



Muncaster
Environmental
Planning Inc.

October 25, 2019

Mr. Kyle MacHutchon
Inverness Homes
69 Moore Street
Richmond, Ontario
K0A 2Z0

Dear Mr. MacHutchon:

RE: 147 Langstaff Drive, Carp
Environmental Impact Statement and Tree Conservation Report

This Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) assesses a proposed residential development in the centre of the Village of Carp. The site is on the west side of Langstaff Drive, approximately 60 metres east of Carp Road. The approximately 7.6 hectare site was historically dominated by agricultural fields, with a treed ravine through the central portion. More recently the north portion of the site was used for surface parking. For the purposes of this report Langstaff Drive and Carp Road are considered to be in a north-south orientation.

Methodology

This EIS and TCR was prepared in accordance with Section 4.7.8 of the City of Ottawa Official Plan (2010) following the EIS and TCR for the City of Ottawa, with guidance from the Natural Heritage Reference Manual (OMNR, 2010). The field surveys and this report were completed by Bernie Muncaster, who has a Master's of Science in Biology and over thirty-one years of experience completing natural environment assessments. In addition, Shaun St. Pierre completed butternut heath assessments on and adjacent to the site on June 20th, 2019. The purpose of the Tree Conservation Report component is to determine any tree stands that should be retained and protected and the associated protection measures. It is proposed to remove trees not identified for retention in 2020, before the breeding bird period. The owner of the site is Inverness Homes.

The EIS will provide the methodology to mitigate as required negative impacts on significant features and functions. Potential Species at Risk in the general area were identified from Ministry of Natural Resources and Forestry databases, the Ontario Breeding Bird Atlas, the Ontario Reptile and Amphibian Atlas, Species at Risk reported for the overall City of Ottawa, and our work on several projects in this portion of Ottawa.

Initial field surveys of the site and adjacent lands was completed outside of the growing season on October 24th, 2008 and April 24th, 2019 from 11:00 to 13:45. Weather conditions included a moderate breeze, cloudy skies, and an air temperature of 6° C. Also in 2019, field surveys were

completed on June 8th, 20th and 27th, 2019, between 06:05 and 09:45 Weather conditions included calm winds or a light breeze, sunny and overcast skies, and air temperatures between 16 and 20° C. In addition to a review of the vegetation and wildlife on and adjacent to the site, two point counts were completed for potential grassland Species at Risk (bobolink and eastern meadowlark) in the cultural meadow habitat. These surveys followed the MNRF sampling protocol including timing the surveys at least one week apart and completing the point counts before 09:00 under good weather conditions with minimal wind and no precipitation.

Environmental Features

The general area is dominated by residences and other developed features of the Village of Carp, including the Carp Fairgrounds to the north and the Huntley Centennial Public School to the east of Langstaff Drive. The closest lands zoned Environmental Protection are approximately 700 metres to the east of the site along the west edge of the Carp Hill Natural Area, with the closest Open Space zoned lands a mostly forested area about 400 metres to the northwest of the site, west of Carp Road. The Carp Hills are also the closest lands designated Natural Environment Area and contain the closest Provincially Significant Wetlands and Areas of Natural and Scientific Interest to site. As with the majority of lands within Carp Village, the site and adjacent lands are part of a Wellhead Protection Area on Schedule K of the Official Plan. A small portion of the City's Natural Heritage System, as shown on the Schedule L3 overlay, is along the ravine in the south portion of the site (see purple line on Map 1). The ravine includes a tributary of the Carp River, which is also shown on Schedule L3. There are no unevaluated wetlands, as shown on geoOttawa, on or adjacent to the site, with some forest cover indicated in the south-central portion of the site along the Carp River tributary and associated ravine.

No areas of rare vegetation, Areas of Natural and Scientific Interest, wetlands, woodlands greater than 50 years of age, or forest interior habitat were identified on or adjacent to the site in the Carp River Watershed/Subwatershed Study (CRWSS) (Robinson, 2004). The on-site and adjacent tributaries were considered 'disturbed/alerted' in the CRWSS and fish community types were not identified for these channels. The streamside environment was also considered degraded. No high or moderate recharge areas were identified in the vicinity of the site in the CRWSS.

Proposed Residential Development

The Applicant is proposing a rental 'retirement community', as shown on the Site Plan which is reproduced as Figure 4 at the end of this report. The proposal would see 84 townhomes and three 3 storey apartment buildings with a total of 75 units within them. This would bring the total residential units proposed for this site to 159. The Applicant is also proposing parkland along both sides of a central ravine and a pathway system that would connect the parkland using existing crossings of the ravine. The development will also include associated access lanes and parking areas with landscaped margins. Pathways are also proposed to encourage movement from the development to Carp Road and the amenities existing within the Village. A Clubhouse is proposed on the site with exact uses to be determined. Three accesses, all off of Langstaff Drive, are proposed to the site. The site will be on full municipal services. Stormwater runoff from the proposed development will be collected and conveyed via an on-site storm sewer

system (minor system) to the central ravine, which is an existing stormwater management facility. The existing ravine stormwater management facility was designed to provide quantity control and detention of stormwater runoff for the 35.9 hectare tributary drainage area. For larger storm events, the stormwater runoff from the proposed development will be conveyed to the existing ravine stormwater management facility via the major overland flow route (major system). Quality control of stormwater runoff will be provided by multiple stormwater treatment units installed in-line with the minor storm sewer system.

