

September 6, 2013

Planning & Environment Committee
The Corporation of the City of London
P.O. Box 5035
300 Dufferin Avenue
London, Ontario N6A 4L9

Attention: Chair - Councillor Polhill & Committee Members

Dear Councillor Polhill & PEC Committee Members:

Re: File No. OZ-8003 – UTRCA Objection to Recommendation
Applicant: Bluestone Properties Inc.
450 Oxford Street West, London, Ontario

The Upper Thames River Conservation Authority (UTRCA) objects to the rezoning of the subject lands on the basis that the proposed amendments are not consistent with Provincial Flood Plain Management Policies, the flood plain policies in the City of London's Official Plan and the flood plain management policies of the UTRCA.

As was conveyed in our correspondence to the City of London Planning Division dated August 12, 2013 (please see attached), the UTRCA has reviewed the available information which includes the ***Draft Mud Creek Subwatershed Study Update*** (Delcan) and we are of the opinion that most of the subject lands are located within the floodway of Mud Creek and are not developable. Consistent with Provincial Policy, the UTRCA does not permit development in the floodway.

Following the submission of our August 12th comments, the UTRCA received draft flood line information from Delcan, depicting both the 1:100-year and 1:250-year flood elevations for the "existing condition". While this information is still being reviewed by our water resources engineering staff, it appears to confirm our earlier conclusion that virtually this entire property is located below the 1:100-year flood elevation and is therefore in the floodway of Mud Creek.

The purpose of the current Mud Creek Subwatershed Study is to undertake the necessary update to the water resources management component of the original (1995) study and to confirm the ecological conditions in the subwatershed in relation to the water resources system (as per the approved terms of reference). The consultant has identified "preferred alternatives" through this update however these alternatives were not vetted with the UTRCA for policy or legislation compliance before they were presented to the public. We also understand that the alternatives have not been vetted for compliance with City policies including the Official Plan.

One of the alternatives identified in the Mud Creek Study is to “floodproof” 450 Oxford Street West by raising the level of the land to an elevation of 236.2 metres. It is premature to re-zone this property on the basis of this recommendation as the Mud Creek Subwatershed Study Update has not been fully reviewed and the alternatives have not been vetted for policy compliance. To establish zoning on the basis of one of the alternatives included in a study that has not been reviewed or adopted by Council is inappropriate. It is our opinion that the recommendation to fill in floodway areas within the subwatershed in order to permit development would need to be confirmed through the completion of an EA under the Environmental Assessment Act. Rezoning the land in advance of this process is an inappropriate presumption of an outcome of a public process.

While the proposed Zoning Amendment includes a holding provision whereby development cannot occur on the property until the UTRCA has issued the necessary approvals under the Conservation Authorities Act, this provision establishes an expectation that 450 Oxford Street West can be developed. This is not the case given that the updated flood line information indicates that the property is located in the floodway. The decision regarding the appropriate extent of the development limit needs to be established at the land use planning decision stage and should not be deferred to the implementation stage. The use of a holding provision to defer the flood plain issue to the UTRCA’s Section 28 permit stage does not represent good planning and does not acknowledge that the information that is available at this point suggests that development is not possible.

EIS

In the Authority’s comments dated March 26, 2012, May 29, 2012 and September 13, 2012 on the Environmental Impact Study for 450 Oxford Street West (Dillon), we disagreed with how the woodland patch on the property had been delineated. The consultants indicated that because the patch on the property was isolated from the adjacent larger Patch 06007 and had an area of less than 0.5 hectares it could be removed. In the Authority’s comments dated September 13, 2012, we indicated:

that an evaluation of the ecological significance of the woodland (which appears to have included the FOD 9-3 forest community, the manicured grass pathways, the vegetation that occurs along Mud Creek and vegetation community FOD 7 as part of the single vegetation patch 06007) was completed using the City of London Environmental Management Guidelines Document Criteria for the Identification of Significant Woodlands and was found significant because of the presence of hydrological features, landscape richness, and size and distribution of large trees (Appendix C – enclosed).

The UTRCA advised that the delineation of the patch boundary needed to be accurate because the erroneous removal of parts of the woodland patch could result in a woodland (patch 06007) that is no longer significant. We have not received a response to our comments. Furthermore an EIS prepared to our satisfaction would be required in order to issue any approvals for this site pursuant to Section 28 of the Conservation Authorities Act.

