Muncaster Environmental Planning Inc.

November 29, 2019

Mr. Greg Winters, MCIP, RPP
Project Manager - Planner
Novatech Engineering Consultants Ltd.
Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

Dear Mr. Winters:

RE: 5618 Hazeldean Road
Tree Conservation Report and Environmental Impact Statement

This Tree Conservation Report and Environmental Impact Statement addresses the existing vegetation, potential tree retention, Species at Risk utilization and other natural environment features on an approximate 86 hectare site at 5618 Hazeldean Road, on the south side of Hazeldean Road, east of Iber Road. The site is within Concession 11, Part of Lot 28 in the Goulbourn Geographic Township of the City of Ottawa.

Cultivated fields, a steel dual-tower hydro line, deciduous hedgerows and cultural habitats are present on the site (Map 1). Aerial photography indicates the site has been in agricultural activity since at least 1976. There is regenerating woody vegetation in the southwest portion of the site where the lands do not appear to have been in agricultural use since the early 1990s and areas of cultural woodlands south of Hazeldean Road.

For the purposes of this report Hazeldean Road is assumed to be in an east-west orientation.

Background and Project Description

The proposed development includes mixed use developments and a park & ride on the south side of Hazeldean Road and further to the south residential units in a variety of densities, including detached homes, townhomes, stacked townhomes, and low-rise apartments. Two-hundred and eighty-eight detached residential units are proposed for the site, with twenty-eight blocks of higher density residential units. Four neighbourhood parks (approximately 0.8 hectares each) will be in each quadrant of the development. The Hazeledean Tributary will remain in a 1.18 hectare open space block south of Hazeldean Road. A 3.23 hectare school block is proposed for the southeast portion of the site, with a stormwater management facility within a 4.41 hectare block in the central-east portion (Map 2). The stormwater management facility was situated to outlet to West Tributary, which will remain open to the east of the site downstream to the Carp River.

The site is designated *General Urban Area* on Schedule B of the City`s Official Plan, with a proposed District Park adjacent to the southeast portion of the site designated *Major Open Space*. Adjacent lands are also designated *General Urban Area* except those to the west that are designated *Employment Area.* No areas designated Urban Natural Features, Natural Environment Area, environmental constraints on Schedule K or elements of the Natural Heritage System (Schedule L3) are on or adjacent to the site. The closest portions of the Natural Heritage System are the low rated Abbott/Iber Woodlot Urban Natural Area approximately 350 metres to the southwest of the southwest corner of the site and the moderately-rated Poole Creek North Urban Natural Area approximately 440 metres to the northwest of the site. There are no Areas of Natural and Scientific Interest or provincially significant wetlands in this portion of Stittsville. No Natural Areas were identified on or adjacent to the site by Keddy (1997).

No rare vegetation, Centers of Ecological Significance, Areas of Natural and Scientific Interest, significant wetlands, natural areas, or woodlands greater than 50 years old were reported within or adjacent to the site in the Carp River Watershed Subwatershed Study (CRWSS) (Robinson, 2004). There are no elements of the CRWSS's Greenlands Plan in the general vicinity of the site other than the corridor associated with the Carp River, approximately 550 metres to the east.

Methodology

This EIS was prepared in accordance with Section 4.7.8 of the City of Ottawa Official Plan (2010) following the EIS Guidelines and the Guidelines for City of Ottawa Tree Conservation Reports, found at http://ottawa.ca/en/development-application-review-process-0/environmental-impact-statement-guidelines and http://ottawa.ca/en/env_water/tlg/trees/preservation/guidelines/index.html,with guidance from the Natural Heritage Reference Manual (OMNR, 2010).

The major objective of this EIS is to determine the feature and functions of the on-site and adjacent natural environment conditions and to assess the anticipated impacts associated with the proposed development on these features and functions. To attain this objective, the draft development plan was reviewed and mitigation measures developed as required based on field observations of the features and functions of the natural environment.

The following items were identified for particular attention in this EIS, recognizing that many of these issues are interrelated:

- what are the terrestrial and aquatic habitat features of the site and adjacent lands and the associated sensitivities?
- as required, what are the recommended areas of tree retention and other mitigation measures to avoid unacceptable impacts on any significant natural heritage features? and,
- does the site support any other natural heritage features, including Species at Risk, that should be considered in development of the site?

Colour aerial photography (1976 - 2014) was used to assess the natural environment features in the general vicinity of the site. Field reviews of the site were completed on October 22nd, 2015 and July 30th, 2016. On October 22nd the weather conditions were partly cloudy skies, a

moderate breeze and an air temperature of 12° C. On July 30th, beginning at 07:00, the air temperature was 16° C, warming to 21° C by 11:00. The skies were clear, with a light breeze.

The field survey and this report were completed by Bernie Muncaster, who has a Master's of Science in Biology and over twenty-eight years of experience in completing natural environment assessments. The purpose of the Tree Conservation Report component is to assess the vegetation and determine which will be retained and protected on the site. The owner of the site is Kizell Management Corporation. No timeline has been set for removal of the woody vegetation.

