



Muncaster  
Environmental  
Planning Inc.

March 16, 2017

Mr. Greg Winters, MCIP, RPP  
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Dear Greg:

**RE: Proposed Research and Development Facility  
4139 Moodie Drive  
Environmental Impact Statement**

I have completed an Environmental Impact Statement (EIS) for a proposed research and development facility on the east side of Moodie Drive between Brophy Drive and Barnsdale Road at 4139 Moodie Drive in the west portion of Concession 4, Lot 4, Nepean Geographic Township of the City of Ottawa (Figure 1). The overall property is approximately 20 hectares and is dominated by conifer plantations.

The research and development facility will support an adjacent waterpark to the south. The natural environment features on the adjacent site to the south were surveyed in 2007, with a final Environmental Impact Statement produced in 2010.

For the purposes of this report Moodie Drive is considered in a north-south orientation.

***Site Context and Proposed Development***

The site and much of the adjacent lands are designated *General Rural Area* on Schedule A of the Official Plan and zoned Rural (*RU*), with lands to the west, on the west side of Moodie Drive, designated *Agricultural Resource Area*. There are no Areas of Natural and Scientific Interest or Provincially Significant Wetlands in the vicinity of the site. The forests to the north and southeast of the site are part of the City's Natural Heritage System, as mapped on the Schedule L2 Overlay of the Official Plan (see green line on Figure 1). A small portion of the Natural Heritage System extends onto the overall site to the east of the portion of the site proposed for development. No environmental constraints are shown for the site or adjacent lands on Schedule K.

The Barnsdale Woodland, identified by Brunton (1997) as Natural Area 507 in the Natural Environment Evaluation System, is to the north of the site (see purple line on Figure 1). This Natural Area was rated low overall, with none of the eight evaluation criteria scoring greater than a low rating. No rare vegetation communities or species of special significance were identified

for the Natural Area. The impact on the Natural Area of non-native species, especially glossy buckthorn, was considered severe by Brunton (1997). The summary for the Natural Area concluded that the forest vegetation is young to occasionally submature and has been extensively disturbed in the past. The Ecological Land Classification work completed by MMM (2005) identified the majority of the Barnsdale Woodland and the portion closest to the site as upland deciduous forest (see Figures 3-7-2 and H-6 of MMM (2005)). No wetlands, forests greater than 100 years old or rare vegetation/landform types are identified in proximity to the portion of the site proposed for development on Figures 3-7-4, -6 and -7 of MMM (2005), with forests greater than 50 years old shown to the north of the site on Figure 3-7-5, along with forest interior habitat to the north of the site on Figure 3-7-3. The vast majority of the site itself is not shown as natural vegetation on Figure 3-7-1 of MMM (2005), with small areas of *Scrub, thicket, hedgerow* in the south and a small area of upland forest in the north-central portion of the site.

Brunton (1997) noted that the Natural Area is fragmented and ecologically isolated by conifer plantations and surrounding agricultural activity. Highway 416 to the east has added to this isolation. The closest identified natural areas to the Barnsdale Woodland are the moderate rated Cambrian Road Complex approximately three kilometers north of the site and the low rated Richmond East Natural Area, a similar distance to the southwest. There are no direct or indirect environmental connections between these Natural Areas and the general area including the site.

A research and development facility is proposed for the central-west portion of the site, between about 250 and 500 metres west of Moodie Drive. A parking area and outdoor test area will be to the east of the facility. A private access road will connect the research facility with Moodie Drive. The access road will cross a north-south swale (Figure 1) about 160 metres east of Moodie Drive.

### **Methodology**

An Environmental Impact Statement is required for the proposed facility as adjacent lands not to be disturbed to the east and north of the site are part of the mapped Natural Heritage System. This EIS will also address potential Species at Risk utilization and potential aquatic habitat in the north-south swale. The EIS will determine if the proposed facility will have a negative impact, as defined in the Provincial Policy Statement, on significant natural features. This EIS was prepared in accordance with Section 4.7.8 of the City of Ottawa Official Plan following the EIS Guidelines, found at <http://ottawa.ca/en/development-application-review-process-0/environmental-impact-statement-guidelines>, with guidance from the Natural Heritage Reference Manual (OMNR, 2010). The field survey and this report were completed by Bernie Muncaster, who has a Master's of Science in Biology and over twenty-eight years of experience in completing natural environment assessments.

The 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, and Species at Risk reported for the overall City of Ottawa.