RECOMMENDATION

Based on the available information including the Draft Mud Creek Subwatershed Study update information prepared by Delcan, 450 Oxford Street West is located in the floodway of Mud Creek. Development is not permitted in the floodway under Provincial, City and UTRCA policy. The draft subwatershed study identifies the subject property as a candidate for filling however it is premature for the City to take any action on this one recommendation from an incomplete study. To do so would inappropriately presuppose the outcome of the process and would create expectations that may not be able to be realized. Also as indicated, the Authority

is of the opinion that the applicant has yet to demonstrate that the woodland on the subject lands is not significant. We therefore believe that the approval of this application is premature and that it is inappropriate to establish the principle of development for this site on the basis of partial information. The Upper Thames River Conservation Authority therefore objects to the approval of this application.

Thank you for your consideration of our comments. If there are any questions, please do not hesitate to contact Christine Creighton or the undersigned.

Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY

A handwritten signature in black ink, appearing to read 'Jeff Brick'.

Jeff Brick, MCIP, RPP
Coordinator, Hydrology and Regulatory Services
JB/MSn/CC/cc

Enclosures - 1. Appendix C -Woodland Patch Assessment Score Sheet (Dillon July 27, 2012)
2. UTRCA August 12, 2013 Correspondence to City of London Planning Division
3. UTRCA Regulations Mapping

c.c. Applicant – Bluestone Properties Inc. – Bernie Bierbaum
City of London – John Fleming, Managing Director, Planning & City Planner

August 12, 2013

The Corporation of the City of London
Planning Division
206 Dundas Street
London, Ontario N6A 4L9

Attention: Barb Debbert (sent via e-mail - bdebbert@london.ca)

Dear Ms. Debbert:

Re: File No. OZ-8003 – Application to Amend the Official Plan & Zoning By-Law
Applicant: Bluestone Properties Inc.
450 Oxford Street West, London, Ontario

Further to our correspondence dated November 5, 2012, the Upper Thames River Conservation Authority (UTRCA) offers the following comments on this application. As was previously indicated, the subject property is regulated by the UTRCA pursuant to Section 28 of the *Conservation Authorities Act*. The regulation limit is comprised of a riverine flooding hazard associated with Mud Creek. The UTRCA has jurisdiction over lands within the regulated area and requires that landowners obtain written approval from the Authority prior to undertaking any site alteration or development within this area including filling, grading, construction, alteration to a watercourse and/or interference with a wetland.

On June 18, 2013, the UTRCA received a copy of the draft *Mud Creek Subwatershed Study Update* prepared by Delcan. The subwatershed study update is intended to be solely for water resources components, including consideration of climate change. We wish to advise that this letter has been prepared to provide the City of London an update of our position on the planning application noted above and is not intended to express our opinion or position on the broader study.

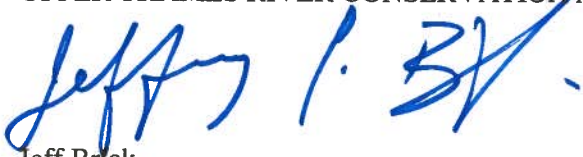
While Conservation Authority staff continue to review all components of the Mud Creek Subwatershed Study Update document (including hydrologic and hydraulic modelling), we have been able to conclude that flood elevations for the *existing condition* do not correspond to those generated as part of the original Mud Creek Subwatershed Study, completed in 1995. Information produced by Delcan during the current subwatershed study update more closely aligns with flood elevations generated by the UTRCA prior to the original subwatershed study. This leaves most of the subject lands within the floodway of Mud Creek. We continue to work with the City of London's Stormwater Management Unit on the overall Mud Creek Subwatershed Study Update completed by Delcan.

One of the recommendations proposed as part of the preferred alternative in the subwatershed study update is to "floodproof" 450 Oxford Street West by raising the level of the land to an elevation of 236.2 metres "or other alternative methods to ensure that the lowest floor level of the development is above the stipulated flood level". The Conservation Authority is not in a position to support this recommendation at this time as it is not in conformity with the Provincial Flood Plain Management Policies, flood plain policies of the City of London's Official Plan, flood plain management policies of the UTRCA or policies established for the review of applications made to the UTRCA pursuant to Section 28 of the Conservation Authorities Act. We are prepared to meet further with the City of London and the applicant to discuss

these comments and any potential next steps, such as further analysis of the modelling to determine if there is a flood fringe area which may be able to be developed consistent with existing policies.

