). No SAR fish were listed in the catchment report.

The Ottawa River occurs approximately 1.1 km to the north of the site. Cardinal Creek joins the Ottawa River at this point as well. Cardinal Creek occurs approximately 300 m to the west of the site and is separated from the proposed development area by multiple existing residential properties.

The proposed development area includes very small drains situated along roads and field edges. These all feed into the Old Montreal Road roadside ditch, which leads southwestward to Cardinal Creek. The ditches and drains on site do not appear to provide any fish habitat, given their slopes, limited connection to downstream areas, and very small, shallow forms. These channels may be used by amphibians during early spring breeding, but are unlikely to hold water for long beyond the spring freshet.

Required setbacks to the Cardinal Trib are provided through the Greater Cardinal Creek Subwatershed Management Plan (AECOM 2014). For this feature, development setbacks are set by: the regulatory flood line, geotechnical limit of hazard lands, 30 m from normal high water mark, 25 m from top of bank, a setback as determined through an Environmental Impact Statement, and/or a setback as determined through a Drain Engineer's Report. For this site, there is no existing regulatory flood line. The geotechnical limit of hazard is located a minimum of 55 m from the channel at its highest, widest point, thereby exceeding setbacks from the top of bank and/or NHWM. The Cardinal Trib is not a municipal drain and so is not subject to a Drain Engineer's Report. The geotechnical limit of hazard as described in Section 3.2 thus applies here.

No provincially significant wetlands occur on or adjacent to the site.

3.4 Vegetation and Land Cover

The site and adjacent lands lie within the Cardinal Creek Catchment (RVCA, 2014). This catchment area is primarily composed of agriculture (54%), urban (17%), and forest (17%) (RVCA, 2014). The remaining components of the Cardinal Creek Catchment include rural (11%) and wetland (1%).

Tree ages were not specifically determined, however, the 1976 geoOttawa (Ottawa, 2017b) air photo shows mature trees located along property boundaries, around homes, and along the Cardinal Trib.

The majority of the site is categorized as Cultural Meadow (CUM) (Lee et al. 1998) (Figure 1). This area is an old field habitat succeeding from previous pasture habitat. Ground cover consists primarily of grass species along with New England Aster (*Symphyotrichum novae-angliae*), goldenrod species (*Solidago* spp.), aster species (*Asteraceae* spp.), Common Milkweed (*Asclepias syriaca*), Viper's Bugloss (*Echium vulgare*), dock species (*Rumex* spp.), Common Mullein (*Verbascum thapsus*), Crown Vetch (*Securigera varia*), Bladder Campion (*Silene vulgaris*), Purple Loosestrife (*Lythrum salicaria*), Foxtail Barley (*Hordeum jubatum*), and others.

The site also contains various small patches of shrubs and trees, and larger forest habitats. Patch 16 is categorized as Dry – Fresh Poplar – White Birch Deciduous Forest (FOD3) (Lee et al. 1998). This forest was primarily composed of Trembling Aspen (*Populus tremuloides*) and White Birch (*Betula papyrifera*) with subordinate species of American Elm (*Ulmus americana*), Red Maple (*Acer rubrum*), Bur Oak (*Quercus macrocarpa*), and White Ash (*Fraxinus americana*). Shrub species such as buckthorn species (*Rhamnus* spp.), Staghorn Sumac (*Rhus typhina*), and Red Osier Dogwood (*Cornus sericea*) are common.

The forest at Patch 12 is categorized as Dry – Fresh White Pine – Hardwood Mixed Forest (FOM2) (Lee et al. 1998). The majority of trees in this habitat are White Ash (*Fraxinus americana*), Trembling and Largetooth Aspen (*Populus tremuloides* and *P. grandidentata*), White Pine (*Pinus strobus*). Subordinate species are Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*), White Birch (*Betula papyrifera*), and Red and Bur Oak (*Quercus rubra* and *Q. macrocarpa*). This habitat occurs in the middle and top of a steep slope along the south portion of the site. Trees in this area were large, ranging from 20 to 60 cm diameter at breast height (DBH).

Patch 11 is categorized as Dry – Fresh Deciduous Shrub Thicket (THDM2) (Lee et al. 1998). This area contains mostly shrubs and sapling trees with a few scattered larger trees. The dominant species in this area is Staghorn Sumac, Manitoba Maple (*Acer negundo*), and Trembling Aspen, with subordinate species of Bur Oak, Red Maple, apple species, Common Lilac (*Syringa vulgaris*), White Ash, and buckthorn species. This habitat occurs on the upper and middle slope of the steep slopes along the south of the site.

Patch 8 is categorized as Dry – Fresh Oak – Red Maple Deciduous Forest Type (FOD2-1) (Lee et al. 1998). The dominate trees in this patch are Red Maple, White Ash, Red Oak, with subordinate tree species of American Elm and Bur Oak. This forest occurs on the upper slope of the bank leading to the Cardinal Trib.

Patch 9 is categorized as Mixed Thicket (THM) (Lee et. al. 1998). This is a previously-cleared area that is regenerating from lack of agricultural use. An old demolished shed structure occurs in the middle of this area and a road crosses the area and the Cardinal Trib to the south connecting to the cultivated fields on the other side of the valley. This area contains shrubs and sapling trees such as Staghorn Sumac, apple

species, Scots Pine, Trembling Aspen, Common Lilac, and grass and forb species found in the CUM habitat to the north.