The natural environment features of the site and adjacent lands were reviewed on September 12<sup>th</sup>, 2013, under partly sunny skies with calm winds and an air temperature of 18° C.

### ***Existing Conditions***

The topography of the site is generally level, with a very gentle slope to the west. The soils on the site are primarily poorly drained clay deposits, with some surficial sand over the clay (Schut and Wilson, 1987).

The conifers appear to have been planted between 1999 and 2002. White spruce up to 28cm diameter at breast height (dbh) are dominant in the conifer plantations (Photos 1 and 2). Most of the spruce appear to be in good condition with some vine (wild grape and wild cucumber) growth on some of the lower branches. Smaller sized tamarack (Photo 3) and white pine are also present, along with regenerating green ash, gray birch, red maple, Manitoba maple and trembling aspen stems up to 20cm dbh. Common buckthorn, blackberry and slender willow shrubs are among the planted conifers. Ground vegetation among and adjacent to the plantations included sensitive fern (dominant in areas), New England aster, calico aster, ostrich fern, Canada goldenrod, rough-stemmed goldenrod, reed canary grass and orchard grass.

Smaller representations of cultural meadow habitat are among the plantations and along the many trails (see vegetation community 1 on Figure 1, Photo 4). Ground flora in the meadow habitat included common plantain, common dandelion, cow vetch, common fleabane, field sow-thistle, bluegrass, orchard grass, curled dock, common ragweed, New England aster, small white aster and nodding ladies-tresses. Scattered white elm and grey birch are up to 15cm dbh, along with slender willow and common buckthorn shrubs.

In a couple of locations some conifer plantings and other trees provide less than 60 percent of the tree cover. In these areas, the vegetation community in Figure 1 is shown as a cultural woodland. Common tree species are green ash, trembling aspen, white spruce, Freeman maple, sugar maple, balsam poplar, Manitoba maple and weeping willow. The larger trees are maples in the range of 45cm dbh. Many of the green ash showed greatly reduced leaf-out. The larger poplars, up to 38cm dbh, had a noticeable amount of trunk decay. Staghorn sumac and apple shrubs were common among the trees in the cultural woodland.

A small upland maple forest, about 0.5 hectares with a maximum width of 90 metres, begins about 170 metres east of Moodie Drive in the southwest portion of the overall site (see vegetation community 4 on Figure 1, Photo 5). Sugar and red maples are dominant with green ash and trembling aspen also present. The largest trees are maples up to 35cm dbh, with many coppice (multi-stemmed) trees. The bark on many of the larger maples was significantly damaged. Common buckthorn and red raspberry were in the understory. The ground flora was limited by a layer wood chips in many areas. Thicket creeper and false nettle were noted.

A north-south drainage swale is mapped approximately 160 metres east of Moodie Drive. This channel was likely created to attempt to drain the lands for agriculture. The channel was not noted during the September survey and will be looked for again this Spring. To the south of the site earlier field surveys noted the channel is straight with a typical trapezoid cross-section. In

areas with an impaired outlet the wetted width varied between 70 and 120cm on June 1<sup>st</sup>, 2007 but was dry on September 12<sup>th</sup> and 20<sup>th</sup>, 2007. The ditch bottom was mostly grass and leaf litter, with some muck substrate. No in-stream structure was noted. Flow off-site to the south appeared minimal on June 1<sup>st</sup>, but a channel does extend downstream to the south, becoming a roadside ditch on the east side of Moodie Drive. There is no culvert under Moodie Drive and on June 1<sup>st</sup>, 2007 the roadside ditch was wet for only about twenty metres to the north and fifteen metres to the south of where the channel from the east discharges into the roadside ditch. This downstream observation indicates the on-site swale has no potential connection to downstream fish habitat, and therefore the feature does not provide an indirect contribution to any downstream fish habitat.

Wildlife observations in 2013 included eastern cottontail, white-tailed deer, red squirrel, American crow, blue jay, black-capped chickadee, northern flicker, cedar waxwing, American goldfinch, song sparrow and spring peeper.