Thank you for the opportunity to comment. If you have any questions please contact the undersigned at extension 293.

Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY



Jeff Brick
Coordinator – Hydrology & Regulatory Services

c.c. Sent via E-mail:
Applicant – Bluestone Properties Inc. – Bernie Bierbaum
Berta Krichker, SWM Unit
Christine Creighton, Mark Shifflett and Mark Snowsell - UTRCA

Appendix C - Evaluation of Ecologically Significant Woodlands

Woodland Patch Assessment Score Sheet

March 2006

Criterion	Factors for Evaluation	Score for each Factor HIGH-MEDIUM-LOW		
		Landscape Level	Community Level	Species Level
1.1 Site Protection	a) Presence of hydrological features	High		
	b) Erosion and slope protection	Low		
Score for 1.1: Circle the highest standard achieved for any one of the two standards		HIGH	MEDIUM	LOW
1.2 Landscape Integrity	a) Landscape Richness	High		
	b) Landscape Connectivity	High		
	c) Patch Distribution	Low		
Score for 1.2: Circle the highest standard achieved for any one of the three standards		HIGH	MEDIUM	LOW
2.1 Age and Site Quality	a) Community Successional Stage		Medium	
	b) Mean Coefficient of Conservatism of Communities		Medium	
	c) Disturbance related to Human Activity		Medium	
Score for 2.1: Circle the highest standard achieved for any one of the three standards		HIGH	MEDIUM	LOW
2.2 Size and Shape	a) Patch Size	Low		
	b) Patch Shape/Interior	Low		
	c) Conservative Bird Species			Low
Score for 2.2: Circle the highest standard achieved for any one of the three categories		HIGH	MEDIUM	LOW
2.3 Diversity of Natural Communities and Associated Species	a) ELC Community Diversity	Low		
	b) ELC Vegetation Type and Topographic Diversity (variation and heterogeneity)	Low		
	c) Diversity (species and individuals) & Critical Habitat Components for Amphibians	Low		
	d) Presence of Conifer Cover	Low		
	e) Fish Habitat Quality	Low		
Score for 2.3: Circle the highest standard achieved for any one of the five standards		HIGH	MEDIUM	LOW
3 Endangered and Threatened Species presence		YES = HIGH	NO = no score	

Criterion	Factors for Evaluation	Score for each Factor HIGH-MEDIUM-LOW		
		Landscape Level	Community Level	Species Level
4.1 Distinctive, Unusual or High Quality Natural Communities	a) ELC Community SRANK		Low	
	b) Specialized or rare species presence/absence			Low
	c) Size and distribution of large trees		High	
	d) Basal Area		unknown	
Score for 4.1: Circle the highest standard achieved for any one of the four standards		HIGH	MEDIUM	LOW
4.2 Distinctive, Unusual, or High Quality Landforms	a) Distinctive Landforms	Low		
Score for 4.2: Circle the highest standard achieved		HIGH	MEDIUM	LOW

ASSESSMENT FOR WOODLAND SIGNIFICANCE

A Woodland will be considered as a significant component of the Natural Heritage System based on the following categories:

- If one or more criteria meet the standard for High;
- If five or more criteria meet the standard for Medium.

WOODLAND DEFINITION

WOODLAND DEFINITION - The Provincial Policy Statement and the Official Plan policy definitions consider woodlands as areas containing trees. Thus, ***all vegetation patches containing treed areas may be defined as Woodlands***. Treed areas may include all communities with a tree cover of >10%. (ELC definition, Lee et. al. 1998)

Ecological Land Classification (ELC) Definitions

The Ontario Ministry of Natural Resources has developed a standardized classification system for vegetation communities across southern Ontario, entitled Ecological Land Classification for Southern Ontario - First Approximation and Its Application (Lee et. al. 1998). In this classification system, the term woodland has a specific definition based on percentage of treed cover and is thus not the only classification that meets the policy definition of a Woodland. In the ELC system, a treed area is any community with a tree cover >10%. Application of the ELC keys identifies the following ELC Community Classes and Series as Woodland:

FOREST - deciduous forest (FOD), mixed forest (FOM) or coniferous forest (FOC);

SWAMP - deciduous swamp (SWD), mixed swamp (SWM) or coniferous swamp (SWC);

BLUFF - treed bluffs (BLT);

TALLGRASS SAVANNA and WOODLAND - (TPS, TPW)

CULTURAL - cultural woodland (CUW), cultural savanna (CUS) or cultural plantation (CUP)

In keeping with Middlesex Natural Heritage Study, the presence of communities with shrub cover >25% will also qualify as woodland. This would include BLS, CUT, and SWT.