Existing Conditions

The site is generally flat with a gentle slope to the east. The subsurface conditions reported by Houle Chevrier (2016) consist of a topsoil layer underlain by surficial deposits of silty clay, silt, sandy silt and clayey silt. The overburden thickness summarized by Houle Chevrier (2016) ranged from 0 to 3 metres within the southwest part of the site, increasing to between 5 and 10 metres to the north and east. Rock was observed at the surface in the southwest cultural thicket and Houle Chevrier (2016) report this as an area of exposed limestone bedrock. Published geologic mapping indicates that the bedrock is mapped as interbedded silty dolostone, lithographic to fine crystalline limestone, oolitic limestone, shale and fine grained calcareous quartz sandstone of the Gull River formation (Houle Chevrier, 2016). Houle Chevrier (2016) reported that there are no bedrock faults mapped at the site.

Groundwater was observed by Houle Chevrier (2016) at between ground surface and 2.5 metres below ground surface in selected test pits. Houle Chevrier (2016) noted that substantial groundwater inflow should be expected from tile drains that are present under many of the agricultural fields, particularly during wet periods of the year. For preliminary design purposes Houle Chevrier (2016) estimated grade raise restrictions at about 1.5 to 2 metres for the majority of the site, with no grade raise restrictions in the southwest corner and grade raise restrictions in the range of 1.2 metres along portions of the north and east site peripheries.

Aquatic Features

There are two remaining tributaries to the Carp River on and adjacent to the site. The Hazeldean Tributary crosses Hazeldean Road adjacent to the northwest corner of the site while the West Tributary, as named in the Fernbank Community Design Plan (Muncaster, 2007), flows from the Granite Ridge Stormwater Management facility to the east under Iber Road and enters the site in the vicinity of the new Paul-Desmarais High School (Map 1). A third west to east channel is shown on background mapping in the middle of the site. This channel enters the West Tributary at the east edge of the site, approximately 550 metres south of Hazeldean Road. The confluence with the West Tributary was historically altered by deepening the reach of the West Tributary oriented to the south along the east site boundary. Fish access into the middle channel did not appear possible under typical flows and no fish were captured in this channel by Muncaster (2007). It is likely that the flows in the middle channel were decreased substantially as a result of development along Iber Road and to the west. The channel is now choked with vegetation and has no apparent aquatic characteristics (Photo 2). In 2006 Muncaster (2007) reported maximum water depths less than 10cm and in 2016 there was no evidence of flow in the middle channel.

The Hazeldean Tributary supports intermittent fish habitat. A refuge pool, approximately 3 metres in diameter and a metre in depth, downstream (north) of Hazeldean Road contained at least 200 cyprinids (brook stickleback and at least 3 other types of cyprinid species), when reviewed by Mississippi Valley Conservation Authority staff in early September, 2004. Brook stickleback were also observed adjacent to the Hazeldean Road culvert during June and July, 2004 surveys completed by Muncaster Environmental Planning Inc. and by EcoTec (2001) for the Hazeldean Road Design Projects. Since the above sampling the Hazeldean Tributary has been realigned north of Hazeldean Road. Muncaster (2015) sampled the fish community in the Hazeldean Tributary just upstream of the current site in 2011. The sampling identified a very modest fish community, with only four fish of one species, brook stickleback, netted. The largest representation of this species was less than 4 cm in length. Intermittent flow appears to be a major impairment on the fish utilization of the Hazeldean Tributary. The fish habitat assessment by Muncaster (2015) concluded that the direct fish habitat in the Hazeldean Tributary is very limited by the lack of flows, frequent dry sections of the channel which are choked with non-aquatic vegetation, poor connectivity with downstream habitat and extremely limited fish community in both species diversity and total numbers. The connectivity of the channel has been further disturbed by recent road work along Iber Road and that the section of Hazeldean Tributary immediately downstream of the site at Hazeldean Road is highly disturbed, with a box culvert approximately 50 metres in length diagonally under Hazeldean Road, then an open section of approximately 22 metres which is entirely rock protection with no natural features, followed by a second culvert of approximately 58 metres in length. Manitoba maples trees provide greater stream cover for the Hazeldean Tributary just to the south of Hazeldean Road, while pool habitat at the upstream end of the culvert increased the diversity of in-stream structure. An outlet from a stormwater pond flows into the Hazeldean Tributary channel approximately 120 metres east of Iber Road just west of the west edge of the site. No coarse substrate was observed in the Hazeldean Tributary.

As part of the construction of the Paul-Desmarais High School the West Tributary was piped for the first 190 metres from the west site boundary and a temporary channel created along the east edge of the school to collect drainage from the Abbott Street extension and surrounding lands (Photo 1). On May 9th, 2007 23 fish, representing three fish species - northern redbelly dace, creek chub and brook stickleback, were netted by Muncaster (2007) along the portion of the West Tributary that is now piped. The fish community included a good representation of young creek chub.