*Photo 1 – Typical white spruce at an outer edge of a conifer plantation*



*Photo 2 – Conifer plantation in the area of the proposed research and development facility*



*Photo 3 – Tamarack and white spruce in the east portion of the proposed research and development facility*



*Photo 4 – Cultural meadow just to the north of the west portion of the proposed research and development facility*



*Photo 5 – Small area of maple forest in the west portion of the site, to the west of the proposed research and development facility*

### 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 the proposed area of disturbance. For example, in the plantations, cultural meadows and woodlands to be disturbed no tree cavities were noted that may support maternity colonies for bats in trees greater than 25cm dbh or other potential wildlife nesting, old growth forest or forest interior habitat is not present and no impacts on native forests are anticipated. No stick nests were observed. Stone fences or areas of broken and fissured rock for potential use by snakes were not observed. No evidence of colonial nesting bird breeding habitat or other examples of seasonal concentration areas were observed. No rare vegetation communities as noted in MNRF (2015) or rare or specialized habitat including seeps or springs were noted on the proposed area of disturbance. No Species of Special Concern or other species of conservation concern were observed.

Linkage functions of the Barnsdale Woodland Natural Area would primarily be to the east of the site through the contiguous portions of the Natural Area which do not include the areas proposed for disturbance and will not be impacted. The development to the south of the site and extensive agricultural lands to the west would impact the linkage function for the proposed development area itself.

### Significant Woodlands

The on-site plantations and small area of deciduous forest are young and do not support forest interior habitat. No characteristics were observed which would suggest that the on-site tree cover would meet the criteria used to define Significant Woodlands in Table 7-2 of the Natural Heritage Reference Manual (OMNR, 2010). Adjacent lands are forested and their size and other characteristics may result in the overall adjacent forest being considered a Significant Woodlands. As assessed below, provided the recommended mitigation measures are properly implemented, no direct or indirect impacts on the adjacent forests are anticipated. The ability of the adjacent forests to function as a Significant Woodlands will not be impaired.

### Species at Risk

No Species at Risk were observed during the field survey. An information request has been submitted to the Ministry of Natural Resources and Forestry (MNRF). The MNRF's Make a Map: Natural Heritage Areas website was reviewed on January 31<sup>st</sup>, 2017 ([www.giscopeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html](http://www.giscopeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html)). 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 (18VR30-96 and -97 and 18VR40-06 and -07). Two Species at Risk: Henslow's sparrow and eastern meadowlark, were identified for the squares, along with the provincially rare Kennedy's emerald (a dragonfly). Suitable habitat for these species was not observed on or adjacent to the site. The Henslow's sparrow utilizes

unmaintained tall weedy fields (Ehrlich et al., 1988). Bobolink and eastern meadowlark utilize large grassland areas including hay fields, habitat not present on or adjacent to the site.

The breeding birds listed in the Ontario Breeding Bird Atlas for the 10 km squares 18VR30 and 18VR40 identified bank swallow, barn swallow, eastern meadowlark and bobolink as Species at Risk in the overall 10 km squares including the study area. No structures that have the potential for barn swallow or chimney nesting remain on the site. Bank swallows use the open face of sand banks; habitat not observed on or adjacent to the site.

No Species at Risk were identified for the Barnsdale Woodland Natural Area by Brunton (1997). Correspondence from the Kemptville District office of the Ontario Ministry of Natural Resources, dated January 4<sup>th</sup>, 2012, for the site immediately to the south identified potential Species at Risk in the general area. In addition to bobolink, eastern meadowlark, Henslow's sparrow and barn swallow discussed above, chimney swift, eastern whip-poor-will and Blanding's turtle were also identified as potential Species at Risk. Butternut is often encountered in portions of Ottawa. No butternuts were observed on or adjacent to the proposed area of disturbance. Eastern whip-poor-will utilize rock or sand barrens with scattered trees, savannahs, old burns, or other disturbed sites in a state of early to mid-forest succession, or open conifer plantations. Although conifer plantations are dominant on the site, it is anticipated that whip-poor-will would not utilize the site due to a lack of adjacent suitable open areas of size. There is not enough standing water or wetland habitat on or adjacent to the site to support Blanding's turtle.

The potential Species at Risk reported for the City of Ottawa were also 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, spiny softshell, Blanding's turtle, musk turtle, bobolink, eastern meadowlark, barn swallow, bank swallow, Henslow's sparrow, loggerhead shrike, eastern whip-poor-will, bald eagle, cerulean warbler, golden eagle, least bittern, little brown bat, eastern small-footed myotis, northern long-eared bat, olive hickorynut, eastern cougar, lake sturgeon, and American eel. The habitat requirements of these species along with those listed as special concern were reviewed.