Patch 10 is categorized as Fresh – Moist White Cedar – Hardwood Mixed Forest (FOM7) (Lee et al. 1998). This area is a bottomland forest that borders the Cardinal Trib and floodplain. The dominate species are White Cedar (*Thuja occidentalis*), Green Ash (*Fraxinus pennsylvanica*), White Birch, and willow shrubs. Subordinate species observed are White Pine, American Elm, Black Spruce, and Red Maple.

Patch 7 is a categorized as a Dry – Fresh Deciduous Hedgerow Thicket Ecosite (THDM3). This area is an old hedgerow separating a cultivated cropland from the CUM habitat on site. This patch is composed of scattered trees and was primary composed of White Ash, Manitoba Maple, with a few Bur Oak and American Elm.

The site also has numerous small tree and shrub patches that have not been classified to ELC due to the planted nature and size.

Patch 5 is composed of small trees with dominate species being Trembling Aspen, Sugar Maple, White Ash, and American Elm. Subordinate species include Bur Oak, Manitoba Maple, Scots Pine, and Staghorn Sumac.

Patch 4 is composed of a few large trees and many sapling and small trees. The dominate species is White Ash and American Elm with subordinate species of White Pine, White Cedar, Bur Oak, Black Cherry, White Spruce, and Scots Pine.

Patch 1 and 6 are small patches of shrubs and saplings that are not categorized under the ELC. Patch 1 is composed of sapling American Elm, White Spruce, and White Ash, along with Staghorn Sumac. Patch 6 is composed of entirely of sapling Manitoba Maple.

The remaining patches (2 - 3, and 13 – 15) are tree patches associated with residential dwellings on site, and therefore do not present natural wildlife habitat. Trees associated with these patches are listed in table 1.

The majority of the trees on site were small (less than 30 cm) or planted in yards and patches. A few large trees are found on site that were present in the 1976 air photo. These were individual trees located on the property and in the hedgerow to the east. Since 1976 trees have regrown into the western portion of the site and small patches around the site. The removal of trees on site are unlikely to affect wildlife in the area and mostly serve aesthetics and shade value. Larger trees can be retained on site to the extent possible during site development.

Table 1: Results of tree inventory survey at the site in 2017.

Tree or patch number	Species	Quantity	Diameter (cm)	Comments	Fate
Tree 1	White Ash	1	51	much dieback	Removed
Tree 2	Sugar Maple	1*	68	some dieback	Removed
Tree 3	Sugar Maple	MS (4)	30 - 34		Removed
Patch 1	Staghorn Sumac	~20	<10		Removed
	American Elm	~10	<10 - 15	some dieback	Removed
	White Spruce	~20	<10 - 35		Removed
	White Ash	~5	<10		Removed
Patch 2	American Elm	5	<10 - 15	dieback and one snag	Removed
Patch 3	Sugar Maple	6	40 - 60	planted in yard	Removed
Patch 4	White Pine	1*	62		Removed
	Bur Oak	1*	51	exposed roots from slope erosion.	Removed
	White Cedar	1*	~53		Removed
	Scots/ Austrian Pine	~10	<10 - 15		Removed
	American Elm	~15	<10 - 15	some dieback	Removed
	Bur Oak	~5	20 - 40		Removed
	Black Cherry	~5	<10		Removed
	White Spruce	~5	<10 - 30		Removed
	White Ash	~15	<10 - 15		Removed
	White Ash	1	~45	some dieback and one snag	Removed
	White Spruce	2	~25 - 35		Removed
Patch 5	Trembling Aspen	~30	<10 - 15		Retained
	Sugar Maple	~10	<10 - 15		Retained
	Sugar Maple	1	~45		Retained
	Bur Oak	~5	20 - 35		Retained
	White Ash	~10	<10 - 15		Retained
	Manitoba Maple	~5	20 - 35		Retained
	American Elm	~10	<10 - 15		Retained
	Scots/ Austrian Pine	2	~25 - 35		Retained
Tree 4	Apple species	2	~25		Removed
Patch 6	Manitoba Maple	~15	<10		Removed
Tree 5	Scots/ Austrian Pine	1	39		Removed
Tree 6	Manitoba Maple	2	49, 25		Removed
Tree 6	White Spruce	1	34		Removed
Patch 7	White Ash	~10	30 - 50	much dieback and a few snags	Removed
	Manitoba Maple	~10	20 - 40		Removed
	Bur Oak	~5	30 - 50		Removed
	American Elm	~5	20 - 40	much dieback and a few snags	Removed
Tree 7	Bur Oak	1*	~85		Removed
Tree 8	Red Maple	1*	76		Removed
Patch 8	White Ash	~60	<10 - 40	much dieback	Retained
	Bur Oak	~15	<10 - 30		Retained
	Trembling Aspen	~10	20 - 40		Retained
	Red Oak	~20	<10 - 20		Retained
	Red Maple	~25	<10 - 25		Retained
	American Elm	~20	<10 - 30	much dieback	Retained
Patch 9	Red Maple	~5	<10 - 30		Retained
	Bur Oak	~5	<10 - 30		Retained
	Staghorn Sumac	~10	<10		Retained
	Trembling Aspen	~10	<10 - 15		Retained
	Apple species	~5	<10 - 25		Retained
Tree 9	Red Maple	1*	82		Removed
Patch 10	White Cedar	~40	20 - 50		Retained
	White Pine	~20	30 - 60		Retained
	American Elm	~20	10 - 30	much dieback and a few snags	Retained