The channel of the West Tributary was historically excavated in a straight ditch to the south along the east boundary of the site. Sampling completed in 2006 by Muncaster (2007) caught only 6 fish, representing two very common species, brook stickleback and central mudminnow, at a station along this reach. Downstream the culvert under an access road approximately 550 metres west of the main channel of the Carp River and 150 metres downstream of the site is perched at the downstream end, and represents a blockage to fish movement. A good diversity of common cool and warmwater fish species remained however upstream of the culvert, with seven species recorded; finescale dace, northern redbelly dace, brassy minnow, brook stickleback, fathead minnow, blacknose dace and banded killifish (Muncaster, 2007). Only three fish species, fathead minnow, brook stickleback and banded killifish, were caught downstream of

the culvert. Run and pool habitats are present upstream of the culvert with primarily run habitat downstream. Hard-packed clay is the dominant substrate and in-stream structure is generally lacking outside of some large pieces of woody debris. Bank erosion is common in areas. Further downstream, approximately 330 metres east of the site, fish sampling in 2006 netted a total of ten fish on May 31st, 2006, representing five species: central mudminnow, northern redbelly dace, blacknose shiner, banded killifish and brook stickleback (Muncaster, 2007). The dominant species was brook stickleback at forty percent of the catch. During sampling on August 4th, 2006 only three species were captured by Muncaster (2007): central mudminnow, brown bullhead and brook stickleback. Very scattered stream cover is provided for the West Tributary by white elms up to 30cm dbh, along with scattered hawthorn, red-osier dogwood and common buckthorn shrubs. Silt substrate is dominant.

Terrestrial Features

The site is dominated by cultivated fields, planted in soybeans in 2016 and previously planted in corn (Map 1, Photos 3, 4 and 5).

Cultural Meadow

A few areas of cultural meadows are adjacent to the agricultural fields (Photo 6). The vegetation in the cultural meadow habitats were dominated by non-native and/or invasive ground flora such as field sow-thistle, Canada thistle, bull thistle, stinging nettle, curled dock, purple loosestrife, blueweed, bird's-foot trefoil, Canada goldenrod, common mullien, common milkweed, wild parsnip, wild carrot, tall buttercup, red clover, lamb's quarter, black medic, common ragweed, field mustard, hedge bindweed, chicory, common dandelion, crown vetch, white bedstraw, Canada anemone, common burdock, thicket creeper, meadow grass, brome grass, reed canary grass and bluegrass, along with common buckthorn, glossy buckthorn and hawthorn shrubs.

White elm, green ash and Manitoba maple trees up to 25cm diameter at breast height (dbh) were also in the meadow habitat. Wild grape growth was extensive on much of the woody vegetation. Many of the elm trees were dead or had greatly reduced leaf-out. The remaining leaves often showed stress through early yellowing.

Cultural Thicket

Cultural thickets are the dominant habitat in the southwest portion of the site (Photo 7). Glossy buckthorn is dominant in many areas, with common buckthorn, hawthorn, slender willow, staghorn sumac, red-osier dogwood, highbush cranberry, nannyberry, apple, narrow-leaved meadowsweet and red raspberry other shrubs present. Green ash, trembling aspen, eastern cottonwood, white cedar and white elm stems were up to 20cm dbh. White elms in the southwest cultural thicket had extensive trunk damage and/or no or reduced leaf-out. Some of poplars had fungus and trunk decay.

Ground flora in the cultural thicket included timothy, reed canary grass, brome grass, bluegrass, purple loosestrife, wild carrot, wild parsnip, cow vetch, white-sweet-clover, Canada anemone,

wild cucumber, Canada goldenrod, tall goldenrod, narrow-leaved goldenrod, wild grape, panicled aster, New England aster, Canada thistle, field sow-thistle, field horsetail, white bedstraw, tall buttercup, blueweed, common mullein, common yarrow, elecampane, thimbleweed, common milkweed, bird's-foot trefoil and butter-and-eggs. Reed canary grass, purple loosestrife, path rush, joe-pye-weed and Bebb' sedge were in lower-lying areas along the southwest edge of the site

Cultural Woodland

Areas of cultural woodland are south of Hazeldean Road (Photos 4 and 8) and in the west portion of the site. White elm, Manitoba maple, bur oak and crack willow between 60 and 105cm dbh were the largest trees in the cultural woodlands with smaller green ash, white ash and trembling aspen also present. The larger white elm and Manitoba maple had many broken limbs, with vine growth common and fungus on the larger elm. Trembling aspen was dominant in the west cultural woodland representation, with white elm common. Manitoba maple was dominant in the central-east cultural woodland and the woodland south of Hazeldean Road. Many of the aspen and elm were in poor condition with reduced leaf-out.

