UPDATED

ENVIRONMENTAL IMPACT STATEMENT
&
TREE CONSERVATION REPORT

CITI GATE 416 – NORTHWEST PARCEL (BLOCK 13)

BARRHAVEN, CITY of OTTAWA

A report prepared for:

NOVATECH

by *Muncaster Environmental Planning Inc.*

April, 2020

TABLE OF CONTENTS

FIGURES

1.0 INTRODUCTION

The 25.9 hectare site is in the northwest parcel of the Citi Gate Highway 416 Corporate Campus and within Lots 19 and 20, Concession 4, in the former City of Nepean, now in the City of Ottawa (Map 1). The site is part of the City's urban area and is bounded by Highway 416 and a northbound off-ramp to the west, Fallowfield Road to the north and the O'Keefe Municipal Drain corridor to the east. The site is known as Block 13 in the subdivision registered in June 2014.

As shown on Map 3, a five-story prestige office building with a light industrial component is proposed for the site. The north portion of the site will be retained as a future Phase 2 building. The urban site will be on full municipal services, with an existing stormwater pond to the southeast of the site to be utilized. This combined Environmental Impact Statement (EIS) and Tree Conservation Report (TCR) represents a 2020 update to the October, 2014 Integrated Environmental Review, which in turn was an update to the original EIS/TCR for the Citi Gate Campus produced in December, 2012.

The site is a combination of deciduous, mixed, and coniferous forests, former agricultural land with regenerating woody vegetation, and agricultural fields in the east portion. The surrounding land uses includes large farm lots to the west, west of Highway 416 in the rural designated area. Commercial and light industrial uses and a hotel have been approved to the north of Fallowfield Road, with existing rural residential subdivisions further to the north. Recent commercial and business park developments are to the east of the site, east of the O'Keefe Municipal Drain, with low-to-medium density residential development and associated parkland further to the east, east of Strandherd Drive. Forests, agricultural land, a stormwater management facility, a snow disposal facility, and car dealerships are to the south and southeast of the site.

The forests in the south portion of the site are part of the Highway 416 Urban Natural Area, UNA No. 50 (Muncaster and Brunton, 2005; purple line on Map 1). This Urban Natural Area was considered to have a moderate overall significance in the evaluation summary performed as part of the Urban Natural Area Environmental Evaluation Study and a high overall significance by NEA (2012). More information on the Natural Area is provided in Section 3.3. The forest, or any other portions of the site and adjacent lands other than the O`Keefe Municipal Drain, are not part of the City's Natural Heritage System, as shown on the Schedule L2 Overlay of the Official Plan.

There are no Provincially Significant Wetlands or Areas of Natural and Scientific Interest on or adjacent to the site with the closest wetland parcel evaluated as Provincially Significant part of the Stony Swamp complex, approximately 1.2 kilometres to the north of Fallowfield Road.

The site and adjacent lands to the north, east, and south are designated *Urban Employment Area* in the City of Ottawa's Official Plan. Lands to the west, west of Highway 416, outside of the City's urban area, are designated *Agricultural Resource Area*. No lands zoned Environmental Protection are in proximity to the site, with a retained woodlot to the northeast of the Strandherd Drive and Fallowfield Road intersection zoned Parks and Open Space. There are no natural

environment constraints identified on or adjacent to the site on Schedule K of the Official Plan, with the Jock River floodplain further to the south.

As the site contains an Urban Natural Area, Section 4.7.8 of the Official Plan requires an Environmental Impact Statement (EIS) as part of the development application. This updates also examines potential utilization of the site by Species at Risk, including those species designated since the 2014 Integrated Environmental Review.

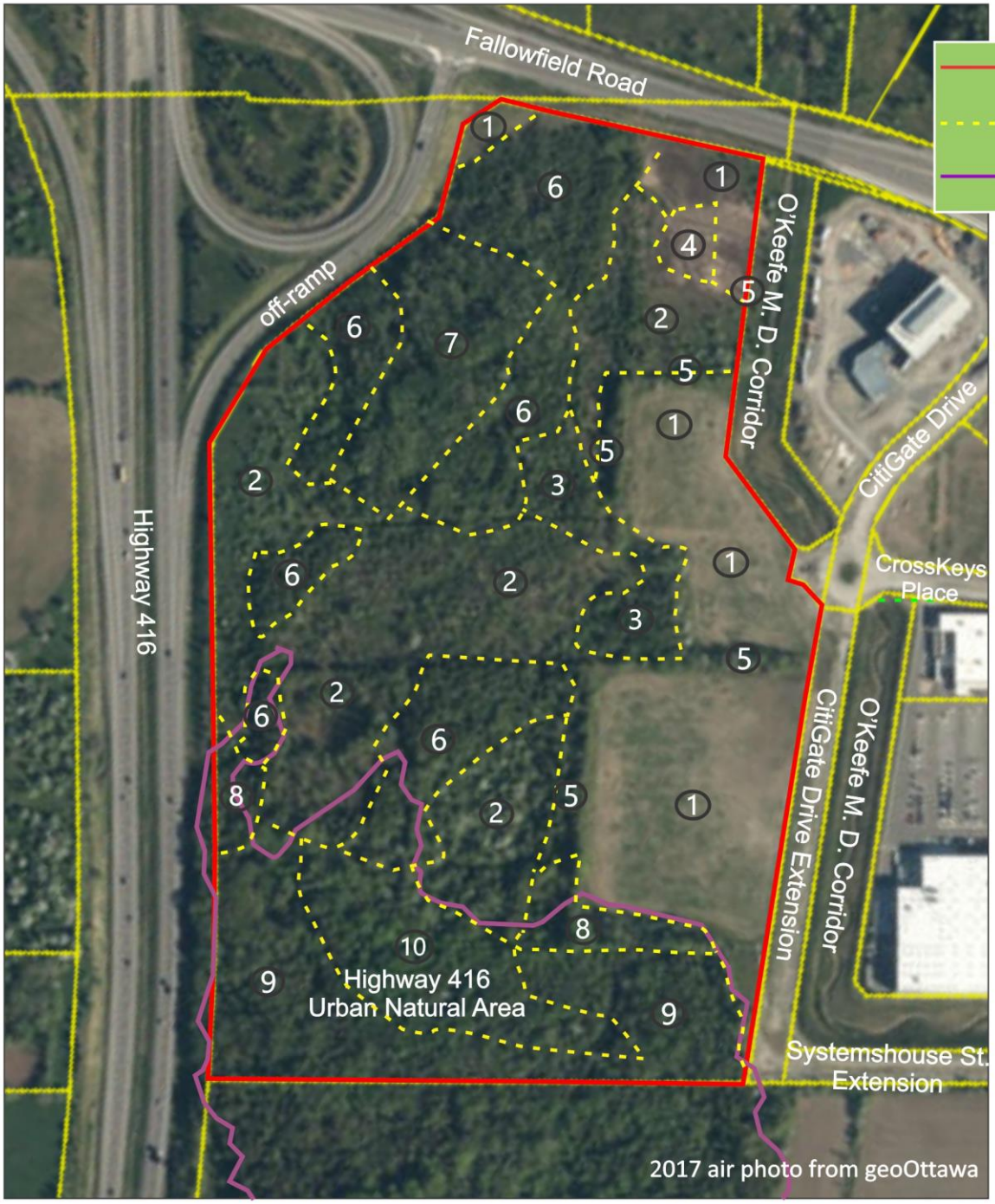
For the purposes of this report, Highway 416 and CitiGate Drive are considered to be in a north-south orientation.