Tree or patch number	Species	Quantity	Diameter (cm)	Comments	Fate
	Green Ash	~40	10 - 30	some dieback	Retained
	Willow species	~30	<10 - 20		Retained
	Black Spruce	~10	20 - 40		Retained
	Red Maple	~20	15 - 40		Retained
	White Birch	~30	<10 - 20		Retained
Patch 11	Manitoba Maple	~20	<10 - 20		Retained
	White Ash	~20	<10 - 20		Retained
	Apple species	~10	<10 - 20		Retained
	Lilac species	~10	<10		Retained
	Bur Oak	~10	<10 - 35		Retained
	Staghorn Sumac	~40	<10		Retained
	Red Maple	~10	<10 - 35		Retained
Tree 10	Red Maple	1*	79		Removed
Tree 11	White Ash	1	<10		Removed
Patch 12	White Pine	~20	15 - 60		Retained
	Bur Oak	~20	20 - 60		Retained
	Black Cherry	~15	20 - 40		Retained
	Trembling Aspen	~30	20 - 50	some snags	Retained
	White Ash	~40	20 - 50	dieback and a couple snags	Retained
	White Birch	~25	<10 - 20		Retained
	Sugar Maple	~30	15 - 40		Retained
	Red Oak	~15	20 - 40		Retained
Patch 13	White Spruce	4	30 - 50		Removed
	Ash species	3	N/A	snags	Removed
Patch 14	White Pine	4	30 - 50		Removed
	White Spruce	9	15 - 40		Removed
	Red Maple	3	20 - 40		Removed
	White Cedar	~20	15 - 20		Removed
	White Ash	~10	15 - 30	mostly dead	Removed
Patch 15	White Spruce	~10	20 - 40		Removed
	White Pine	3	15 - 40		Removed
	White Cedar	~10	15 - 30		Removed
	Shrub species	~10	<10		Removed
Patch 16	American Elm	~40	15 – 30	dieback and snags	Removed
	Trembling Aspen	~60	10 - 25		Removed
	Red Maple	~30	10 - 25		Removed
	Bur Oak	~20	10 - 30		Removed
	White Birch	~60	10 - 20		Removed
	White Ash	~20	10 - 30		Removed

* = Potential specimen tree
MS = multi-stem

3.5 Wildlife

Wildlife surveys were not completed on site during the field visit as it occurred outside of the active season for most species. The site is surrounded by residential and commercial development on three sides and is primarily composed of vacant pasture land. We predict that the site is used by urban wildlife species present throughout the Ottawa region.

No wetlands were observed on or immediately adjacent the site during the field surveys. The Cardinal Trib to the south of the site likely provides habitat for many amphibian species, but is separated from the site by a steep-sloped valley.

3.6 Species at Risk Habitat

A natural heritage information request for the property was submitted to the Kemptville MNRF office. The MNRF response includes a review of significant habitats and natural heritage features on and adjacent to the site. This includes a review of the NHIC element occurrence records for species at risk. The MNRF identified six SAR as having some potential for presence: Barn Swallow (THR), Eastern Whippoorwill (*Caprimulgus vociferous* - THR), Butternut (*Juglans cinerea* - END), Little Brown Myotis (*Myotis lucifugus* - END), Northern Long-eared Bat (*Myotis lucifuga* - END), and Eastern Small-footed Myotis (*Myotis leibii* - END).

KAL's own internal review of SAR potential for the area site relies on publicly available NHIC database records, OBBA squares, and other species databases (Section 3.1) to expand the list, which ensures all listed species within the broader vicinity are considered. Our internal review then takes into account habitats observed on site during the field visits, and knowledge of SAR habitat preferences and distributions when determining potential SAR occurrence. Our review investigated a total 15 species listed under the *ESA* (Ontario, 2007) and *SARA* (Canada, 2002) to occur on or in proximity to the site, including those within the MNRF response. This also includes additional entries for species under consideration for listing within the next two years. For full due diligence, Table 2 indicates the habitat requirements of all of these species, whether the property may provide significant habitat and, if so, whether any individuals of those species were observed during our field studies.

The initial field visit to the site occurred outside of the active window of most wildlife on site. The only evidence of SAR on site during the field visit was Barn Swallow nests in two old, ramshackle farm buildings. These nests were likely used for nesting during the summer and appear freshly made. Confirmation of Barn Swallow presence will require field visits during the breeding bird season (May 24 – July 10). These buildings however, can be approved for removal under a site registration process with the MNRF. This process can be compete based on the observations of nests to date, and does not require further study. Compensation nesting habitat will be required to be created adjacent to the site following Ontario Regulation 242/08 (Ontario, 2017).