Existing Conditions

The topography of the tablelands is generally level, with a gentle slope to the southwest. The central ravine is between three to five metres deep, with the ravine adjacent to the northwest property line between four and five metres deep (Paterson, 2019). The native soils were mapped by Schut and Wilson (1987) as imperfectly-drained silty loams and well drained sandy loams, with the ravine noted as an eroded gully. Paterson (2019) described the surficial geology as topsoil overlying a thin, compact silty sand layer and/or very stiff to stiff brown silty clay crust, which in turn is underlain by a stiff to firm grey silty clay deposit. These layers are followed by a very dense to very loose grey silty sand underlain by an inferred glacial till deposit. Practical refusal was encountered by Paterson (2019) at depths ranging from 18.9 to 24.9 metres below ground surface. Due to the presence of a silty clay deposit, permissible grade raise restrictions are recommended by Paterson (2019b) for this site. The permissible grade raises determined by Paterson (2019b) ranged from up to 1.2 metres for a small area adjacent to the ravine to the northwest of the site to up to 3 metres for the south and east portions of the site. See Drawing PG4918-2 at the end of Paterson (2019b) for the areas of permissible grade raises.

Groundwater was observed by Paterson (2019) in depths between 2.1 and 7.0 metres below the ground surface. The long-term groundwater level at the site was expected by Paterson (2019) to range from approximately 4.5 to 5.5 metres below ground surface. Paterson (2019) concluded that groundwater at the site will generally flow laterally through the silty sand and glacial till towards topographically low areas, such as the ravines on and adjacent to the site. As such, Paterson (2019) interpreted that the topographical and geological conditions are suitable for low to moderate discharge to be occurring at the site.

The site is dominated by cultural meadows on former agricultural lands, with trees along the east site periphery and within and adjacent to portions of the central ravine containing the Carp River tributary.

The cultural meadows appeared to be cut frequently and potentially used as hayfields (Photos 1 and 2). Common ground flora included field sow-thistle, Canada thistle, cow vetch, reed canary grass, common brome grass, bluegrass, June meadow grass, orchard grass, timothy, common mullein, common strawberry, common milkweed, common dandelion, wild carrot, red clover, white clover, white-sweet clover, thicket creeper, white bedstraw, ox-eye daisy, lesser stitchwort, tall buttercup, blueweed, evening primrose, tall cinquefoil, heal-all, yellow goat's-beard, common burdock, bird's-foot tick trefoil, common mugwort, common plantain, bladder campion, yellow hawkweed, Canada goldenrod, and small white aster. Common juniper, staghorn sumac, and red-osier dogwood shrubs were noted along the meadow peripheries, along

with scattered Manitoba maple, white ash, and white elm trees up to 35cm diameter at breast height (dbh).

The largest tree noted was a mature bur oak (110cm diameter at breast height (dbh)) along the ravine slope, with mature basswood, white elm, sugar maple, red maple, and crack willows also in the ravine (Photos 5 and 6). Some of the older trees appeared to be entering senescence and natural deadfall was present. Smaller white cedar, white spruce, Manitoba maple, sugar maple, black cherry, trembling aspen, basswood, and apple were also in the ravine. Common buckthorn and glossy buckthorn shrubs were abundant among the trees in the ravine, with hawthorn, chokecherry, red raspberry, Tartarian honeysuckle, gray dogwood, and red-osier dogwood also observed. Regenerating stems in the understory included green ash, white elm, Manitoba maple, bur oak, and basswood. The ground flora in the upland deciduous forest along the ravine was generally reflective of disturbed conditions including Canada goldenrod, dame's rocket, corn gromwell, reed canary grass, June meadow grass, blue violet, common burdock, thicket creeper, common milkweed, ox-eye daisy, cow vetch, white bedstraw, common strawberry, field horsetail, wormseed mustard, common dandelion, bittersweet nightshade, wild parsnip, tall buttercup with Virginia waterleaf, joe-pye-weed, blue cohosh, spotted jewelweed, and bloodroot also present.