Common buckthorn and glossy buckthorn were abundant in many areas of the cultural woodland. Other shrubs observed were red raspberry, black currant, red-osier dogwood, tartarian honeysuckle, staghorn sumac, nannyberry, hawthorn, Bebb's willow, apple and red elderberry. Regenerating bur oak, Manitoba maple and poplar stems were common in many areas.

Garlic mustard was dominant in many areas of the cultural woodland. Other ground flora included wild cucumber, reed canary grass, thicket creeper, wild grape, common yarrow, sensitive fern, common burdock, common dandelion, yellow avens, common ragweed, field sow-thistle, common milkweed, stinging nettle, Canada thistle, panicled aster, Canada goldenrod, small white aster, broad-leaved cattail, wild parsnip, purple loosestrife, field horsetail, chicory, common plantain, hard-stemmed bulrush, wool grass, bittersweet nightshade, sensitive fern and motherwort.

Deciduous Hedgerow

The larger trees in the deciduous hedgerows are principally Manitoba maple, bur oak, basswood, crack willow, white elm and white ash, with the largest stems in good condition in the range of 50 to 80cm dbh. An 80cm dbh white elm in the north portion of the hedgerow along the west property line appeared dead with no leaf-out (Photo 10). White elms in the deciduous hedgerows in the middle-south portion of the site appeared to be in better condition with a fair amount of leaf-out and in the central portion of the west site boundary (Photo 11). A 120cm dbh bur oak in the north east-west hedgerow appeared to be in relatively good condition with good leaf-out noted (Photo 12), as were mature basswoods in the central-west portion of the site (Photo 9). The locations of the larger bur oaks and basswoods in apparently good condition are shown on Map 1.

Some of the east-west hedgerows are almost exclusively white elm and buckthorn shrubs. The deciduous trees in the hedgerows provide some wildlife habitat but many of the larger trees are in poor condition with decreased leaf-out and broken limbs and many of the ash trees now appear dead. Some of the larger multi-stem trees have had one or more of the trunks removed. Many of the trees are also covered in wild grape. These hedgerows are only a single tree width and of reduced value due to their intermittent nature, dominance in many areas of Manitoba maple and white elm and poor condition of many of the trees. The minimal width and intermittent nature, along with the adjacent development to the west, north and east greatly limit the current linkage function provided by the hedgerows. However, the hedgerows do provide local wildlife habitat and have several examples of mature basswood and bur oak in apparently good condition.

Hawthorn, common buckthorn, black currant, red raspberry, staghorn sumac and glossy buckthorn shrubs, along with smaller Manitoba maple and crabapple stems are common among the deciduous hedgerow trees. Wild grape coverage was extensive on many of the shrubs. Other ground flora included common burdock, enchanter's nightshade, meadow grass, large manna grass, brome grass, wild grape, thicket creeper, Canada goldenrod, field-sow thistle and bittersweet nightshade. Wild grape coverage was extensive on many of the lower branches and shrubs in the deciduous hedgerows.

Wildlife observed on and adjacent to the site included American goldfinch, wild turkey, Canada goose, dark-eyed junco, belted kingfisher, double-crested cormorant, Cooper's hawk, mourning dove, house wren, song sparrow, black-capped chickadee, downy woodpecker, northern flicker, yellow warbler, common yellowthroat, eastern kingbird, alder flycatcher, great-crested flycatcher, cedar waxwing, American robin, grey catbird, American crow, European starling, grey squirrel, raccoon, white-tailed deer, woodchuck and coyote scat. Some of the larger bur oaks had cavities which could be used by wildlife. No stick nests or other evidence of raptor utilization on the site was observed.

All photos were taken on July 30th, 2016:

Photo 1 – Realigned portion of the West Tributary downstream of the new high school. View looking east

Photo 2 – Former west to east channel in the central portion of the site

Photo 3 – Cultivated field of soybeans south of Hazeldean Road, with view looking west to the north portion of the central north-south deciduous hedgerow

Photo 4 – Cultivated field of soybeans south of Hazeldean Road, with view looking north to the west cultural woodland representation south of Hazeldean Road

Photo 5 - Cultivated field of soybeans in the southeast portion of the site. View looking southeast along the hydro corridor

Photo 6 – Cultural meadow regenerating on areas of stripped topsoil in south portion of the site between the high school to the west and cultivated fields to the east. View looking north to area of cultural woodland and the hydro corridor

Photo 7 – Cultural thicket vegetation in the southwest portion of the site

Photo 8 – Cultural woodland south of Hazeldean Road and the north-central site edge

Photo 9 - Mature basswood in an east-west deciduous hedgerow in the northwest portion of the site with good leaf-out

Photo 10 – White elm with no leaf out on July 30th. This tree is along the west edge of the site approximately 100 metres south of Hazeldean Road. View looking west to Iber Road

Photo 11 – White elm with good leaf out in the intermittent deciduous hedgerow along the west edge of the site approximately 450 metres south of Hazeldean Road. View looking west to the rear of the commercial buildings off the east side of Iber Road

Photo 12 – Bur oak with good leaf-out among ash and elm trees in poorer condition in the north east-west hedgerow

Species at Risk

No Species at Risk were observed during the field surveys. Two Species at Risk were observed in the overall Fernbank Community Design Plan: the grassland bobolink and eastern meadowlark. These species were observed in large hay fields beginning approximately 150 metres to the south of the site, south of the Trans-Canada Trail. The removal of this grassland habitat was compensated for following MNRF's procedures in 2012.