No other SAR or SAR habitats were observed on site during the field surveys. The Cultural Meadow in the center of site does not provide suitable habitat for either Eastern Meadowlark or Bobolink. Both of these grassland bird species prefer to breed in grassland habitat with low to moderate grazing to keep grass and forbs at a length between 10 and 50 cm, with an area of at least 5 ha (McCracken et al. 2013). The meadow is only 2 ha in area and approximately 120 m wide at its maximum (mostly narrower). It is too small and interrupted by other structures and trees to be provide habitat potential.

Potential bat roosting habitat may exist within the forest aligning the Cardinal Trib and valley. This habitat contains large diameter trees (i.e. greater than 50 cm) some of which had cavities; a few large snags were also present. Conversely, the proposed development area includes only smaller diameter trees with a few small snags, which are unlikely to provide SAR bat roosting habitat. Site development will be constrained to the area to the north of the valley, and therefore we do not predict any impacts to SAR bat habitat on site. Bats potentially roosting within the forest area, may feed, on occasion, over the open portions of the proposed development area. Feeding potential here would not be altered by residential development.

Table 2: Species at risk with the potential to occur on or adjacent to the site.

Species Name	Provincial (ESA) Status	Habitat Requirement	Habitat on Site	Project Concerns Associated with Habitat on Site
Birds				
Barn Swallow (*Hirundo rustica*)	Threatened	Species prefers to nest on manmade structures such and bridges, barns, and buildings near open terrestrial and aquatic habitats where it forages.	The site does contain manmade structures that could be used for nesting; however, open areas on site are small and unlikely to provide foraging habitat.	Barn swallow nests were observed on site within old farm buildings. Field surveys should be completed during breeding bird season to confirm. Compensation nesting habitat will be required for site development and removal of these buildings. Any removal of these existing, nest-supporting structures must be preceded by a site registration with the MNRF. Site registration will allow for the buildings to be removed within acceptable timing windows and will impose requirements for the installation of alternative nesting structures.
Bobolink (*Dolichonyx oryzivorus*)	Threatened	Periodically mown, dry meadow for nesting. Habitat (meadow) should be > 10 ha, and preferably > 30 ha before bobolink are attracted to the site. Not near tall trees	The site does not contain preferred nesting habitat for these species, as thicket scrub, homes, and forest interrupt the meadow areas, which are too small regardless.	Low potential for occurrence on site. Negligible concerns for the project.
Eastern Meadowlark (*Sturnella magna*)	Threatened	Prefers grasslands and pastures >5 ha in area with moderately tall grasses (25 to 50 cm) and abundant litter cover. High proportion of grasses to forbs and shrubs (<35% forbs and shrubs).	The site does not contain preferred nesting habitat for these species, as thicket scrub, homes, and forest interrupt the meadow areas, which are too small regardless.	Low potential for occurrence on site. None were observed. Negligible concerns for the project.
Eastern Whip-poor-will (*Caprimulgus vociferous*)	Threatened	Species prefers areas that are a mix of open and forested habitats such as savannahs, open woodlands, or forest openings. It nests on the ground or forest floor and has cryptic coloured eggs and are hidden from visual predators.	The open habitats on site are either residential dwellings or fallow pasture, which are not usable habitat. The forests south of the site also, being located primarily on slopes, do not appear to present suitable habitat to the species. The species is not noted to occur within at more at than 20 km of site according to the Ontario Breeding Bird Atlas.	Low potential for occurrence on site. Habitat not observed on or near site. Negligible concerns for the project.
Eastern Wood-pewee (*Contopus virens*)	Special Concern	Prefers mature and intermediate-aged deciduous and mixed forest with an open understory. Often nests and forages near open areas and forest edges.	Forest habitat along the Cardinal Trib has the potential to provide breeding sites for this species; however, the development area contains no breeding habitat.	Low potential for occurrence within project area. Species is not afforded habitat protections under the *ESA*. Negligible concerns for the project.
Wood Thrush (*Hylocichla mustelina*)	Special Concern	Moist deciduous hardwood or mixed forests with trees >16 m in height, a closed canopy (>70%), moderate sub-canopy and shrub layer, fairly open forest floor, and moist soil.	Forest habitat along the Cardinal Trib has the potential to provide breeding sites for this species; however, the development area contains no breeding habitat.	Low potential for occurrence within project area. Species is not afforded habitat protections under the *ESA*. Negligible concerns for the project.
Butterflies				