1.1 Scoping the Environmental Impact Statement

This EIS was prepared in accordance with Section 4.7.8 of the City of Ottawa Official Plan following the EIS Guidelines and the Guidelines for City of Ottawa Tree Conservation Reports, with guidance from the Natural Heritage Reference Manual (OMNR, 2010).

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

- what are the on-site and adjacent terrestrial and wetland features and functions?
- are there any aquatic features on or adjacent to the site outside of the O`Keefe Municipal Drain?
- what are the anticipated direct and indirect potential impacts on the features and functions of the Natural Area and other portions of the site that are anticipated from the proposed change in land use on the site?
- how are the features and functions of the natural area and other portions of the site influenced or supported by the site, including linkages and unique habitats? and,
- will increases in impermeable surfaces result in impacts on infiltration and groundwater?



Legend

- Site
- Vegetation Communities
- Urban Natural Area

Vegetation Communities

1. Cultural meadow
2. Cultural thicket
3. Cultural woodland
4. Meadow marsh
5. Deciduous hedgerow
6. Dry-fresh white cedar coniferous forest
7. Dry-fresh white cedar-poplar mixed forest
8. Dry-fresh poplar deciduous forest
9. Fresh-moist white cedar coniferous forest
10. Fresh-moist cedar-sugar maple mixed forest

Approx. Scale 1:4,800

0 50 100 150 200 METRES

Map 1

February 26, 2020

FILE: 12 - 23

CURRENT VEGETATION
CITI GATE BLOCK 13 - NORTHWEST PARCEL

Barrhaven, City of Ottawa

Prepared for: NOVATECH

Prepared by: Muncaster Environmental Planning Inc.

2.0 METHODOLOGY

Environmental information was collected and summarized through:

- information on the Highway 416 Urban Natural Area (Muncaster and Brunton, 2005), including files at the City of Ottawa;
- extensive information collected by Niblett (2012) and Niblett (2000) for the site and adjacent lands as part of the City's Environmental Management Plan and the Nortel Networks Strandherd Campus study, respectively;
- a review of the Ministry of Natural Resources and Forestry, City of Ottawa, Natural Heritage Information Centre, and Ontario Breeding Bird Atlas databases and correspondence with the Ministry to identify potential species of interest in the vicinity of the site;
- field surveys of the site and adjacent lands completed on May 17th, 2010 and September 20th, 25th and November 23rd, 2012. Observations were made on vegetation communities and associated wildlife habitat within and adjacent to the site. In addition, field reviews, including breeding bird surveys, were made by Niblett (2012) on May 18th, June 20th and 23rd, 2011; and,
- a review of the other studies associated with the site such as the site servicing and stormwater management report by Novatech (2014) and planning rationale.

Colour aerial photography (1976 - 2018) was used to assess the natural environment features in the general vicinity of the site. Ecological units were defined based on species present, the wetness index of the species, dominant species, locations of standing water and other drainage observations, health, age, topography and soil conditions. As part of the surveys, the potential wildlife habitat attributes of the site were examined.

Other aspects of the surveys included photographs of site representative features and observations on the level of disturbance from human activities and non-native flora and fauna.

The field surveys and this report were completed by Bernie Muncaster, who has a Master's of Science in Biology and over thirty-two years of experience in completing natural environment assessments. The purpose of the Tree Conservation Report component is to establish which vegetation should be retained and protected on the site. The current owner of the site is Strandherd Road Inc. (613-230-2100). It is proposed to remove the woody vegetation not to be retained in 2020 before the breeding bird season. A Tree Cutting Permit from the City of Ottawa will be required before the required trees can be removed.

3.0 EXISTING CONDITIONS

3.1 Geologic and Hydrologic Conditions

Paterson (2012) identified the subsurface profile as topsoil underlain by a silty sand to sandy silt and/or stiff to very stiff silty clay deposits over a dense glacial till layer which in turn overlies bedrock. Precambrian bedrock of interbedded limestone and dolomite of the Gull River

formation is close to the surface in many areas of the site (Paterson, 2012). No sensitive marine clays were observed by Paterson (2012). A three to four metre high slope is along the west edge of the site, adjacent to Highway 416. The ridge is approximately 13 metres higher in elevation than the eastern portion of the Citi Gate campus, although the transition is generally gentle.

Groundwater elevations varied between 0.4 and 5.5 metres below the ground surface (Paterson, 2012). Only two of 51 test pits or boreholes completed by Paterson (2012) on the overall Citi Gate campus had groundwater less than one metre below the surface. One of these boreholes was located adjacent to the O'Keefe Municipal Drain with the other in a low lying area south of Fallowfield Road in the northeast corner of the Block 13 lands. The rate of flow of groundwater into the excavation through the overburden is anticipated by Paterson (2012) to be low to moderate.

Paterson (2012) noted a 2.4 metre stable slope setback from top of slope is required for the lands adjacent to the Highway 416 northbound off-ramp in the northwest corner of the site to achieve a factor of safety of 1.5.

3.1.1 O`Keefe Municipal Drain

The features of the O'Keefe Municipal Drain were summarized by Muncaster (2010) and Muncaster (2014). The fish community in the O'Keefe Municipal Drain includes common warm and cool water forage fish species such as blacknose dace (representing almost half of the catch), banded killifish, brook stickleback, central mudminnow, fathead minnow and creek chub, as well as white sucker. These species are observed throughout eastern Ontario. The density and diversity of the fish community was greater in the upper portions of the Drain relative to the east branch flowing from Strandherd Drive and reaches in the south portion of the site. This may be a reflection of the increase in diversity of habitat characteristics including more canopy cover, vegetated side channels and greater in-stream structure. The netted fish species utilize principally aquatic vegetation or gravel for spawning. The connection to the Jock River is excellent and City of Ottawa (2012) noted nineteen cool and warm water fish species in the O'Keefe Municipal Drain. Overall the greatest diversity in the fish community of the O'Keefe is in the reaches closest to the Jock River, south of the site. Additional species recorded by Niblett (2000) downstream of the Citi Gate campus but not collected by Muncaster (2010) on the Citi Gate campus included logperch, pumpkinseed, mottled sculpin, rock bass and pearl dace.

As part of the Citi Gate campus development, the O'Keefe Municipal Drain was retained or realigned to be flow within a 40 metre corridor to the east of the Block 13 lands. Extensive plantings along the corridor have provided more woody vegetation cover in the channel corridor than existed when the area was dominated by agricultural fields and the tableland were actively cropped to the edge of the channel. No tributaries to the O`Keefe Municipal Drain or other channels with aquatic habitat potential were observed on or adjacent to the Block 13 lands. The O`Keefe Municipal Drain will not be disturbed as part of the proposed development.