Deciduous trees extend onto the tablelands in the south portion of the site. Here coppice, multi-stem, Manitoba maples up to 40cm dbh were dominant adjacent to the foundations of the former structures, with smaller bur oak, sugar maple, basswood, white elm, and green ash in fewer numbers than the Manitoba maple (Photo 8). Most of the Manitoba maple had very in poor form with slanted trunks, broken trunks, and horizontal broken branches. Common buckthorn, staghorn sumac, and red-osier dogwood shrubs were also on the tablelands. A derelict shelter was in the central portion of the site adjacent to the top of the ravine valley on the east side.

A single-tree width intermittent deciduous hedgerow extended from the central ravine east towards Langstaff Drive. Bur oak was dominant in the hedgerow, with Manitoba maple, basswood, and white elm up to 30cm dbh were present. Thicket creeper coverage was dominant on the lower branches of many of the hedgerow trees, with shrubs such as glossy buckthorn tartarian honeysuckle, red-osier dogwood, red raspberry, and staghorn sumac generally replacing the trees in the east portion of the hedgerow.

Manitoba maple, white elm, Scot's pine, sugar maple, bur oak, green ash, basswood, and white cedar were common along the southwest and west site periphery, adjacent to another ravine immediately to the northwest of the site and between the site and a cemetery (Photo 8). Black walnut and butternut were also present. The largest trees in this area were mature bur oaks up to 70cm dbh and sugar maple and basswood in the 40cm to 50cm dbh range. Most deciduous trees along the edge of the tablelands adjacent to the ravine were in the 15 to 30cm dbh range.

Flowing water was observed during the 2019 surveys in both the central ravine (Photo 3) and the ravine adjacent to the west and northwest site edges (Photo 7). The potential fish habitat in these channels is greatly limited by the lack of an open connection with the Carp River to the south, the use of the upper portion of the central ravine as a stormwater management feature, and two long 60cm csp culverts within the central ravine channel (Photo 4). The downstream ends of

these culverts are perched, with a 40cm step noted on June 20th, 2019. Thus, fish movement through these culverts does not appear possible. The exposed substrate was included hard pack clay with some rock protection in association with the culverts providing coarser material. Geomorphix (2019) noted that the channel banks were composed of clay, silt and sand, and the average bankfull channel width for the channel in the central ravine was estimated at approximately 3.0 metres. Signs of erosion were noted by Paterson (2019b) along the lower portion of the slope face that confines the channel in the central ravine. Some minor sloughing failures were also noted by Paterson (2019b) in the lower portion of the slope, leaving some exposed tree roots. No evidence of active erosion was noted along the toe of slope.

The general characteristics of the central and western ravines are discussed by Geomorphix (2019) who considered the on-site and adjacent channels to be confined systems.

Wildlife observed included grey squirrel, eastern chipmunk, American crow, red-winged blackbird (agitated), common grackle, European starling, northern flicker, yellow-bellied sapsucker, black-capped chickadee, blue jay, great-crested flycatcher, tree swallow, American robin, red-eyed vireo, ovenbird, yellow warbler, common yellowthroat, song sparrow, chipping sparrow, American goldfinch, Baltimore oriole, white-breasted nuthatch, blue jay, mourning dove, Canada goose, and ring-billed gull. Two chimney swifts were observed on the morning of June 8th and June 20th flying to the south of the site. Woodpecker cavities were observed in a couple of large snags within the ravine and a few of the mature deciduous trees in the ravines contained larger cavities which may be used by other wildlife. No potential wildlife cavity trees were noted on the lands proposed for development.



*Photo 1 – Meadow habitat in the northeast portion of the site.
View looking north to the wooded ravine along the northwest site edge*



*Photo 2 – Meadow habitat in the southeast portion of the site.
View looking west to deciduous forest along central ravine*



Photo 3 – Channel with flowing water on June 20th in the central ravine. View looking northwest



Photo 4 – Downstream end of long culvert under access lane of blast rock through the central ravine. Another similar crossing is further south, downstream. View looking south



Photo 5 – Mature sugar maple in the central ravine. View looking west



Photo 6 – Central ravine is generally well covered with deciduous trees. View looking northwest



Photo 7 – Channel and ravine adjacent to the northwest side edge. View looking south



Photo 8 – Manitoba maples and smaller other deciduous trees around the former buildings in the south portion of the site. View looking southeast



Photo 9 – Butternut in the southwest corner of the site. View looking southwest

Species at Risk and Other Species of Special Interest

On April 19th, 2019, the Ministry of the Natural Resources and Forestry'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 lands (18VR12-81, -82, -91, and -92). Four Species at Risk were identified for these 1 km squares: bobolink, eastern meadowlark, chimney swift, and Blanding's turtle, with one species of special concern, snapping turtle, noted. Blanding's turtle, snapping turtle and northern map turtle, another species of special concern, were recorded for the overall 10 km square 18VR12 in the Ontario Reptile and Amphibian Atlas. These turtle species are known from the Carp River corridor to the southeast of the site and the Carp Hills to the east. Although there is an on-site tributary of the Carp River, the flow within the tributary enters the Village infrastructure approximately 25 metres north of Donald B. Munro Drive south of the site. No open channel or contiguous natural corridor were observed for the last 180 metres northeast of the Carp River. Thus, there appears to be no reasonable potential for turtles to move from the Carp River corridor northeast to the site. Any potential turtle movement from the Carp Hills west to the site would be impaired by over 600 metres of residential developments. No suitable wetland habitat for turtles was observed on the site.