Species Name	Provincial (ESA) Status	Habitat Requirement	Habitat on Site	Project Concerns Associated with Habitat on Site
Monarch (*Danaus plexippus*)	Special Concern	Caterpillars require milkweed species and are confined to meadow and open areas where it grows, while adults feed on nectar ins a variety of habitats.	Open habitats on and adjacent to site may provide milkweed species; however, it is unlikely that removal of habitats on site would impact species population in the area.	Moderate potential for occurrence. Species is not afforded habitat protections under the *ESA*. Negligible concerns for the project.
Mammals				
Northern Long-eared Bat (*Myotis lucifuga*)	Endangered	Roosts mainly in trees during Summer, especially in boreal/coniferous forest areas; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum.	Forest habitat occurs on the edge of the site to the south along the Cardinal Trib. but is not of the preferred type.	Limited potential for roosting habitat in mature forests along the Cardinal Trib. Unlikely to be present. Residential site usage within the proposed development area would not be anticipated to reduce its utility as a feeding area. Negligible concerns for the project.
Little Brown Myotis (*Myotis lucifuga*)	Endangered	Widespread, roosting in trees and buildings. Hibernate in caves or abandoned mines.	Forest habitat occurs on the edge of the site to the south along the Cardinal Trib. This forest will be protected from development by the buffer along the creek.	Moderate potential for roosting habitat in mature forests along the Cardinal Trib. Low potential for roosting within the project area. Project development is unlikely to impact potential roosting habitat. Residential site usage within the proposed development area would not be anticipated to reduce its utility as a feeding area. Negligible concerns for the project.
Eastern Small-footed Myotis (*Myotis leibii*)	Endangered	Species roosts in a range of habitats including under rocks, rocky outcroppings, buildings, under bridges, caves, mines, and hollow trees. Hibernate in smaller caves subject to air movement.	Forest habitat occurs on the edge of the site to the south along the Cardinal Trib. This forest will be protected from development by the buffer along the creek.	Moderate potential for roosting habitat in mature forests along the Cardinal Trib. Low potential for roosting within the project area. Project development is unlikely to impact potential roosting habitat. Residential site usage within the proposed development area would not be anticipated to reduce its utility as a feeding area. Negligible concerns for the project.
Reptiles				
Blanding's Turtle (*Emydoidea blandingii*)	Threatened	Species prefers shallow water usually in large wetlands or shallow lakes with high abundance of emergent vegetation.	No wetlands were observed on site and the Cardinal Trib is unlikely to provide habitat for this species other than a possible travel corridor, which would be unaffected by development regardless.	Low potential for the species to occur on site. Negligible concerns for the project.
Eastern Musk Turtle (*Sternotherus odoratus*)	Threatened	Lakes, rivers, and ponds with slow-moving water with abundant emergent vegetation and soft muddy bottoms. Preferred nesting sites are close to water and exposed to direct sunlight.	The nearest habitat is located within the Ottawa River approximately 1.5 km to the north. The Cardinal Trib is unlikely to provide habitat for this species.	Low potential for occurrence on site. Negligible concern for the project.
Northern Map Turtle (Graptemys geographica)	Special Concern	Species prefers rivers and lakeshores and hibernates on the bottom of slow-moving sections of rivers. The main prey source is mollusc so unpolluted waters are preferred.	The nearest habitat is located within the Ottawa River approximately 1.5 km to the north. The Cardinal Trib is unlikely to provide habitat for this species.	Low potential for occurrence on site. Negligible concern for the project.

Species Name	Provincial (ESA) Status	Habitat Requirement	Habitat on Site	Project Concerns Associated with Habitat on Site
Snapping Turtle (*Chelydra serpentina*)	Special Concern	Freshwater habitat characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation.	No wetlands were observed on site and the Cardinal Trib is unlikely to provide useful habitat for this species.	Low potential for species to occur on site. Minor concerns for the project.
Vascular Plants				
Butternut (*Juglans cinerea*)	Endangered	Variable but typically on well-drained soils and prefers areas with full sun.	The shrubland in the central area of the site and forest edges along the Cardinal Trib have the potential to provide habitat for this species.	Low potential for occurrence and species was not observed on site or near the site during field surveys. Negligible concerns for the project.

Species occurring or potentially having habitat on site and potentially negatively impacted.

3.7 Other Natural Heritage Features

The Cardinal Creek Urban Natural Area occurs approximately 300 m to the west of the site. This area is separated from the site by multiple residential properties. The MNRF identified a wintering area - deer yard and wintering area - moose early wintering area adjacent to the site. This likely occurs in the forested valley of the Cardinal Trib to the south of the site. The valley also contains unstable slopes according to the City of Ottawa Official Plan – Schedule K (Ottawa, 2015). Accordingly, that valley is deemed to constitute a Significant Valleyland and Significant Wildlife Habitat. It must also be considered as providing and important wildlife corridor for the area.

4.0 PROJECT DESCRIPTION

The proposed 5.3 ha development will ultimately include twelve condominium buildings of four or more storeys, with a total of 510 units, 12 townhouse units and 14 semi-detached units (Figure 2). The units will connect directly with existing municipal water and wastewater systems such that no wells or septic systems area required for the site (IBI, 2018).

Site stormwater management will focus on site level or source control of runoff including, but not limited to: flat site grading where possible, vegetation planting, and groundwater recharge in landscaped areas. The development also proposes to use conveyance control measures to improve runoff quality including vegetated swales and catchbasin sumps.

No development will occur within the erosion allowance of the Cardinal Trib valley and an additional 6 m is reserved as an erosion access allowance.