MNRF's Make a Map: Natural Heritage Areas website was reviewed. This site allows for a search of Threatened and Endangered species covered by the 2008 *Endangered Species Act*, as well as other species of interest. A search was conducted on the 1 km squares including the site and adjacent areas (18VR21-84, 85, 83, 94 and 95). No Species at Risk were reported for these squares with one provincially rare species, ram's-head lady's-slipper noted. The ram's-head lady's-slipper is an orchid found in mature coniferous forests or coniferous fens and swamps, habitat not present on or adjacent to the site.

The breeding birds listed in the Ontario Breeding Bird Atlas for the 10 km square 18VR21 identified eastern whip-poor-will, eastern meadowlark, barn swallow, bank swallow and bobolink as Species at Risk in the overall 10 km square. Cultivated fields are not suitable nesting habitat for eastern meadowlark and bobolink, which utilize larger grasslands such as hayfields. The meadow habitat in the southwest portion of the site is too disturbed with the topsoil stripped and did not contain sufficient grass and other herbaceous cover for potential nesting habitat for grassland Species at Risk (Photo 6). The meadow habitat south of Hazeldean Road is too small and contains too much woody vegetation for potential nesting habitat. No suitable structures or other habitats were observed on or adjacent to the site for barn swallow, bank swallow or chimney swift. There is no suitable habitat on or adjacent to the site for eastern whip-poor-will, which requires large wooded areas with open patches, and/or open woodlands or alvar.

The potential Species at Risk in the City of Ottawa were also reviewed. Many endangered and threatened species have historically been reported in the overall City, including butternut, American ginseng, eastern prairie fringed-orchid, wood turtle, spiny softshell, Blanding's turtle, musk turtle, Henslow's sparrow, loggerhead shrike, little brown myotis, northern long-eared bat, olive hickorynut, chimney swift, eastern meadowlark, barn swallow, bank swallow, bobolink, whip-poor-will, bald eagle, golden eagle, cerulean warbler, least bittern, eastern cougar, lake sturgeon and American eel. Although some larger trees with cavities are present on the site, with respect to potential summer maternity colonies for bats the density of the larger cavity trees is low. In addition, the bat summer maternity colonies are found in deciduous or mixed forests, which are not present on the site.

Butternut and Blanding's turtle are other potential Species at Risk in the general area. The on-site and adjacent channels are not considered suitable watercourses for Blanding's turtle due to the lack of wetland vegetation extending beyond the immediate limited width of the channels, intermittent flow and the disturbed agricultural nature of the channels which are a typical trapezoid shape in cross-section. No wetland communities are present on or adjacent to the site. The closest Blanding's turtle observation is approximately three kilometres to the northwest of the site.

The habitat requirements of the above species along with those listed as special concern were reviewed. The only Species at Risk considered to have the potential to be on or adjacent to the site is butternut which is found in a variety of habitats in Kanata and Stittsville. However, no butternuts were observed in the Fernbank community study area and none were observed during the more recent surveys of this site.

Significant Wildlife Habitat

The potential for significant wildlife habitat was assessed using the guidance in OMNR (2010) and MNRF (2015). Potential components which may lead to a designation of significant wildlife habitat include seasonal concentration areas of animals, rare vegetation communities or specialized habitat for wildlife, habitat for species of conservation concern and animal movement corridors.

No field observations which would trigger a significant wildlife habitat designation with respect to the ELC communities present were noted. For example, the cultural habitats do not support waterfowl stopover or staging areas, colonial nesting bird breeding habitat or other examples of seasonal concentration areas. No rare vegetation communities as noted in MNRF (2015), Provincially rare species, evidence of animal movement corridors or rare or specialized habitats were observed. The cultivated fields and cultural woodlands do not appear to support raptor wintering areas and forests are not present. No seeps or springs were observed. No potential bat hibernacula or maternity colonies in mixed or deciduous forests or suitable turtle nesting or wintering areas were observed.

Due to the abundance of disturbed activities in the immediate area including urban and rural residential developments and agricultural activity there is a very limited potential for linkage functions in and adjacent to the site. No linkages were identified by Keddy (1997) for the Natural Areas in the general area.

Impact Analysis and Recommendations

Other than the intermittent direct fish habitat of the Carp River tributaries, no natural heritage features, as identified in the Provincial Policy Statement and OMNR (2010), were observed on or adjacent to the site which is dominated by cultivated fields, intermittent deciduous hedgerow and cultural thicket and woodlands. There are no forests and no Species at Risk were observed on or adjacent to the site.