Based on the site and adjacent habitat, the potential Species at Risk most likely to occur on the proposed area of disturbance is butternut. As indicated above, no butternuts were observed on or adjacent to the proposed development area.

### ***Impact Analysis and Recommendations***

With the potential exception of intermittent aquatic habitat in the north-south swale and Significant Woodlands in the adjacent forests, no natural heritage features, as identified in the Provincial Policy Statement and OMNR (2010), are present on or adjacent to the site.

Figure 1 shows the outline of the footprint for the proposed research and development facility and associated parking, outside test area and access. The north-south swale will be crossed with a new access road but otherwise be undisturbed within a retained corridor. Other than the access road, no disturbances are proposed on either side of the swale for a distance of greater than 30

metres. The potential for aquatic habitat in the swale will be examined in the Spring and a self-assessment process completed under the *Fisheries Act*. Pending the results of the assessment a Request for Review will be submitted to the Department of Fisheries and Oceans for the access road crossing. As the swale will be kept in its current alignment a headwater feature assessment is not required. Mitigation measures for the access road crossing are presented below.

The outer trees of the adjacent forests have a maximum size in the range of 30 - 40cm dbh. No disturbances will occur within a minimum of five metres of the adjacent forests, which will protect the critical root zones of the adjacent outer trees and the features and functions of any adjacent Significant Woodlands.

To minimize the extent of woody vegetation removal at this time the work areas are to be delineated with sturdy temporary construction fencing. In addition to protecting the adjacent retained trees and shrubs, the fencing will confine construction vehicles, stockpiling of materials and other activities. The retained woody vegetation adjacent to the proposed building envelope will provide good buffering with respect to potential impacts associated with surface water, noise, light, and dust.

The following mitigation measures are recommended:

1. The amount of tree removal for the research and development facility, parking, test area and access road is to be minimized as much as possible;
2. Adjacent trees whose critical root zone extends into the work area are to be protected with temporary sturdy fencing at least 1.2 metres in height. The critical root zone is defined as ten times the diameter of the tree trunk. No grading or activities that may cause soil compaction such as heavy machinery traffic and stockpiling of material are permitted on the non-work side of the fencing. No machinery maintenance or refuelling, storage of construction materials, or stockpiling of earth is to occur within three metres of the protective fencing. The existing grade is not to be raised or lowered and no digging is permitted on the non-work side of the fencing. The fencing is to be properly installed and maintained around the perimeter of the work areas. In addition to tree protection, the fencing will confine construction activity and keep any turtles and other wildlife out of the work areas. Where temporary surface drainage may occur, silt fencing, and other sediment and erosion control measures as required, are to be properly installed and maintained to filter surface water runoff;
3. Woody vegetation removal is to occur before April 15<sup>th</sup> or after August 15<sup>th</sup> for the protection of breeding birds, unless a survey conducted within five days of the vegetation removal identifies no bird nesting activity;
4. As recommended in City of Ottawa (2015) prior to beginning work each day, the work area is to be checked for wildlife by conducting a thorough visual inspection of the work space and immediate surroundings. See Section 2.5 of the City's Protocol for Wildlife Protection during Construction (City of Ottawa, 2015) for additional recommendations on construction site management. Any turtles or snake observed in the vicinity of the work areas or that may otherwise be in danger are to be safely relocated to the Natural Areas to the north or east. 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. Maintenance on construction equipment, such as refuelling, oil changes or lubrication, will only be permitted at designated areas of the work area where all precautions have been made to prevent spills, including oil, grease, antifreeze or other materials inadvertently entering the ground or the surface water flow. Properly constructed and maintained spill pans and traps will be required for all machinery utilized on the site;
6. All waste oils, lubricants and filters will be collected following equipment servicing and disposed of in an appropriate manner at an approved location. Lubricants, fuels or other hazardous materials should not be placed outside of the working areas. The cleaning or washing, of any type of equipment or machinery should not occur outside of designated areas;
7. No burning or burying of rubbish and waste materials will be permitted on the site. Unauthorized disposal of solvents on or off the site will not be permitted;
8. Outdoor lighting is to be directed away from the adjacent forests;
9. 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. Waste will be managed in accordance with provincial regulations;
10. The contractor will have a spill kit on-hand at all times in case of spills or other accidents;
11. The extent of exposed soils is to be kept to a minimum at all times. Re-vegetation of exposed, non-developed areas is to be achieved as soon as possible; and,
12. Roof runoff should be directed to grass or other permeable surfaces.