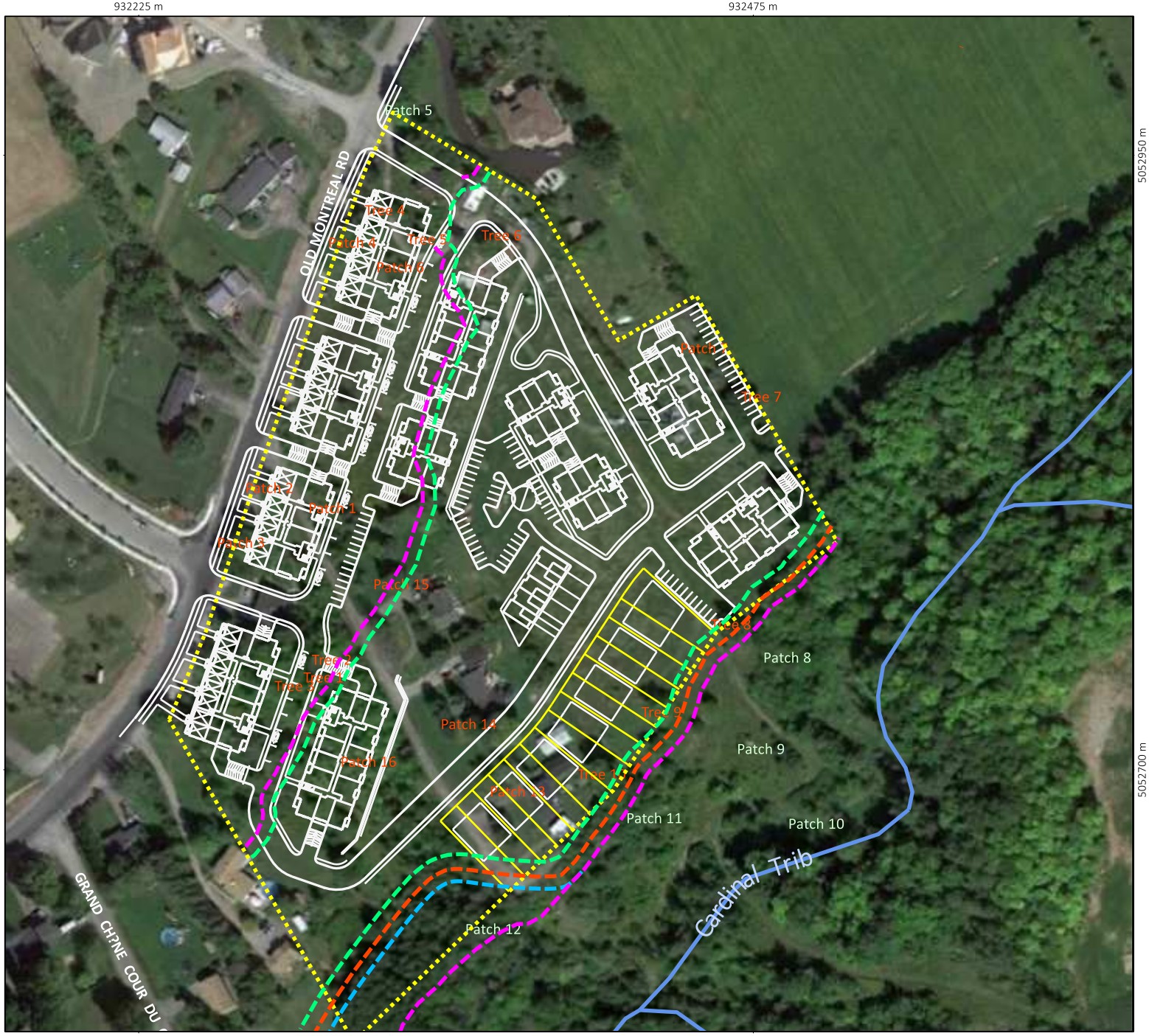

Figure 2 Proposed development.

Legend

Development Area

Geotech.

- Crest of Slope
- Geotechnical Setback
- Erosion Allowance
- Erosion Access Allowance

N

0 50 m

Project: DCRP 715 Trees and ELC2
Created By: TH
Checked By: AF
Universal Transverse Mercator - Zone 17 (N)
Printed on: 2018-02-15

KILGOUR & Associates

5.0 IMPACT ASSESSMENT

5.1 Impacts to Surface Water Features

The Cardinal Trib will remain unaltered. The setback provided by the geotechnical limit of hazard satisfies the setback requirement of the Cardinal Creek Subwatershed Management Plan, and thus the City's OP. The site includes two headwater features (HDFs) – two roadside ditches that drain into Cardinal Creek along Old Montreal Road to the west. The existing driveway-side diches (but not the Old Montreal roadside ditch) will be removed as their ecological function is considered to be limited to conveyance during the spring freshet. The conveyance function can be handled instead by the stormwater management system to be implemented for the development area. The assumption of their limited function however, will be confirmed through a Headwater Drainage Feature Assessment (HDFA) prior to their removal.

The Cardinal Trib to the south may receive some limited overland surface flow from the site, but no HDF channels were observed in or near the valley to convey specific or concentrated flows. The stormwater system for the area will be designed to manage surface water runoff, ensuring no alteration of flow patterns or volumes to the Cardinal Trib (i.e. no increased erosion issues within the valley). The Cardinal Trib itself is protected by the application of the geotechnical limit of hazard. There are no negative impacts to surface water features anticipated from site development.

5.2 Impacts to Trees

The majority of trees within the development area were small (less than 30 cm DBH) or planted in yards or patches. The limited canopy cover and function provided by these trees can be maintained within the new community through trees to be planted as part of a site landscape plan. Some larger trees located around the periphery of the development area will be retained (Figure 2), as will all trees associated with the wooded valley of the Cardinal Trib. The small trees and shrubs patches and west forest area will be removed from site during development. Accordingly, no net negative impacts are anticipated to site trees, site canopy cover, or the forested features adjacent to the development area.