The Hazeldean Tributary and associated limited intermittent fish habitat will be retained in its existing alignment. The associated open space corridor provides a development setback that serves to protect the creek against erosion, provides some canopy cover in the east portion and locally preserves the natural environment. Well before it is proposed to remove the remaining portion of the West Tributary, a Request for Review will be submitted to the department of Fisheries and Oceans and the Mississippi Valley Conservation Authority contacted. Off-site contributions, including from the Granite Ridge stormwater management facility, will be piped to the portion of the West Tributary to remain open to the east of the site. The downstream reach contains a canopy cover, which is not present on-site, and the channel has many more natural

features and a greater fish community than the on-site attributes. The West Tributary will remain open downstream of the site for approximately 880 metres east and northeast to the Carp River. Flows from a stormwater management facility constructed in the central-east portion of the site will outlet to the West Tributary, maintaining the existing flow contributions to the site while treating the stormwater. As outlined in the Fernbank Environmental Management Plan, enhancements will be funded by the applicant to improve the aquatic habitat structure in the Carp River corridor upstream (south) of Hazeldean Road. These enhancements will be specified in a Compensation Plan for the removal of the portion of the West Tributary on the site. Components of the plan may include improvement in the channel definition to increase fish access, removal of islands that are splitting flow and debris jams, plantings of native trees and shrubs to provide riparian cover along the Carp River and remaining West Tributary within publicly owned lands, and installation of additional in-stream structure such as floodplain and deeper refuge pools, riffles, logs, root wads and boulders. In addition, on the West Tributary to the east of the site, removal of a perched culvert under an access road may be part of the Compensation Plan. Components of the Compensation Plan will be developed in consultation with the Conservation Authority and the City.

Where silty clay soils are present tree planting should be limited to trees with low water demand. Tree species to avoid in this situation include poplars, willows and Manitoba maple. Plantings of native vegetation as part of the development will provide a diversity of natural environment and aesthetic features. Potential native species to plant include nannyberry, elderberry and dogwood shrubs along with sugar maple, red maple, basswood, balsam fir, white cedar, bur oak, red oak and white spruce trees. Sourcing native species from local seed sources is strongly recommended to ensure adaptability and longevity.

Although many larger deciduous trees with good leaf-out, including bur oaks and basswoods, are in the on-site deciduous hedgerows, NOVATECH (2016) have advised that grade raises in the range of one metre will be required for the site to meet the urban servicing requirements. Some tree and shrub retention is anticipated along the Hazeldean Tributary, the hydro corridor and the west edge of the site, as shown on Map 2.

Trees to be retained will be protected with sturdy orange construction fencing at least 1.2 metres in height installed from the tree trunk a minimum distance of ten times the retained tree diameter. Signs, notices or posters are not to be attached to any tree. No grading, heavy machinery traffic, stockpiling of material, machinery maintenance and refueling or other activities that may cause soil compaction to occur within four metres of the critical root zone of the trees to be retained and protected. The root system, trunk or branches of the trees to be retained are to be protected and not damaged. If any roots of trees to be retained are exposed during site alterations, the roots shall be immediately reburied with soil or covered with filter cloth, burlap or woodchips and kept moist until the roots can be buried permanently. A plastic covering should be used to retain moisture during an extended period when watering is not be possible. Any roots that must be cut are to be cut cleanly to facilitate healing and as far from the tree as possible. Exhaust fumes from all equipment during construction will not be directed towards the canopy of any retained trees.

All of the supports and bracing for the protective fencing should be placed outside of the protected area and should be installed in such a way as to minimize root damage. Also, since the

desired effect of the barrier is to prevent construction traffic from entering the trees' critical root zones, the barrier should be kept in place until all site servicing and construction has been completed.

To protect breeding birds, the woody vegetation removal should not occur between April 15th and August 15th, unless a breeding bird survey conducted by a qualified biologist within five days of the woody vegetation removal identifies no active nests in the trees or shrubs. No stick nests or other evidence of raptor utilization on the site was observed.

Other Mitigation Measures

Many helpful wildlife oriented mitigation measures are detailed in the City's Protocol for Wildlife Protection during Construction (City of Ottawa, 2015). For example any of the larger trees with wildlife cavity potential are to be removed in the less sensitive periods of early spring or late summer to early fall. Contractors are to review in detail and understand the City's Protocol for Wildlife Protection during Construction prior to commencement of construction. The contractor is to be aware of the potential Species at Risk in the vicinity of the site including barn swallow and butternut. Appendix 1 of City of Ottawa (2015) describes these species. Bernie Muncaster (613-748-3753) is the project biologist for this development. Any Species at Risk sightings are to be immediately reported to the project manager and the Ministry of Environment, Conservation and Parks and work that may impact the species suspended immediately.