Chimney swifts use open brick chimneys and historically tree cavities for nesting. No potential structures are present on the site for chimney swift or barn swallow nesting. However, chimney swifts are known to nest in the older buildings on the south side of Donald B. Munro Drive to the north of the site and were observed during two of the June, 2019 surveys flying overhead to the north of the site. Bobolink and eastern meadowlark utilize larger grasslands such as hayfields for nesting. The on-site meadow habitat appears sufficiently large and open for nesting by these grassland species and thus three early morning field surveys were completed in June, 2019. No bobolink or eastern meadowlark were observed during these targeted surveys or during the other surveys.

Species at Risk reported in the Breeding Bird Atlas for the 10 km square 18VR12 are bobolink, eastern meadowlark, barn swallow, bank swallow, eastern whip-poor-will and chimney swift. In addition to the species discussed above barn swallow nests on structures with open rafters such as barns, larger agricultural sheds and bridges, while bank swallow is a colonial nester; burrowing in eroding silt or sand banks and sand pit walls. No suitable nesting structures for these birds were observed on or adjacent to the site. Eastern whip-poor-will requires large wooded areas with open patches, and/or open woodlands or alvar habitats. The on-site forests are too small and the understory of the on-site and adjacent forests appear too thick for whip-poor-will use.

No aquatic Species at Risk are reported for this portion of the Carp River watershed in the database maintained by the Department of Fisheries and Oceans (<http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>).

The potential Species at Risk historically reported for the overall City of Ottawa and their habitat requirements were also reviewed, including butternut, American ginseng, eastern prairie fringed-

orchid, butternut, wood turtle, spiny softshell, Blanding's turtle, Henslow's sparrow, loggerhead shrike, eastern meadowlark, barn swallow, bobolink, eastern whip-poor-will, bald eagle, golden eagle, least bittern, little brown bat, eastern small-footed myotis, northern long-eared bat, olive hickorynut, eastern cougar, lake sturgeon, cerulean warbler, and American eel. Some of the decomposing tree snags present near the base of the central ravine contained cavities but these cavities appeared too open to be used as potential summer maternal bat colonies.

In addition to bobolink and eastern meadowlark, butternut has the potential to be on and adjacent to the site and seventeen were assessed on June 20th, 2019 by Shaun St. Pierre (Figure 3). Fourteen of the 17 butternuts were assessed as healthy but the majority were very young with 10 of the 14 butternuts assessed as Category 2 trees 4cm dbh or less. Two other healthy butternuts (20cm and 31cm dbh) along the west edge of the site were assessed as Category 3 trees (see red dots on Figure 3). The other Category 2 butternuts were 6cm and 10cm dbh. Once a 30 day Ministry review period of the butternut health assessment has passed, the unhealthy butternuts (Category 1) can be removed pending nesting birds and any other concerns. Prior to any site alterations that may impact the butternuts assessed as healthy, compensation for the removal or harm of these butternuts must be completed following the ESA process in place at the time of the proposed removal. It appears the following healthy butternuts will need to be removed: # 7 (31cm dbh), # 10 (1cm dbh), # 11 (4cm dbh), # 12 (1cm dbh), # 13 (2cm dbh), and # 17 (2cm dbh), with the other healthy butternuts anticipated to be harmed or will be far enough away from the areas to be disturbed that they will not be harmed.

Significant Woodlands and Valleylands

As the site is in the rural portion of the City of Ottawa, the significance of woodlands is evaluated using the criteria in the Natural Heritage Reference Manual (OMNR, 2010). The on-site forest and small contiguous forested areas extending to the south are too small at just over one hectare, to be considered significant. No interior forest habitat is present and no other attributes of the forest were observed for which the forest would be considered significant woodlands.

However, the ravine would likely be considered significant valleylands based on the well-treed slopes, significant slopes of the valley, valley widths greater than 25 metres and lengths greater than 50 metres, and presence of flow in the Carp River tributary. The ravine adjacent to the northwest and west site edges would also likely meet the criteria for significant valleylands.

Significant Wildlife Habitat

The potential for significant wildlife habitat is 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.

As there is no forest interior habitat on site, eastern wood pewee and wood thrush, both Species of Special Concern, are not anticipated to be on the site and were not heard during the June survey. The on-site habitat is too disturbed with minimal early successional habitat to be used by

Species of Conservation Concern indicators (MNRF, 2015) such as brown thrasher, clay-coloured sparrow, field sparrow, eastern towhee, upland sandpiper, or grasshopper sparrow. No evidence of animal movement corridors, such as those for deer or amphibians, were noted.