5.3 Impacts to Species at Risk

The only listed species considered as having both presence (confirmed or reasonably likely) on or near the site, and the potential to be directly, negatively impacted by the proposed development, is Barn Swallow. Barn Swallow nests were observed within site barns during the field visits. While these visits occurred outside of the breeding season for these species, the nests appeared to be new and were likely used by Barn Swallows during the 2017 summer breeding season. This is sufficient evidence to conclude their presence on site and to support a site registration with the MNRF.

The two farm buildings containing the area are considered as both Category 1 and 2 Habitat, which has the lowest tolerance to alteration (MNRF, 2015). Category 1 habitat is the nest, while Category 2 habitat is a 5 m buffer around the nest. The presence of Barn Swallow nests on site results in the Cultural Meadow and all lands within 200 m being classified as Category 3 habitat and used a foraging habitat, which includes most of the site. Site registration with the MNRF will oblige the developer to build and manage alternative nesting structures for Barn Swallows, to be locate in proximity to other open areas for feeding.

The registration process, and the subsequent mitigations/compensations imposed by the registration, are recognized by the MNRF as providing a net benefit to the species, and thereby allow for the removal of the barns without contravention of the ESA.

No other SAR or SAR habitat were observed on site during the field visit. Potential bat roosting habitat however, may exist in the mature forests within the valley to the south. The Cardinal Trib will be protected from development by buffers established during geological field surveys. All listed bat species considered to be potentially roosting in the valley forests, are species that are known to feed over residential areas. The conversion of the open landscape of the development area to residential usage, is not anticipated to reduce its potential to support feeding for bats roosting nearby.

Additionally, while bats could also use the farm buildings and adjacent abandoned house for roosting habitat, anthropomorphic structures are not classified as significant wildlife habitat for bats. Regardless, as SAR bats are protected from direct harm under the *ESA*, the removal of these buildings must be completed outside of the active season for bats (April through August) to ensure that no bats are present. Because of this we predict no impacts to bats using anthropomorphic structures on site.

So long as the site registration process for Barn Swallows is employed, and timing windows for bats are followed, no negative impacts to SAR are anticipated for this development project.

5.4 Impacts to Wildlife

The agricultural composition of the site makes it unlikely to support a large and diverse wildlife community. The linear nature of the hedgerows will provide only limited cover for wildlife species and minimal connectivity to other areas as urban development has already been complete to the north, west, and east. The riparian corridor to the south of the site along the Cardinal Trib will not be impacted by site development. Development in these areas is not anticipated to have significant negative impacts on wildlife in the area.

5.5 Impacts to Natural Heritage Features

The forested river valley to the south of the site is deemed as “significant” under multiple natural heritage designations. This area is both a significant woodland and a significant valleyland, and being designated as a wintering area - deer yard and wintering area - moose early wintering area by the MNRF, also constitutes a significant wildlife habitat. This creek valley and its associated forest will be preserved through the application of setbacks from the top of the valley to the new community. Moreover, the stormwater management design community is planned to prevent surface water and sediment runoff from leaving the site and entering the valley. Because of these proposed project setbacks and other mitigation measures, no impacts to the adjacent natural heritage features are anticipated under the proposed development.

6.0 MITIGATIONS

6.1 Mitigations for Surface Water Features

Erosion and sediment control measures will be installed along road side ditches and slope area to prevent overland sediment flow off site during construction. Alteration of site headwater features can only be

completed with permission from the Rideau Valley Conservation Authority, and in accordance with the requirements associated with any permits to alter a waterway as may be issued by them. Any application for a permit to alter a water way, must be preceded and supported by an HDFA. The HDFA will confirm the ecological functions associated with the site HDFs.

6.2 Mitigations for Trees

Please note that this report does not constitute permission to remove any trees from the site. Removal of trees can only be undertaken upon the issuance of a tree removal permit from the City of Ottawa. This report may be used to support the application for that permit and to advise mitigation measures imposed by the permit. Accordingly, to minimize impact to the remaining trees on the property, the following protection measures are indicated as necessary during construction:

- Tree removal on site should be limited to that which is necessary to accommodate site construction.
- To minimize impact to remaining trees during future site development:
    - Erect a fence beyond the critical root zone (CRZ, i.e. 10 x the trunk diameter) of trees. The fence should be highly visible (e.g. orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
    - Do not place any material or equipment within the CRZ of the tree;
    - Do not attach any signs, notices or posters to any tree;
    - Do not raise or lower the existing grade within the CRZ without approval;
    - Tunnel or bore when digging within the CRZ of a tree;
    - Do not damage the root system, trunk or branches of any tree; and
    - Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.
- The *Migratory Bird Convention Act* (Canada, 1994) protects the nests and young of migratory breeding birds in Canada. The City of Ottawa guidelines stipulate no clearing of trees or vegetation between April 1 and August 15, unless a qualified biologist has determined that no nesting is occurring within 5 days prior to the clearing (Ottawa, 2017c).