3.2 Terrestrial Features

Vegetation communities were identified by Niblett (2012) and confirmed as part of the fall 2012 field surveys. The following descriptions are divided into the forests in the south portion of the Block 13 lands, which comprises part of the Highway 416 Urban Natural Area, and other terrestrial communities on the balance of the site.

3.2.1 Forests in the South Portion of the Block 13 Lands

Fresh-Moist White Cedar Coniferous Forest

White cedar is dominant in this forest, with sugar maple, ironwood, white spruce, white ash and eastern hemlock also present (Photos 1, 2 and 3). Niblett (2012) reports vernal pools among the hummocky topography. The portion of the forest adjacent to Highway 416 is lower lying and contains predominantly white cedar and yellow birch with some black ash and red maple. The largest cedars are up to 48cm dbh (Photo 2) with an 84cm dbh yellow birch noted. This yellow birch is in senescence with major trunk decay. Wind throw is very common in many portions of the forest (Photo 3) but there are many cedars greater than 30cm dbh that appear healthy. The understory and ground cover are limited, likely due to the density of the cedars in most areas and former pasture activity (Photo 1). Representative species include maple-leaf viburnum, red elderberry, black currant, glossy buckthorn, regenerating white cedar stems, red raspberry, helleborine, enchanter's nightshade, thicket creeper, sensitive fern, evergreen wood fern, lady fern, stinging nettle, white snakeroot, helleborine, wild sarsaparilla and red trillium. Niblett (2000) also reported spikenard, foamflower, starflower, three-leaved Solomon's seal, sharp-lobed hepatica and white trillium in this community. Spotted jewelweed, ostrich fern and joe-pye-weed are common in the west lower lying area. Large puffballs were noted in the central-west part of the forest.

The east portion of the coniferous forest has a more open canopy in most areas (Photo 4) and was not forested in 1976. The extent of invasive species in the understory and ground flora is greater.

Fresh-Moist White Cedar-Sugar Maple Mixed Forest

This community is between cedar coniferous representation where the deciduous component is greater than 25 percent. Sugar maple has regenerated where logging has occurred, as this area was forested in 1965 but open in 1976 photography. In many areas the forest canopy cover is reduced and common and glossy buckthorn shrubs are well represented. Some mature white cedars up to 48cm dbh are along a former hedgerow along the north edge of the woods. The largest sugar maples are in the range of 40cm dbh. The canopy is much more open than the cedar coniferous forest and several access trails are present. Rock is common at the surface.

The understory and ground flora is limited, likely due to historic pasture activity. Helleborine, white snakeroot, thicket creeper, red raspberry, Canada thistle and herb Robert were noted. Other ground flora reported in this community by Niblett (2012) included northern beech fern, trout lily, red baneberry, wild leek, marginal wood-fern, sensitive fern, and violets.

Photo 1 –Understory and ground flora are lacking in many areas of the forest in the south portion of the Block 13 lands

Photo 2 – Mature cedar near in the southwest corner of the site, likely part of a former hedgerow

Photo 3 – Example of wind throw in the forests in the south portion of the site

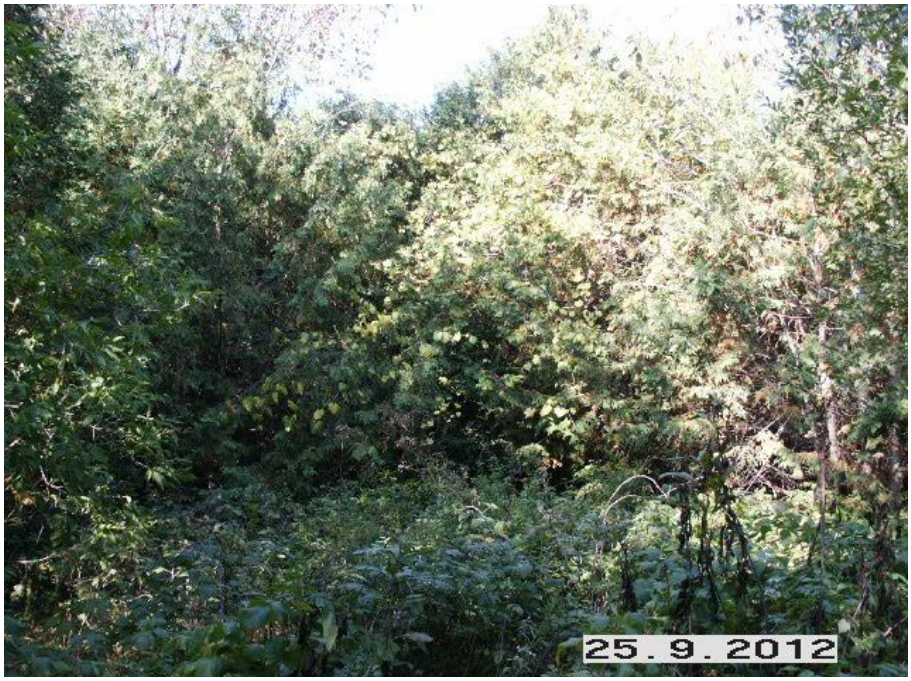


Photo 4 – Breaks in the forest canopy are common in the east portion of the forests in the south portion of the site. These areas were not forested in 1976

3.2.2 Other Terrestrial Communities

Cultural Meadows

Cultivated agricultural fields are in the east portion of the Block 13 lands. Common cultural meadow vegetation is around the field peripheries including June meadow grass, common brome grass, bluegrass, reed canary grass, common milkweed, common strawberry, Canada goldenrod, tall goldenrod, narrow-leaved goldenrod, New England aster, calico aster, tufted vetch, red clover, and wild grape. Scattered woody vegetation is represented by slender willow, red raspberry, common buckthorn, staghorn sumac, red-osier dogwood, white cedar, and white elm.

Cultural Thicket

Staghorn sumac, common buckthorn, gray dogwood, apple, glossy buckthorn, chokecherry, highbush cranberry, red raspberry, and slender willow are the common shrubs in this community along with regenerating white cedar, white elm, bitternut hickory, poplar, white pine, and ash stems (Photo 5). The buckthorn is very thick in many areas. Pockets of white cedar and poplar (trembling aspen and large-toothed aspen) are common with butternut (Photo 6) and yellow birch stems also present. Butternut is an endangered Species at Risk but frequently encountered in the Ottawa area. The butternut health assessments are discussed below. Canada goldenrod, late goldenrod, common milkweed, whorled aster, New England aster, heart-leaved aster, small white aster, deptford pink, pearly everlasting, reed canary grass, white bedstraw, wild carrot, tufted vetch, joe-pye-weed, common milkweed, violets, alsike clover, and wild grape are representative of the ground flora. Old piles of cut logs were observed at the edges of this community.

Meadow Marsh

An area of meadow marsh, approximately 0.25 hectares and with no areas of standing water noted, is south of Fallowfield Road in the northeast corner of the Block 13 lands. Broad-leaved cattail is dominant, with purple-loosestrife, Canada bluejoint, small white aster, New England aster, boneset, field sow thistle, wild grape, white bedstraw, joe-pye-weed, purple-stemmed aster, marsh horsetail, narrow-leaved meadowsweet, and red-osier dogwood also present.