Other field observations would not trigger a significant wildlife habitat designation with respect to the ELC communities present. 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 or rare or specialized habitats as described in MNRF (2015) were observed. No wetlands with the potential to support amphibians were observed on or adjacent the site. No seeps or springs, potential bat hibernacula or maternity colonies, or suitable turtle nesting or wintering areas were noted. Stone piles and areas of broken and fissured rock for potential use by snakes, including potential reptile hibernaculum, were not observed nor was evidence of winter raptor utilization. Some of the decomposing tree snags present near the base of the central ravine contained cavities but these cavities appeared too open to be useful as wildlife cavities, including for potential summer maternal bat colonies. Regardless these trees will be retained and no trees with potential wildlife cavity are anticipated to be removed.

The lack of nearby natural areas and associated many industrial and commercial operations along the Carp Road and Donald B Munro Drive corridors, and the residences and institutional activities along Langstaff Drive prohibit any significant wildlife linkage functions for the site and adjacent general area.

Impact Assessment and Mitigation Measures

The significant valleylands and potential local residence forage fish habitat of the central and adjacent ravines, and the presence of healthy butternuts, an endangered Species at Risk, are the natural heritage features, as defined in the Provincial Policy Statement and City of Ottawa Official Plan, identified for the site and adjacent lands. The central ravine and adjacent forested portions in the south part of the site are also identified as part of the City's Natural Heritage System. Outside of the central ravine the tablelands portion of the site was historically used for agriculture and is currently mostly meadow habitat which is dominated by invasive ground flora and appears to be cut frequently, with the deciduous forest now extending onto the tablelands in the south portion of the site.

The potential aquatic habitat associated with the Carp River tributary in the central ravine is highly impacted by a lack of a connection with the Carp River to the southwest, perched culverts on the site, and existing stormwater management functions associated with the ravine. Paterson (2019b) identifies a construction setback which is the limit of hazard lands, as shown by red dashed lines on Map 2. The limit of hazard lands for the central ravine includes toe erosion (two metres) and access allowances (six metres) and is in total eight metres from the top of slope (Paterson, 2019b). The setbacks from the central ravine will exceed the limit of hazard lands and will be at least 15 metres from the top of valley slope except at the cul-de-sac in the southeast portion of the site, where the west edge of the cul-de-sac will be closer to the hazard lands setback of eight metres and will be less than 15 metres for approximately 25 linear metres. Overall, the setback will provide more than adequate protection for the features and functions of

the valleylands, including the mature trees along the slopes. Given the location of the mature trees further down the slope and smaller trees along the top of the ravine slope, it is anticipated that the critical root zones of the ravine trees will not extend more than four metres onto the tablelands. The fifteen metre setback will be flat and the vegetation will be allowed to naturalize further where currently lacking in trees to provide additional protection for the ravine features including the tributary habitat. Other than a section of the southeast cul-de-sac, pathways, constructed of permeable material, and grassed amenity areas will be the only site disturbances within 15 metres of the top of slope.

A top of slope setback of ten metres along northwest site edge will provide similar protection for the ravine and tributary adjacent to the site. This reduced setback reflects the fewer features of the ravine to the west and northwest of the site relative to the central ravine in terms of intermittent flow (Geomorphix, 2019), mature tree density, and tributary length. The limit of hazard lands along the northwest property line varies between 5.5 and 10.3 metres. The greater limit of hazard land relative to the central ravine is due to a slope stability allowance identified by Paterson (2019) of up to 4.8 metres in addition to a one metre toe erosion allowance and a 4.5 metres access allowance.

Outside of the ravine habitats, where adjacent or co-owned trees are present along the west and south site boundaries, a boundary setback of five metres will be implemented to protect the critical root zones of the co-owned or immediately adjacent trees.

The trees that are regenerating in portions of the tablelands, including the location of the former buildings in the southwest, are dominated by Manitoba maple and younger representation of other species, especially poplar, ash, and bur oak. These areas are also part of the City's Natural Heritage System but do not appear to support the same features and functions as the core ravine area due to the young trees on former agricultural use and generally non-desirable species. In the south portion of the site, the treed width was approximately 40 metres in 1976 versus in the range of 100 metres today. Although new forest edges will be created on the tablelands to the west and east of the south portion of the central ravine (see Map 2), it is not anticipated that the young remaining trees of relatively hardy species will be susceptible to impacts from the increased exposure including windthrow and sunscald.