In addition, many helpful wildlife oriented mitigation measures are detailed in the City's Protocol for Wildlife Protection during Construction (City of Ottawa, 2015). The contractor is to review in detail and understand the City's Protocol for Wildlife Protection during Construction prior to commencement of construction. The contractor is to be aware of the potential Species at Risk including butternut. Appendix 1 of City of Ottawa (2015) describes these species. Appendix 1 should be modified for this project to include the contact information of the project biologist, as applicable. Any Species at Risk sightings are to be immediately reported to the Ministry of the Natural Resources and Forestry and work that may impact the species suspended immediately.

The following mitigation measures are recommended for the access road crossing of the north-south swale:

- The summer period is recommended for the culvert installation due to the generally reduced flow, decreased potential for sediment input and the greater growing season afforded for re-vegetation of disturbed areas. If the proposed timing of the work is to take place between October 15<sup>th</sup> and March 15<sup>th</sup>, it may be necessary to have any exposed areas covered with erosion control blankets to keep the soil in place and prevent erosion from occurring during the spring freshet time period. If the swale contains water, no in-water work will be permitted between March 15<sup>th</sup> and June 30<sup>th</sup>, inclusively;
- The culvert work will not be initiated when flows are elevated from local rains, storm events or seasonal floods, or when significant rains are forecasted;

- It is important that the culvert is properly embedded to avoid potential restrictions in fish movement. As required, rock protection is to be installed at the culvert ends to stabilize the channel and culvert. Any rock protection at the base of the channel must be installed flush with the base to avoid potential impacts on fish movement:
- Any stockpiling of material will be properly protected with appropriate erosion and sediment control measures and during the culvert installation, mitigation measures are to be deployed to address the potential for contamination of the water with sediment and/or other deleterious substances;
- Any in-water work should be completed in the dry by de-watering, as required, the work area and diverting and/or pumping flows around temporary cofferdams of clean shot rock or steel plates placed at the limits of the work area. If water was present and once the work area is isolated, the area is to be de-fished by a qualified biologist, with any fish released downstream of the work area. Two weeks should be allowed prior to the de-fishing to obtain a Scientific Collectors Permit from the MNRF.

Any dewatering from the work area will be treated in a sediment trap or similarly effective sediment control prior to downstream release. Pumps and hoses will be used to convey the flow of the watercourse during the culvert installation. Rock flow checks, following approved specifications, will be installed downstream of the work area. Silt or debris that has accumulated around the temporary cofferdams should be removed prior to their withdrawal. Proper sediment and erosion control measures will be utilized. Silt fencing will be installed along the work area and will remain in place and frequently inspected until all components of the work area are stabilized;

### *Conclusion*

A proposed research and development facility and associated surface parking, outdoor test area and access road are proposed for the central-west portion of the overall site. The site is dominated by young conifer plantations. The proposed building footprint will avoid the small natural forested areas on site. Other than the crossing of a north-south swale no potential impacts on significant natural heritage features are anticipated. Given that the mitigation measures presented above are properly implemented, it is anticipated that there will be no negative impacts, as defined in the Provincial Policy Statement, on adjacent significant natural environment features including any adjacent Significant Woodlands.

This EIS concludes that it is the professional opinion of the author that the construction and operation of the proposed research and development facility and associated infrastructure is not anticipated to impact the significant features and functions of the adjacent Barnsdale Woodland Natural Area and associated Natural Heritage System, surface water features and potential Significant Woodlands provided the important mitigation measures in this report are properly implemented.

### *References*

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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.

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Please call if you have any questions on this EIS.

Yours Sincerely,  
**MUNCASTER ENVIRONMENTAL PLANNING INC.**



Bernie Muncaster, M.Sc.  
Principal

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## Legend

-  Overall Site
-  R & D Facility and Access
-  Vegetation Communities
-  Natural Area # 507
-  Natural Heritage System per Schedule L2

## Vegetation Communities

-  Cultural meadow
-  Cultural woodland
-  Conifer plantation
-  Upland maple deciduous forest



2014 air photo from City of Ottawa website

Approx. Scale 1:4,700



January 20, 2017

FILE: 06-12

Figure 1

Prepared for:

Novatech Engineering  
Consultants Ltd.

Prepared by:



NATURAL ENVIRONMENT FEATURES

Alottawata Water Park Research & Development Area  
Moodie Drive  
City of Ottawa