Cultural Woodland

The cultural woodlands contain white elm, green ash, Manitoba maple, apple, common buckthorn, and hawthorn. Wild grape coverage is extensive on much of the woody vegetation.

Deciduous Hedgerows

Deciduous hedgerows are adjacent to the agricultural fields. White elm and Manitoba maple are dominant in most of the hedgerows; with trembling aspen, sugar maple, basswood, black cherry, white ash, apple, and butternut also present (Photo 7). Many of the elms are in poor condition, but there are some larger examples up to 42cm dbh that appear to be in good condition. Most of the larger hedgerow trees are between 28 and 38cm dbh, however sugar maples up to 56cm dbh are in the in the south portion of a north-south hedgerow in the southeast portion of the Block 13

lands. These maples appear to be in good condition (Photo 8). Mature black cherries in the second west-east hedgerow south of Fallowfield Road also appear to be in good condition. Hawthorn, nannyberry, and buckthorn shrubs are among the deciduous hedgerow trees. Vine growth is common on some of the hedgerow trees.

Dry-Fresh White Cedar Coniferous Forest

The dominant and dense young white cedar prevents much understorey and ground flora growth except at the many edges of the fragmented forest. The largest cedars are less than 20cm dbh (Photo 9). Glossy buckthorn, hawthorn, red-osier dogwood, common juniper, maple-leaf viburnum, and slender willow are the common shrub species. The ground flora is represented by Canada goldenrod, rough-stemmed goldenrod, hairy goldenrod, heart-leaved aster, New England aster, upland white aster, calico aster, poison ivy, black-eyed susan, common strawberry, thimbleweed, white bedstraw, red clover, tall meadow rue, tufted vetch, ox-eyed daisy, and daisy fleabane. Scattered basswood, white elm, Manitoba maple, green ash, yellow birch, apple, and sugar maple are also present, mostly at the edges of the young forest. Piles of historically cut small trees are present (Photo 10).

Dry-Fresh White Cedar-Poplar Mixed Forest

White cedar and trembling aspen are the dominants in this young community (Photo 11). White birch, balsam poplar, white elm, white ash, basswood, and green ash are also present. The largest trees are poplars up to 25cm dbh with most stems less than 15cm dbh. The canopy is much more open than the coniferous forest, with glossy buckthorn and regenerating ash trees established in the understory. The ground flora includes small white aster, heart-leaved aster, wild grape, thicket creeper, and white snakeroot.

Dry-Fresh Poplar Deciduous Forest

This young forest is dominated by trembling aspen, with white birch, basswood, and butternut also present (Photo 12). All stems are less than 20cm dbh. Glossy buckthorn abundant in many areas of the understory, with less representation of regenerating ash, white cedar, sugar maple, and basswood stems and hawthorn and purple flowering raspberry shrubs. Wild grape coverage is common on much of the woody vegetation. Canada goldenrod, helleborine, Canada thistle, heal-all, thicket creeper, common strawberry, small white aster, Pennsylvania sedge, lady fern, and common brome grass are common ground flora in this disturbed community. Many stumps are reflective of historical logging while stone piles indicate past agricultural activity.

Photo 5 – Cultural thicket habitat in the northwest portion of the site

Photo 6 – Butternut is common in the cultural thicket habitats on the Block 13 lands. Canker has impacted some of the stems such as this 9cm dbh example

Photo 7 – White elm and Manitoba maple dominate most of the hedgerows on the site

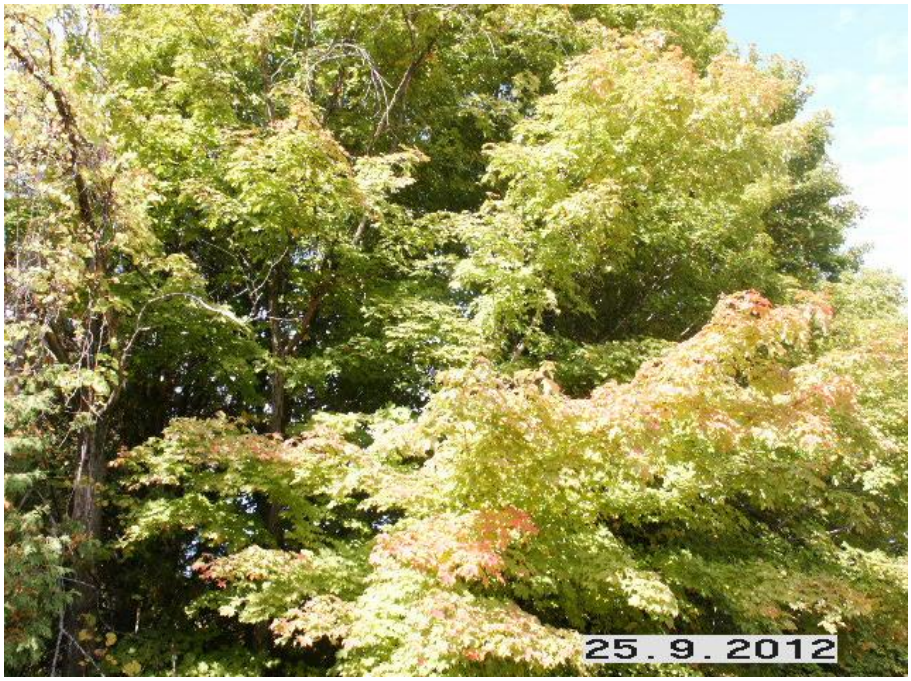


Photo 8 – Mature sugar maples in a north-south hedgerow in the southeast portion of the Block 13 lands

Photo 9 – Dry-fresh young cedar coniferous forests are common in the north portion of the Block 13 lands

Photo 10 – Historical cutting is common in many portions of the young forests on the site

Photo 11 – The mixed forest representation on the site is also young

Photo 12 – Poplar deciduous forest in the southeast portion of the Block 13 lands

3.2.3 Wildlife

Wildlife observations included American crow, turkey vulture, ring-billed gull, Canada goose, European starling, blue jay, black-capped chickadee, American robin, northern flicker, song sparrow, chipping sparrow, white-throated sparrow, American woodchuck, American goldfinch, cedar waxwing, gray catbird, American toad, woodchuck, red squirrel, eastern chipmunk, eastern cottontail, and white-tailed deer. A few snags in the forests in the south portion of the site had extensive woodpecker activity.

Niblett (1993, 2000 and 2012) have extensive additional wildlife observations in their overall general area. Additional bird species observed in the forests included brown creeper, black-throated green warbler, northern waterthrush, ovenbird, magnolia warbler, American redstart, broad-winged hawk, and great-crested flycatcher while northern mockingbird, red-tailed hawk and eastern kingbird were also observed in the cultural habitats. Niblett (2012) reported four area sensitive species in the overall forests including to the south of the Block 13 lands. Savannah sparrow, another area sensitive breeding bird, was reported by Niblett (2012) in the meadow habitat to the southeast of the current site.