Although the ravine area and top-of-slope valley setbacks will be retained and protected, some tree removal on the tablelands will occur in the south portion of the site. These trees do provide some ecological functions including local wildlife habitat, and an area of tree cover with associated climate, air quality, wildlife, and nature appreciation benefits. Potential impacts during construction of the residential development and associated removal of trees and other vegetation includes impacts on wildlife, increased erosion and release of sediments and other potential contaminants from truck traffic and construction activity, harm to wildlife remaining in the work area during construction, and impacts associated with an increase in noise, dust and light. The following mitigation measures are designed to address these potential impacts.

All top of slope setbacks and other trees to be retained are to be protected with temporary fencing at least 1.2 metres in height installed from the tree trunk, where possible, a distance of ten times the retained tree's diameter (the critical root zone). 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 is to occur within three 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 unless necessary. Exposed roots of retained trees are to be either kept moist and protected until they can be backfilled, or as advised by a certified arborist, the roots cut cleanly and as far from the tree as possible at a proper angle to facilitate healing. Overhanging branches that may be damaged by the construction are to be trimmed by a certified arborist prior to construction. Exhaust fumes from all equipment during construction will not be directed towards the canopy of the 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 construction has been completed in the vicinity of the trees.

In terms of planting sensitivities, tree and shrub species that have a high water demand are not recommended for the site due to the clay soils. These species include willows, poplars, and elm. Paterson (2019b) noted that the silty clay deposits on the site were hard to firm and are considered to be low to medium sensitivity clay and should not be considered a sensitive marine clay. Therefore, Paterson (2019b) concluded that where footings are founded over a silty clay bearing surface, large trees (mature height over 14 metres) can be planted provided a tree to foundation setback equal to the full mature height of the tree is utilized (e.g. in a park or other green space). Tree planting setback limits may be reduced to 4.5 metres for small (mature height up to 7.5 metres) and medium size trees (mature tree height 7.5 to 14 metres). Paterson (2019b) noted that shrubs and other small plantings are permitted within the 4.5 metre setback area. To ensure adaptability and longevity, it is important that native trees from a local seed stock be used for planting whenever possible. Plantings of native trees and shrubs are recommended to add to the natural attributes of the site. A mix of coniferous and deciduous species such as sugar maple, red maple, tamarack, white spruce, white pine, red oak, basswood, native dogwoods, and nannyberry is recommended.

Many helpful wildlife oriented mitigation measures are detailed in the City's Protocol for Wildlife Protection during Construction (City of Ottawa, 2015). Contractors are to review in detail and understand the City's Protocol for Wildlife Protection during Construction prior to commencement of construction. Listed below are specific mitigation measures associated with the Protocol for Wildlife Protection during Construction (City of Ottawa, 2015).

Summary of Mitigation Measures

1. The extent of exposed soils shall be kept to a minimum at all times. Re-vegetation of exposed, non-developed areas shall be achieved as soon as possible;
2. During construction, sediment and erosion control measures will be implemented as required, including filtering of pumped groundwater, properly installed and maintained silt fencing, and seepage barriers deployed in any temporary drainage ditches, until the construction is completed. These control measures must be properly maintained to maximize their function during construction. For example, the silt fencing must be properly keyed in to filter runoff and be maintained as required, including repair of broken panels and removal of accumulated sediment;
3. The contractor is to be aware of potential Species at Risk in the vicinity of the site such as butternut. Appendix 1 of City of Ottawa (2015) describes these species. The contact biologist for this project, as described in Appendix 1, is myself, Bernie Muncaster (613-748-3753). Any new Species at Risk sightings are to be immediately reported to the project manager and the Ministry of the Environment, Conservation and Parks and activities are to be stopped until further direction is received from the Ministry;
4. As recommended in City of Ottawa (2015), prior to beginning work each day thorough visual inspections of the work space and immediate surroundings are to be completed for wildlife. 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 in the work area are to be relocated to the ravine lands. 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;
5. To protect breeding birds, no tree or shrub removal should 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 was observed on or adjacent to the site;
6. Sturdy temporary fencing to be installed at least 1.2 metres in height to protect the east portion of the deciduous hedgerow to be retained along the north edge of the site and additional tree protection measures are described above;
7. 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,
8. 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

Removal of woody vegetation is generally limited to the tablelands in the south portion of the site adjacent to the top-of-slope setbacks from the central ravine. This removal is proposed for 2020, before the breeding bird season. City of Ottawa forestry staff are to be contacted at least two business days prior to any tree removal so staff have the opportunity to verify that the protective fencing has been properly constructed.

Conclusion

Significant natural heritage features, as defined in the Provincial Policy Statement, were identified for the overall site, including significant valleylands in the central ravine, which are also identified as part of the City's Natural Heritage System, and the ravine immediately to the northwest of the site, associated potential local fish habitat in the ravine channels, and butternuts. The central ravine will be retained and protected with a 15 metre top-of slope valley setback. The majority of the butternuts will be retained along the edge of the site and on adjacent lands with only one 2cm dbh butternut anticipated for removal.