As recommended in the City of Ottawa (2015) prior to beginning work each day, the work areas are to be checked for wildlife by conducting a thorough visual inspection of the work space and immediate surroundings. See Section 2.5 of the City's Protocol for Wildlife Protection during Construction (City of Ottawa, 2015) for additional recommendations on construction site management.

Any turtles and snakes are to be relocated to the open space corridor associated with the Carp River corridor to the east the site. Animals should be moved only far enough to ensure their immediate safety. See Appendix 1 and the links in Section 4 of City of Ottawa (2015) for suggestions on how to effectively relocate turtles and snakes.

Additional recommended mitigation measures for sediment and erosion control and general environmental protection include:

- Any groundwater that must be removed from work area will be pumped into a proper filter mechanism such as a sediment trap or filter bag prior to release to the environment;
- The extent of exposed soils is to be kept to a minimum at all times. Re-vegetation of exposed, non-developed areas is to be achieved as soon as possible. The objective with respect to erosion and sediment controls will be to ensure that the surface water runoff leaving the site is not degraded with respect to water quantity or quality. Erosion and sediment control will focus on best management practices such as grassed swales with a reduced slope and direction of roof runoff to grass or other permeable surfaces.

- During construction seepage barriers such as silt fencing, straw bale check dams and other sediment and erosion control measures will be installed as required to OPSD requirements in any temporary drainage ditches and around disturbed areas during construction and stockpiles of fine material. These control measures must be properly maintained to maximize their function during construction;
- Silt fencing is recommended around the work area. The fencing must be properly keyed in to filter runoff and maintained as required including repair of broken sections and removal of accumulated sediment;
- Municipal by-laws and provincial regulations for noise will be followed and utilities will be located as required in the vicinity of the site prior to construction; and,
- Waste will be managed in accordance with provincial regulations. The contractor will have a spill kit on-hand at all times in case of spills or other accidents.

Schedule of Proposed Works

No timeline has been set of the removal of the woody vegetation but it should be completed outside of the breeding bird season. As indicated above any of the larger trees with wildlife cavity potential are to be removed in the less sensitive periods of early spring or late summer to early fall. City of Ottawa staff (Forester – Planning) is to be contacted at least two business days prior to any tree removal so that staff have the opportunity to verify that the protective fencing, if applicable, has been properly constructed.

Cumulative Effects

The Canadian Environmental Assessment Agency (CEAA) defines cumulative effects as…"*the effects on the environment caused by an action in combination with other past, present, and future human actions*…" They occur when two or more project-related environmental effects, or two or more independent projects, combine to produce an augmented effect. These cumulative effects may be positive or negative.

The site is dominated by cultivated fields with many deciduous hedgerows. The deciduous hedgerows contain some representation of more desirable species such as bur oak and basswood in apparently good condition. Unfortunately to meet urban grading and servicing requirements in combination with the central location of the trees, these trees and their associated local wildlife habitat will be removed as part of this urban mixed-use development. It is anticipated that as the on-site plantings of native trees and shrubs grow the local wildlife habitat will be in part replaced and the effects of the proposed development on the cumulative effects in the general landscape minimized. Retention of the northwest open space block, trees along the site periphery and the hydro corridor will also assist in retaining the local wildlife habitat.

Conclusion

A mixed-use development is proposed for an approximate 86 hectare site at 5618 Hazeldean Road, on the south side of Hazeldean Road, east of Iber Road. The development includes residential units in a variety of densities such as detached homes, townhomes, stacked townhomes and low-rise apartments. There will be four approximately 0.8 hectare neighbourhood parks on the site and a park & ride on the south side of Hazeldean Road.

The site is in the urban area of the City of Ottawa and is dominated by cultivated fields with deciduous hedgerows. The limited aquatic habitat within the Hazeldean Tributary will be retained, with the remaining on-site portion of the West Tributary removed. The West Tributary downstream of the site will be retained and enhanced as part of the urban development to the east. No Species at Risk were observed on or adjacent to the site. Due to their location and urban grading and servicing requirements removal appears required for the on-site woody vegetation outside of the site peripheries, hydro corridor and open space block south of Hazeldean Road. A generous assortment of native plantings as part of the landscaping for the site will help to replace the features and functions of the woody vegetation to be removed.

It is important that the other mitigation measures outlined in this EIS and TCR are properly implemented and maintained.

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Please call if you have any questions on this TCR and Environmental Impact Statement.

Yours Sincerely,
MUNCASTER ENVIRONMENTAL PLANNING INC.