Additional herpetiles noted included northern leopard frog and eastern garter snake, while raccoon and coyote were additional mammals observed. Niblett (2012) noted that the vernal pools observed in the woods along the south edge of the Block 13 lands were low areas that held water for a few weeks in the spring melt. It was found they dried up early in the summer and would not provide sufficient hydroperiod for frogs to lay eggs, live as tadpoles and metamorphose before the pond dried up. Searches for adults, egg masses and tadpoles by Niblett (2012) found no evidence frogs were using these vernal pools in the spring. Rock piles were observed adjacent some of the agricultural fields. However, no snake or other unique wildlife utilization has been observed in association with the rock piles.

3.3 Significant Features

The potential sensitivities of the natural heritage features and functions, including wildlife utilization and vegetation communities, are assessed through consideration of the condition and other components of the features including age, habitat maturity, rarity, diversity, regeneration, and other unique and significant features. The condition of the features is influenced by factors such as past land use, representation of non-native components, existing disturbances, and adjacent land uses. As there is an approved subdivision for the site, the current criteria for significant woodlands in the urban area of the City of Ottawa are not applicable.

<u>Highway 416 Urban Natural Area No. 50</u>

The 13.4 hectare Urban Natural Area was considered to have a moderate significance in the evaluation summary performed as part of the Urban Natural Areas Environmental Evaluation Study (Muncaster and Brunton, 2005) and was increased to a high overall significance by Niblett (2012). The change from a moderate to high overall rating was a result of additional field studies

by Niblett (2012) which identified more significant flora and fauna and a higher percentage of plant species with a moderate to high coefficient of conservation. In addition, more community types were identified due to more detailed field studies. None of the nine evaluation criteria were given the highest score, although using Niblett's (2012) updated analysis four of the criteria were scored above average: size and shape, natural communities, representative flora, and significant flora and fauna. Connectivity and wildlife habitat were assigned below average scores, with average scores assigned the regeneration, disturbance and habitat maturity criteria. Note that this analysis is for the overall Urban Natural Area, the majority of which is to the south of the portion of the Natural Area on the Block 13 lands.

The two communities identified by Niblett (2000) for retention in the Natural Area, vegetation communities 7 and 8 in Niblett (2000), are mostly south of the Block 13 lands, with the northwest portion of community 7 on the site adjacent to Highway 416. Muncaster and Brunton (2005) also noted that the oldest and least disturbed forest in the Urban Natural Area is the dry-fresh sugar maple forest (community 8 in Niblett (2000)) to the south of this site. Much of the current forests in the south portion of the Block 13 site were not treed in 1976.

With respect to corridors, Niblett (2012) noted that the isolation of this Natural Area from other natural areas presents few opportunities for connectivity or a regional corridor for wildlife movement. Populations are likely limited due to the urbanization of the surrounding Barrhaven area, nearby aggregate pits, and Highway 416. Some local movement of wildlife was evident from the woodland south through the fields and regenerating communities south of the site. Some minor movement and corridor was present to the north through the remnant woodlands north of Fallowfield Road.

The impact of invasive plants in the Highway 416 Urban Natural Area was considered light by Muncaster and Brunton (2005) but in 2012 was considered high for garlic mustard and common buckthorn by Niblett (2012). Other disturbances noted in the Natural Area included evidence of former cutting, edges of site formerly cleared, evidence of former cattle grazing due to the low ground flora diversity, edge effect influence, high noise levels from highway in the west portion, and minor informal trails.

Species at Risk and other Species of Special Interest

The Ontario Ministry of the Natural Resources and Forestry's Make a Map: Natural Heritage Areas website was reviewed again in 2020. 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 (18VR31-71, - 72, - 81 and -82). No Species at Risk were identified for these squares. The breeding birds listed in the Ontario Breeding Bird Atlas for the 10 km square 18VR31 identified barn swallow, bank swallow, eastern meadowlark and bobolink as Species at Risk in the overall 10 km square including the site and adjacent lands. Bobolink and eastern meadowlark require larger areas of grasslands, including hayfields while barn swallows utilize barns and other structures with open rafters for nesting. The cultivated fields do not represent suitable nesting habitat for the grassland avian Species at Risk and no structures are on the Block 13 lands.

The potential Species at Risk in the City of Ottawa were reviewed, with an emphasis on the endangered and threatened species historically reported in the overall City, including butternut, American ginseng, eastern prairie fringed-orchid, wood turtle, Blanding's turtle, Henslow's sparrow, loggerhead shrike, bobolink, eastern whip-poor-will, bald eagle, golden eagle, cerulean warbler, least bittern, eastern cougar, common gray fox, lake sturgeon, eastern meadowlark, barn swallow, bank swallow, and American eel. The habitat requirements of these species along with those listed as special concern were reviewed. None of these Species at Risk other than butternut were observed during the field surveys, and no specific habitat characteristics related to the other Species at Risk are considered present.

Niblett (2012) observed chimney swift, barn swallow and bobolink in the general area, although habitat for these species is not present on or adjacent to the Block 13 lands. Bobolinks were observed by Niblett (2012) in hayfields to the south of the current site. No nesting structures which may be used by barn swallow or chimney swift were observed on or adjacent to the Block 13 lands. There is no indication in the discussion by Niblett (2012) that significant habitat of these species is present in the general area as barn swallow and chimney swift were observed flying overhead and foraging.

Niblett (2012) described two regionally significant plants in their overall study area, long-leaved chickweed and cow parsnip. Both of the plants were observed in vegetation community 11, shown by Niblett (2012) at least 110 meters from the current site.

In summary, other than butternut no habitat of Species at Risk is considered present on the site. Large numbers of butternuts, an endangered Species at Risk but present in many areas of Ottawa, were assessed on the site in 2013. Most of the butternuts have regenerated in the Block 13 lands and some are in the deciduous hedgerows (Map 2). Two-hundred and sixty-one butternuts were assessed as healthy. Of these healthy butternuts, 20 were greater than 14cm dbh, 140 were between 3 and 14cm dbh, and 101 were less than 3cm dbh. Four trees were assessed as 'Category 3' butternuts. These are healthy butternuts that are at least 20cm dbh and are within 40 metres of a diseased butternut.

Fish Habitat

The O'Keefe Municipal Drain to the east of the Block 13 lands supports direct cool and warm water fish habitat, and the habitat has been enhanced with extensive plantings and addition of in-stream structure within a designated 40 metre corridor.

Significant Wildlife Habitat

The potential for significant wildlife habitat was assessed using the guidance in OMNR (2010) and MNRF (2015). No flora, fauna or ecological conditions identified in the background review or field survey that would trigger a Significant Wildlife Habitat designation with respect to the ELC communities present were observed on or adjacent to the site. For example, the forests do not appear to support raptor wintering areas, raptor stick nests were not observed, old growth

forest is not present, and the forests are not large enough to meet the size criterion for deer winter congregation areas. Areas of broken and fissured rock for potential use by snakes were not observed, although rock piles are present. No snake or other unique wildlife utilization has been observed in association with the rock piles.

Due to the fields, breaks in the regenerating forest cover, the Highway 416 corridor and commercial developments to the east, there is only a very limited amount of forest interior habitat on the Block 13 lands, about 0.4 hectares along the south-central edge. More forest interior habitat is present to the south of the site, with about three hectares total of interior habitat. No wetland habitat with notable standing water is present and the on-site habitats do not support waterfowl stopover or staging areas, amphibian breeding areas, colonial nesting bird breeding habitat or other examples of seasonal concentration areas. No rare vegetation communities as noted in MNRF (2015) or rare or specialized habitat including seeps or springs were observed on the site. No Species of Special Concern or other species of conservation concern were observed.