The tablelands have historically been used for agriculture and are now dominated by cultural meadow habitats, with some young deciduous forests in the south portion adjacent to the central ravine. Mitigation measures are presented to protect the adjacent natural heritage features to be retained and to lessen the impacts of development on the tablelands.

This EIS and TCR concludes that it is the professional opinion of the author that the construction and operation of the proposed village residential units will not have a negative impact, as defined in the Provincial Policy Statement, on the significant natural heritage features and functions of the general area, including the significant valleylands in the ravines and associated potential aquatic habitat, provided the above recommended mitigation measures are properly implemented.

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Please call if you have any questions regarding this EIS and TCR

Yours Sincerely,
MUNCASTER ENVIRONMENTAL PLANNING INC.



Bernie Muncaster, M.Sc.
Principal

\\Langstaff Carp EISTCR



Approx. Scale 1: 2,600

0 25 50 75
METRES

Vegetation Communities

- ① Cultural meadow
- ② Deciduous hedgerow
- ③ Upland maple deciduous forest

FILE: 08 - 44

Map 1

June 18, 2019

TREE CONSERVATION REPORT/ EIS

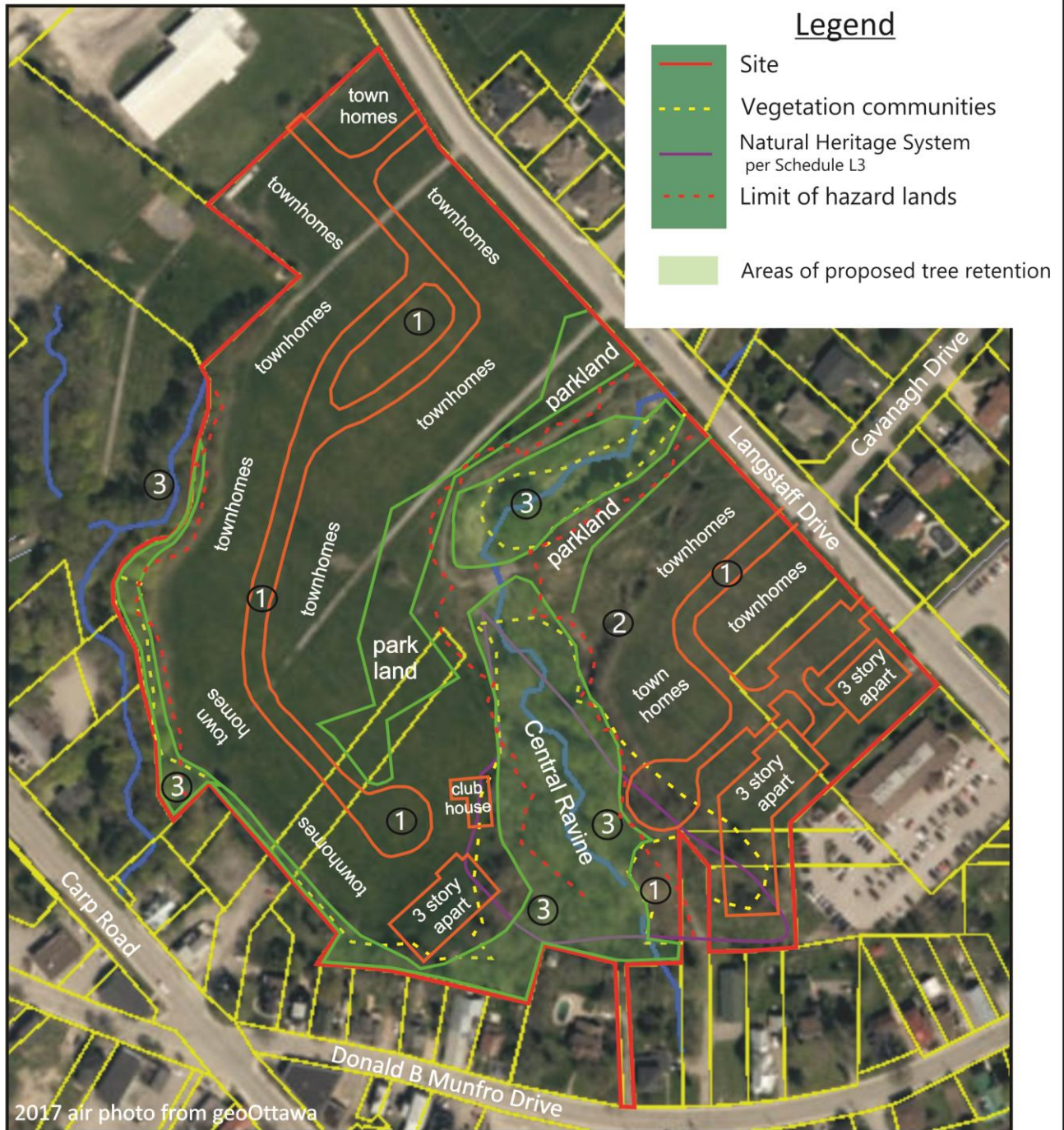
EXISTING VEGETATION
147 Langstaff Drive, Carp, Ottawa

Prepared for: **Inverness Homes**

Prepared by:



Muncaster
Environmental
Planning Inc.