Specific trees to be planted on site will be identified in the landscape plan for the development. Trees species identified in this plan shoudl be non-invasive and should be native to the Ottawa area. The exp Services (2016) geotechnical report identified five tree species as suitable for this site: Amur Maple (*Acer ginnala*), Serviceberry (*Amelanchier canadensis*), Crabapple (*Malus* spp.), Japanese Lilac (*Syringa reticulate*), and Green Colorado Spruce (*Picea pungens*). These trees were chosen for their small size an low water requirements, as was generally called for under the City's previous Clay Soils Policy. While these

trees are still considered suitable, recent updates to the Clay Soils Policy can allow for the planting of larger trees potentially more similar to natural tree cover within the vicinity. As such landscaping plans should also consider including species such as Red Maple, White Spruce, Pin Cherry, White Birch, Black Cherry, and White Cedar where conditions may now permit. Burr Oak may be considered where spacing allows for future showcase trees. Common Juniper, Maple-leaf Viburnum, Nannyberry, and Northern Bush-honeysuckle may be considered as appropriate shrub species. Trees must be planted to a density equivalent to at least one per unit, though the distribution of specific planting locations may be varied from necessarily planting on every lot, as may be dictated by individual lot considerations. The landscape plan must include additional tree planting within parks and other open spaces as may be accommodated by the final configuration of those areas.

6.3 Mitigations for Species at Risk

Site development will require registration of the site as species at risk (Barn Swallow) habitat and the corresponding creation of compensation nesting habitat under Ontario Regulation 242/08 (Ontario, 2017). Removal of buildings and nests will be performed outside of the breeding season (May through August) to ensure that species area not harmed. Nesting compensation structures will also be installed outside of the breeding season, but before the beginning of the next breeding season (before May 1st.) Compensation nesting structure(s) will be created to in accordance with Ontario Regulation 242/08 (Ontario, 2017). The structure(s) will be installed on the edge of the site near the field to the east or the clearing along the slope to the south near the Cardinal Trib.

Standard bird nesting timing windows apply as per the *Migratory Bird Convention Act* (Canada, 1994). Areas cannot be cleared of trees without first ensuring the absence of nesting birds between April 1 and August 15. The presence of bats extends the closed windows. Because of the possible presence of Little Brown Myotis, clearing of forest areas may only occur between October 1 and April 30. No tree clearing or other destructive site preparation of the property may occur between April and September 30 without first ensuring the absence of birds AND bats from any trees or structures subject to removal.

6.4 Mitigations for Wildlife

Common wildlife species are likely to use the site. The following mitigation measures shall be implemented during construction of the project on site:

- Areas shall not be cleared during sensitive time of the year for wildlife, unless mitigation measures are implemented and/or the habitat has been inspected by a qualified biologist.
- Site clearing should begin at the north end of the site and proceed southward to drive wildlife towards the large forest.
- Do not harm, feed, or unnecessarily harass wildlife.
- Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the site (especially in warm weather).
- Drive slowly and avoid hitting wildlife where possible.

- Shelter – effective mitigation measures include covering or containing piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife.
- Checking the work site (including previously cleared areas) for wildlife, prior to beginning work each day;
- Inspecting protective fencing or other installed measures daily and after each rain event to ensure their integrity and continued function; and,
- Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.

6.5 Mitigations for Natural Heritage Areas

The outer edge of the setback area along the top of the Cardinal Trib valley (i.e. the erosion allowance) must be fenced with silt fencing prior to commencement of any construction on site within 30 m of this line. Construction traffic, activity (other than the construction of rear yard fencing and yard prep for the semi-detached units) or waste, is to be permitted beyond this fence line.

7.0 SUMMARY AND RECOMMENDATIONS

It is our recommendations that the site be registered as containing nesting sites for Barn Swallows with the MNRF. Compensation nesting structures should be created and erected on or adjacent to the site in potential foraging habitat. No other SAR or SAR habitat was observed on site. Trees on site are mostly small and located in shrubby patches and young forests that are unlikely to provide wildlife habitat.

Regards,
KILGOUR & ASSOCIATES LTD.

Terry Hams, MSc.	Anthony Francis, PhD.
Ecologist	Senior Ecologist/Project Manager

Appendix 1
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Appendix 2
Qualifications of Report Author

Anthony Francis, PhD

Dr. Francis is an ecologist with over 18 years of experience in both terrestrial and aquatic projects. His doctoral thesis work on global plant diversity patterns included conducting tree surveys across North America. As a consulting ecologist he has worked on diverse ecological projects including literature reviews of forestry management and species-at-risk; environmental studies of contaminants (metals and suspended particulates); geomatic and statistical analyses for federal and provincial ministries as well as for private industry; and aquatic and terrestrial species inventories. He has contributed to environmental impact statements and federal environmental screening assessments for creek realignments and other infrastructure projects across Ontario.

Terry Hams M.Sc.

Terry is a terrestrial ecologist with over 10 years of experience in terrestrial field work and five years of experience in ecological consulting. He has worked on various projects across the United States and Canada surveying for terrestrial plants and wildlife. Terry has worked on Environmental Assessments for potash mines, Environmental Impact Statements, Constraints Assessments, and Species at Risk Assessments. He has experience preforming of Species at Risk surveys across Canada and has extensive knowledge of terrestrial plant and wildlife species.