Corridor functions are limited by the adjacent Highway 416 corridor, cultivated lands and expanding commercial and urban residential communities to the east of the site.

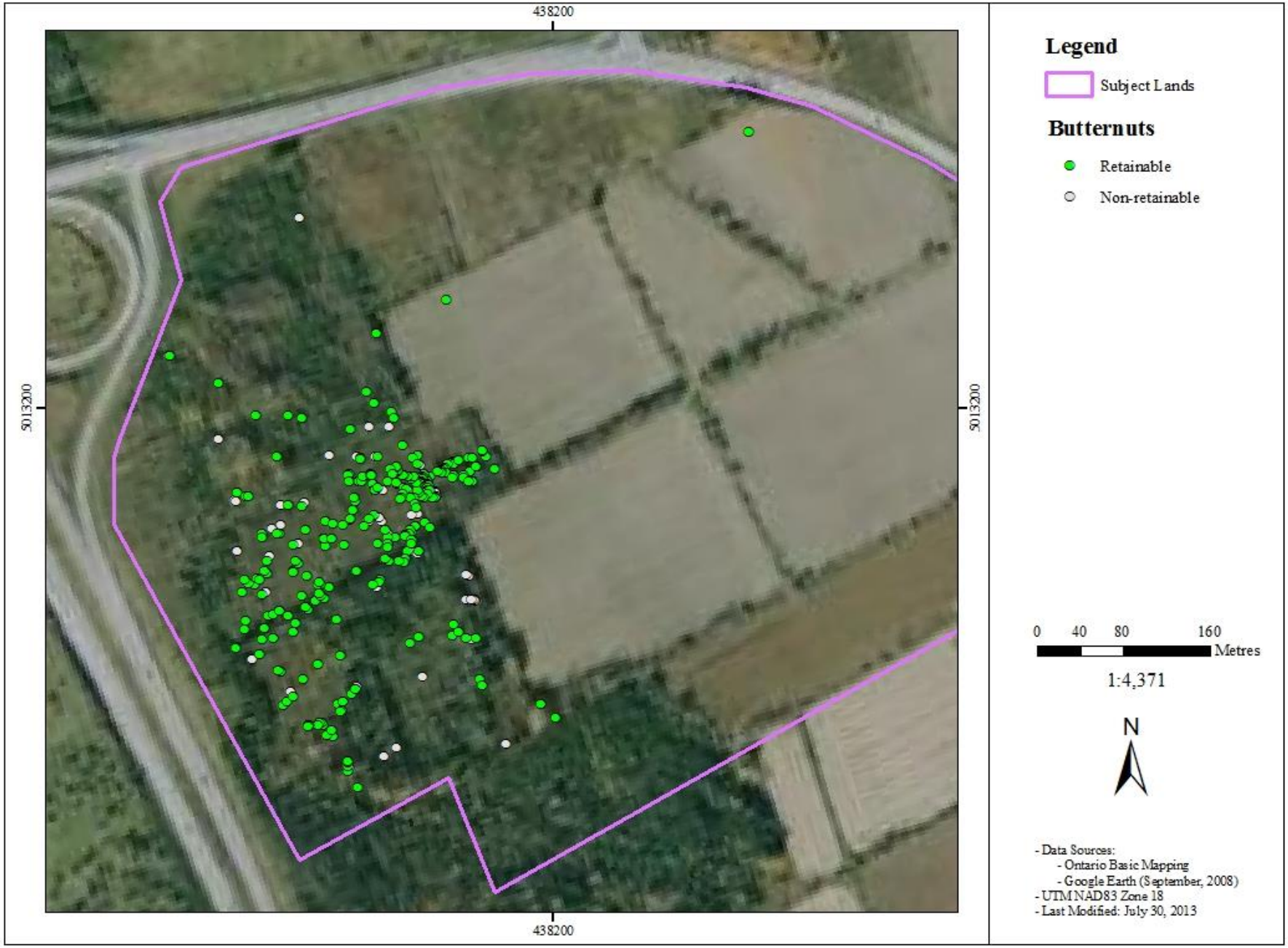
4.0 DEVELOPMENT PROPOSAL

A five-story prestige office building (approximately 2,700,000 ft^2), with a light industrial is proposed for the site. The north portion of the site will be retained as a future Phase 2 building. CitiGate Drive and Systemhouse Street will be extended to provide access for the site, including sidewalks along the road corridors. The urban site will be on full municipal services. Water and sanitary services will be extended along the extensions of CitiGate Drive and Systemhouse Street to the site.

The existing stormwater management pond to the southeast of the site will be utilized, with the stormwater from the site to be conveyed in storm sewers along Systemhouse Street and adjacent to the O'Keefe Municipal Drain corridor to the stormwater pond. The existing stormwater management pond was designed to provide water quality and erosion control. Quantity control to pre-development levels is not required for storm runoff entering the Jock River (Novatech, 2014). The stormwater management will provide an enhanced level of water quality control, corresponding to 80 percent long-term removal of total suspended solids. The Servicing Study and Stormwater Management Report by Novatech (2014) identifies Best Management Practices to be implemented for on-site water quality and quantity control of stormwater runoff. These stormwater mitigation measures will ensure that pre and post development flow rates and quality remain comparable and that stormwater runoff will be addressed during the construction and operation phases of the development, including a retention rate of 100 m^3/ha.

Site preparation on the Block 13 lands is anticipated to begin in the spring of 2020.

Map 2 – BUTTERNUT LOCATIONS and ASSESSMENT RESULTS
(retainable = butternut assessed as healthy)



Legend

- Site
- Vegetation Communities
- Proposed Tree Retention

Vegetation Communities

1. Cultural meadow
2. Cultural thicket
3. Cultural woodland
4. Meadow marsh
5. Deciduous hedgerow
6. Dry-fresh white cedar coniferous forest
7. Dry-fresh white cedar-poplar mixed forest
8. Dry-fresh poplar deciduous forest
9. Fresh-moist white cedar coniferous forest
10. Fresh-moist cedar-sugar maple mixed forest

Approx. Scale 1:4,800

0 50 100 150 200 METRES

Map 2

February 26, 2020

FILE: 12 - 23

PROPSOED CONSERVED VEGETATION
CITI GATE BLOCK 13 - NORTHWEST PARCEL

Barrhaven, City of Ottawa

Prepared for: NOVATECH

Prepared by: Muncaster Environmental Planning Inc.

5.0 POTENTIAL IMPACTS and MITIGATION MEASURES

The potential impacts of the proposed development considered critical to the local natural system were scoped from features identified in the background information for the Highway 416 Urban Natural Area, the existing natural environment work by Niblett (2000 and 2012) and field visits to the site and adjacent lands.

Natural heritage features and functions on the site are generally found in relation to the older forests in the south portion of Block 13, areas of regenerating woody vegetation and the O'Keefe Municipal Drain corridor to the east of the site.