Approx. Scale 1: 2,600



Vegetation Communities

- ① Cultural meadow
- ② Deciduous hedgerow
- ③ Upland maple deciduous forest

FILE: 08 - 44

Map 2

October 25, 2019

TREE CONSERVATION REPORT/ EIS

PROPOSED CONSERVED VEGETATION 147 Langstaff Drive, Carp, Ottawa

Prepared for: Inverness Homes

Prepared by:



Muncaster
Environmental
Planning Inc.

FIGURE 3 – BUTTERNUT LOCATIONS and ASSESSMENT CATEGORIES

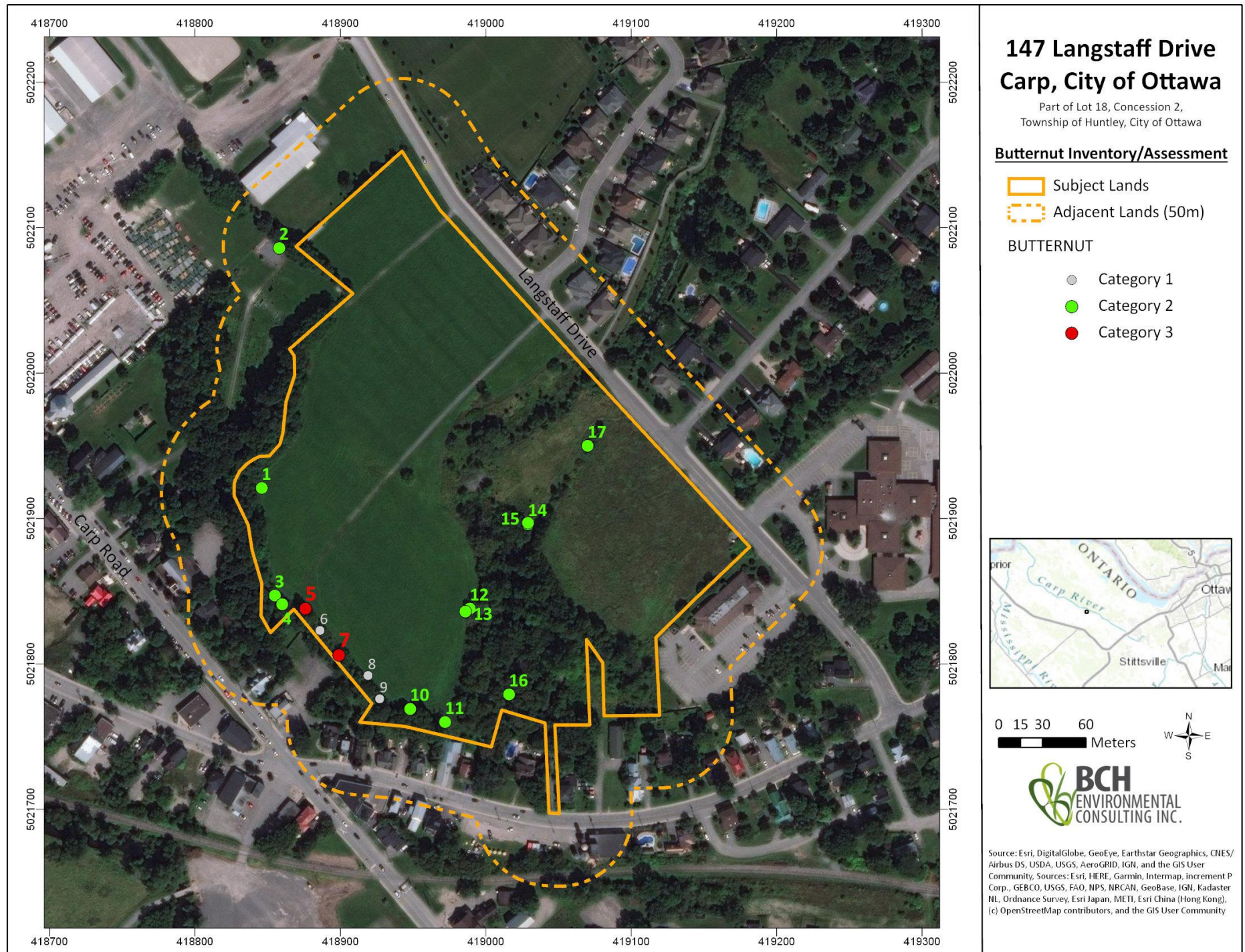


FIGURE 4 – SITE PLAN