Bernie Muncaster, M.Sc.
Principal

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air photo from Google Earth (2015)

Legend

- Site
- Hazeldean Tributary
- West Tributuary
- Vegetation communities
- Trees in better condition:
  - B Bur Oak (70 - 120cm dbh)
  - W Basswood (64 - 66cm dbh)

Vegetation Communities

1. Agricultural lands
2. Cultural meadow
3. Cultural thicket
4. Cultural woodland
5. Deciduous hedgerow

Approx. Scale 1:5,400
(on a 11 x 17 plot)

0 50 100 150 200
METRES

Prepared for: NOVATECH

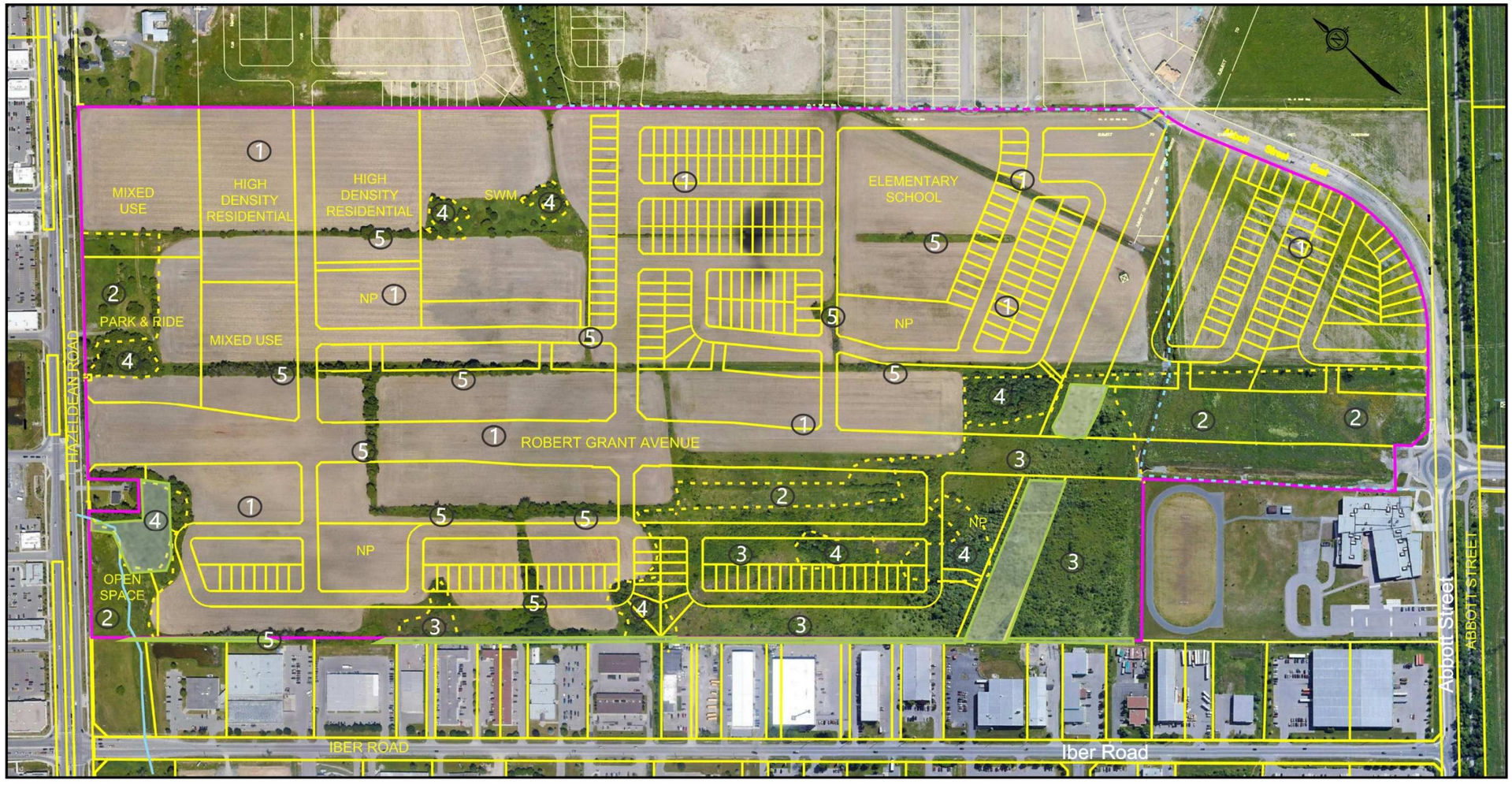
Prepared by: Muncaster Environmental Planning Inc.

CURRENT VEGETATION

5618 Hazeldean Road
Fernbank, City of Ottawa

Map 1

FILE: 16-03 August 12, 2016



air photo from geoOttawa (2017)

Legend

- Site
- Hazeldean Tributary
- West Tributuary
- Vegetation communities
- Potential Areas of Tree and Shrub Retention

Vegetation Communities

1. Agricultural lands
2. Cultural meadow
3. Cultural thicket
4. Cultural woodland
5. Deciduous hedgerow

Approx. Scale 1:5,400 (on a 11 x 17 plot)

0 50 100 150 200
METRES

Prepared for: NOVATECH

Prepared by: Muncaster Environmental Planning Inc.

PROPOSED CONSERVED VEGETATION

5618 Hazeldean Road
Fernbank, City of Ottawa

Map 2

FILE: 16-03 November 21, 2019