5.1 Terrestrial Habitat

Due to the extensive grading required for the site, unfortunately tree retention is not feasible for the majority of the site. This will result in a loss of local wildlife habitat and aesthetic, climate, and other benefits associated with the forests and other tree cover. Tree retention is proposed for the site edges as shown on Map 3. The tree retention will be a minimum of ten metres along the west site edge and five metres along the south site edge. Wherever grading permits this width of tree retention should be increased. No site disturbances, including vegetation removal, grading, or excavations, are permitted within the ten and five metre limits of tree retention. For the south site limit, the five metres of no disturbances will protect the critical root zones of the trees to the south of the Block 13 lands. On the site development side of the limits of tree retention, grading will occur for approximately five metres to meet the new elevations of the development. Indirect impacts could occur on the trees and adjacent forests to be retained as a result of the construction and operation of the office building and associated servicing. *Potential* indirect impacts include increased exposure to dust, light and noise and increased sediment loadings and other contamination of surface water runoff during construction from machinery maintenance and operation. In addition, degradation in water quality through increased levels of fertilizers and pesticides in surface water runoff is possible. As detailed below, proper sediment and erosion control is critical to ensuring the potential for indirect impacts is minimized as much as possible. As there is not a residential component associated with the development greater human and pet intrusions into the adjacent urban natural area is not anticipated to be a concern. It is not anticipated that increases in noise and light pollution will be significant on the wildlife in the retained forest to the south given the Highway 416 corridor immediately to the west and other urban developments in the area.

To minimize potential impacts on the woody vegetation, plowed snow will be stored on the site in a manner to avoid piling against trees retained along the site peripheries and new plantings. As required, snow will be removed from the site to avoid potential impacts on the retained vegetation and landscaping

As indicated above, no grading or other disturbances are to occur within five metres of the edge of the retained portion of the Highway 416 Urban Natural Area to the south of the site. Given the largest trees in this area are less than 50cm dbh, this will provide suitable protection for the critical root zones of the retained trees. Any grading or other site alterations done in the vicinity

of the south site edge will be undertaken to ensure sedimentation can be controlled and easily directed away from the forest. The topography and grading will direct surface water away from the retained forest as the existing conditions currently do. This will greatly limit the potential for contamination of surface water in the vicinity of the retained forest.

Tree removal should begin in the north portion of the Block 13 lands to encourage wildlife to relocate to the remaining Urban Natural Area to the south of the site. It is anticipated that the large portion of the Natural Area that will remain will be sufficient to accommodate the existing wildlife utilization.

Woody vegetation to be retained is to be protected with sturdy temporary fencing at least 1.3 metres in height installed from the tree trunk a minimum distance of ten times the diameter of the outer retained trees. 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 five 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 covering of plastic should be used to retain moisture during an extended period when watering may 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 the retained trees to the west or south.

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 zone, the barrier should be kept in place until all site servicing and other rconstruction has been completed.

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.

The contractor is to be aware of potential Species at Risk in the vicinity of the site including butternut. Appendix 1 of City of Ottawa (2015) describes these species. The project biologist for this development is Bernie Muncaster (613-748-3753). Any Species at Risk sightings are to be immediately reported to the project biologist and the MECP, and activities modified to avoid impacts until further direction by the Ministry.

As recommended in City of Ottawa (2015) prior to beginning work each day, wildlife is to be checked for by conducting a thorough visual inspection of the work space and immediate surroundings. See Section 2.5 of City of Ottawa (2015) for additional recommendations on construction site management with respect to wildlife. It is the responsibility of the contractor to be familiar with all components of City of Ottawa (2015). Any turtles, snakes, or other sensitive

wildlife in the work area are to be relocated to the retained forest to the south of 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.

To assist over time in the replacement of the removed trees, a generous planting program is proposed for the site. Due to the limited soil in much of the forested portions of the site, transplanting of existing stems is considered to have limited feasibility.

Highlights of the planting plan should include:

- establishing a tree planting target of forty percent tree canopy cover over the site;
- provide for one tree planting per five surface parking spaces where possible;
- trees are to be planted as early as site conditions permit. The larger stock planted the greater the shorter-term benefits of the plantings. To provide a natural appearance, trees should be planted in a random, cluster fashion rather than in a grid system. Native species such as sugar maple, red maple, basswood, red oak, tamarack and white spruce are to be utilized. Where clay soils are present, tree and shrub species that have a high-water demand are generally not recommended in these areas. These species include willows, poplars, Manitoba maple and elm; and,
- for soil volumes, as outlined in the draft Street Tree Manual, large, medium and small size trees planted in clay soils are to be provided with a minimum of 35 m^3, 30 m^3 and 25 m^3 of available soil volumes, respectively, with 5 m^3 less soil required where clay soils are not present. The soil must be protected from excessive compaction during construction. Note that the soil volume calculation is to be based on a depth of 1.5 metres below finished grade (e.g. 5m length x 4m width x 1.5m depth = 30 m^3).

Butternut Permit

As shown on Map 2, there are many butternut trees on the Block 13 lands. Butternut health assessments were completed during leaf-out conditions in 2013 and a permit for their removal was issued by the Ministry of Natural Resources and Forestry on December 8th, 2016. As compensation for removal of the healthy butternuts, the permit details the archiving of four Category 3 trees. One of these archives was completed by the Forest Gene Conservation Association in 2018, using an on-site Category 3 tree. Three more archives are to completed within two years of the removal of the on-site Category 3 butternuts. The Forest Gene Conservation Association indicated that they do not wish to archive the remaining on-site Category 3 butternuts and off-site Category 3 butternuts from their approved list will be utilized.

Off-site plantings of pure butternut seedlings (and companion plantings) and seed collections will compensate for the removal or harm of 257 Category 2 butternuts and damage or removal of 8.7 hectares of butternut habitat. These plantings are to be done within three years of the harm or removal of the Category 2 butternuts. Two-hundred off-site compensation plantings of pure butternuts have already been completed by the Rideau Valley Conservation Foundation.

Schedule of Proposed Works

It is proposed to remove the woody vegetation not proposed for retention in 2020, before the breeding bird season. 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 has been properly constructed. A Tree Cut Permit from the will be required before the trees can be removed.

5.2 Aquatic Habitat

The O'Keefe Municipal Drain is to the east of the Block 13 lands and will not be impacted directly. The north portion of the site is adjacent to the 40 metres wide drain corridor while in the south portion, the extension of CitiGate Drive will be between the site and the corridor.

Portions of the O'Keefe Municipal Drain were relocated and reconstructed in 2014 using the principles of natural channel design, with a view to restoring and enhancing the ecological function of the drain and the riparian corridor. The relocation was done to provide a higher productive capacity with respect to fish, fish habitat and terrestrial corridor function than the pre-development condition of a generally straight channel with ninety degree turns and a typical agricultural cross-section. City of Ottawa (2012) concluded that the primary limiting factor on fish habitat productivity along the O'Keefe Municipal Drain was an overall low coverage by aquatic and riparian vegetation, so plantings were a key component of the enhancement work. The realigned channel was also designed to accommodate 1:100 year flows to protect adjacent developments from flood risks.

It is anticipated that the 40 metre wide O'Keefe Municipal Drain corridor will adequately protect the habitat from sedimentation, erosion, and nutrient runoff. There is not expected to be significant pollutants originating from the proposed development and runoff from the site will be directed to the existing stormwater management pond. In terms of thermal regime, the cool water status is likely due to groundwater inputs from the till deposit in the upper reaches to the north of the CitiGate campus. Once the watercourse hits the clay, significant groundwater input is not expected. The design of the stormwater system and the maintenance of the groundwater inputs will be the primary determinants of the final thermal regime. Riparian vegetation provided by plantings of native trees and shrubs throughout the corridor will contribute to thermal protection by providing shading to the low flow channel.

The channel corridor will be protected with silt fencing erected along the west edge prior to adjacent site alterations. This will avoid the potential for migration in surface flow of sedimentation and other contaminants into the channel and ultimately downstream habitat. It is important that the construction and silt fencing are installed prior to other site disturbances. The fencing will be regularly inspected and maintained to ensure proper function during the construction period.

5.3 Stormwater Mitigation

The proposed drainage plan for the site has been designed so existing base flows and quantities are maintained. Novatech (2014) also recommend opportunities to increase base flows in the O'Keefe Municipal Drain, including extended detention and baseflow outlets from the stormwater management facility and promotion of infiltration of storm runoff in areas with suitable soils. Low gradient, grassed swales will provide an opportunity for settling, absorption, filtration, and infiltration of the stormwater before outletting to the storm sewers conveying the stormwater to the existing pond. This will reduce the peak flows and volume of stormwater runoff from the developed site. Rooftop storage can potentially provide significant quantity control storage, but should be limited to larger storm events to minimize temperature increases associated with shallow storage depths and large ponding areas on warmer surfaces (Novatech, 2014). Water reuse will reduce the volume of storm runoff requiring temperature mitigation.

5.4 Erosion and Sediment Controls

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. An erosion and sediment control plan will be prepared as part of the detailed design package. During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. Seepage barriers such as silt fencing, straw bale and rock flow check dams and other sediment and erosion control measures will be installed to reduce as much as possible sediment loadings during construction in any temporary drainage ditches and around disturbed areas during construction and stockpiles of fine material. The seepage barriers will also promote absorption and infiltration. Filter fabric is to be placed under all catchbasins and storm manhole covers during construction

Any groundwater encountered during construction will be pumped into a proper filter mechanism such as a sediment trap or filter bag prior to release to the environment. The dewatering will be released away from the O'Keefe Municipal Drain corridor. Stockpiles of cleared materials as well as equipment fuelling and maintenance areas will be located a minimum of 30 metres from swales and other conveyance routes. Construction vehicles will leave the site at designated locations. Exits will consist of a bed of granular material or other forms of mud mats to minimize the tracking of mud off-site. Properly constructed and maintained spill pans and tarps will be required for all machinery and storage tanks.

A qualified inspector will conduct frequent visits during construction to ensure that the contractor is constructing the project in accordance with the design drawings and mitigation measures are being implemented and maintained as specified. These control measures must be properly maintained to maximize their function during construction. Silt fencing may require removal of sediment and repairs. The inspector must ensure that construction vehicles and chemicals, fuels and other potentially hazardous materials remain in designated areas.

All sediment and construction fencing must be removed following construction, providing there is no exposed soil or other potential sources of sedimentation.

The extent of exposed soils shall be kept to a minimum at all times. All planting, sodding and seeding is to be conducted correctly and as soon as weather and construction activity permits.

During operation of the prestige office building and other components of the development, erosion and sediment control will focus on best management practices such as grassed swales with a reduced slope and direction of roof and other runoff to the grass swales and other permeable areas.

6.0 CUMULATIVE EFFECTS and SUMMARY

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.

With proper implementation of the mitigation measures described in this report it is anticipated that the impacts associated with the construction and operation of the prestige office building and other components of the development will be minimized, though the forest removal will result in a loss of wildlife habitat and other environmental and social attributes of the forests. To minimize this loss, it is important that the extensive plantings are part of the development, addressing the targets in Section 5.1 as much as possible. Larger and older portions of the Highway 416 Urban Natural Area are to the south of the site, on adjacent lands, and will be retained. Wildlife, including area sensitive breeding birds, can utilize the forests to the south where more forest interior habitat is present pre-development.

It is recognized that tree retention away from the site peripheries is difficult with the grading and other servicing requirements.

The realigned and enhanced O'Keefe Drain and associated protected corridor is anticipated to provide a greater diversity of aquatic habitats and greater ecological functions than the former conditions. The proposed corridor will adequately meet the buffer functions by reducing sedimentation, erosion, and nutrient runoff; providing shading through extensive native tree and shrub planting that will enhance and restore the riparian vegetation, providing aquatic habitat with a food supply and inputs of debris, and providing terrestrial habitat for smaller wildlife. In addition, the hydraulic function of the watercourse will be accommodated within the corridor.

Best management practices for stormwater will be instituted to protect the on-site and downstream environmental features during construction and operation of the prestige office building and other components of the development.

7.0 REFERENCES

CH2M Hill Canada Ltd. 2013. O'Keefe Drain Environmental and Stormwater Management Plan. May, 2013. 103 pp & Append.

City of Ottawa. 2012. O'Keefe Drain Fish Habitat and Risk Assessment. Prepared by Dr. Nicholas Stow, Brian Bezaire and Tara Redpath. February 22nd, 2012. 24 pp.

City of Ottawa. 2015. Protocol for Wildlife Protection during Construction. August, 2015. 14 pp & Append.

Muncaster Environmental Planning Inc. and D. F. Brunton. 2005. Urban Natural Areas Environmental Evaluation Study. Prepared for City of Ottawa. March, 2005. 58 pp & Append.

Muncaster Environmental Planning Inc. 2010. O'Keefe Municipal Drain Fish Community Report. November, 2010. 17 pp.

Muncaster Environmental Planning Inc. 2012. Environmental Impact Statement & Tree Conservation Report. Citi Gate 416 Corporate Campus. December 21, 2012. 35 pp

Muncaster Environmental Planning Inc. 2014. Integrated Environmental Review. Citi Gate 416 Corporate Campus, Barrhaven, City of Ottawa. Revised October 27, 2014. 24 pp

Niblett Environmental Associates Inc. 2000. Nortel Networks Strandherd Campus. Strandherd Study Area. Natural and Environment Existing Conditions. Report PN 00-046. August, 2000. 13 pp & Append.

Niblett Environmental Associates Inc. 2012. O'Keefe Drain Woodland Study. City of Ottawa. Prepared for: CH2M Hill Canada Ltd. February, 2012. 27 pp & Append.

Novatech Engineering Consultants Ltd. 2014. Citi Gate 416 Corporate Campus. Detailed Servicing and Stormwater Management Report (Phase 1). March 31, 2014. File: 109203, Ref: R-2014-039. 31 pp. & Append.

Ontario Ministry of Natural Resources. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. March 2010. 233 pp.

Ontario Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. January, 2015. 38 pp.

Paterson Group Inc. 2012. Preliminary Geotechnical Investigation. Proposed Commercial Development. 4337 and 4225 Strandherd Drive Ottawa, Ontario. November 1, 2012. Report No. PG2449-1R. 17 pp. & Append.