- Other communities that contribute to the biological diversity and ecological function of woodlands include old fields (CUM), open prairies (TPO) and open wetland communities (MAM, MAS, SAF, OAO, FEO, and BOG) as defined by the Ecological Land Classification. While these communities will not comprise entire woodland patches, they are important components and contribute to the ecological significance of the vegetation patch. As such they are included in the evaluation of significance for applicable criteria.

1. CRITERION 15.4.5 (i) The Woodland contains natural features and ecological functions that are important to the environmental quality and integrity of the Natural Heritage System.

1.1 Site Protection

- a) Presence of hydrological features within or contiguous with the patch.** Based on RULE "O": *Patches that contain waterbodies are generally more important than those that do not.* Based on other concepts developed for the London Subwatershed Studies to recognize: a) the linkage between protection of groundwater and vegetation on the surface; b) the interface between aquatic and terrestrial systems which is very rich and the focus of important activities and functions; and c) the important hydrological functions of wetlands that complement and enhance those provided by woodlands.

Includes groundwater recharge areas (Schedule B); headwater/ 1st order watercourses, 2nd, 3rd, and 4th or higher watercourses (includes flood plain regulated lands and river, stream and ravine corridors outside of flood plain regulated lands and rivers/streams (subwatershed studies category 1 patches and/or as mapped on Schedule B); wetlands (evaluated on Schedule B and unevaluated identified on the ELC digital layer).

- ☒ **HIGH** one or more hydrological features/functions located within or contiguous with the patch (category 1 patch / within ground water recharge area / contains a wetland >2 ha size.
- ☐ **MEDIUM** within 50 m of a watercourse or contains a wetland < 2 ha size.
- ☐ **LOW** no hydrological features present within or contiguous with the patch

b) Erosion and Slope Protection. Based on the need to *protect runoff processes, ground stability and aquatic habitat (erosion potential) for slopes > 10% (MNR, Design Guidelines for Forest Management).*

As mapped in the Slope Stability Mapping Project (UTRCA 1996) and also using the surface mapping for slope and aspect based on a TIN surface file generated by ArcView 3D Analyzer. Additionally, this criterion requires knowledge of the soil textures and types as described in the Ecological Land Classification manual (MNR 1998) based on the Ontario Institute of Pedology (1985) and Canadian Soil Classification System (1978).

- ☐ **HIGH** patch present on steep slopes >25% on any soil type, OR on a remnant slope associated with other features such as moraines or remnant valley slopes no longer continuous with the river system OR on moderate to steep slopes >10% - 25% with erodible soils (silty loam, sandy loam and loam, fine to coarse sands).
- ☐ **MEDIUM** patch present on moderate to steep slopes > 10% - 25% with less erodible soils (heavy clay and clay, silty clay)
- ☒ **LOW** patch present on gentle slopes < 10% with any soil type.

Score for criterion 1.1 based on the highest standard achieved for any one of the two standards

1.2 Landscape Integrity (Richness, Connectivity and Distribution)

a) Landscape Richness. The density of landscape fragmentation, or patchiness as measured by the total area of all patches per unit area of land. Based on the demonstration that *Native plant richness and flora quality are significantly related to local forest cover* (UTRCA 1997; Bowles and Bergsma 1999). Based generally on RULE "G": *Clustered patches are usually better than in-line patches of the same total area.*

Percent cover of vegetation (all habitat types) within a 2 km radius circle from patch centroid. Thresholds reflect cumulative frequency distribution of patches within London).

- ☒ **HIGH** > 10% local vegetation cover
- ☐ **MEDIUM** 7 – 10% local vegetation cover
- ☐ **LOW** < 7% local vegetation cover.

b) Landscape Connectivity (linkage and distance between patches not separated by permanent cultural barriers). Based on RULE "E": *Connected patches are usually better than unconnected patches* and RULE "N": *Patches that are relatively unaffected by human use are more valuable than more disturbed patches.*

- ☒ **HIGH** patches directly connected by:
 - i) waterways or riparian habitat (generally primary or secondary aquatic corridors and streams with bridges and/or underpasses: include Thames, Dingman, Medway, Stoney, Pottersburg, Kettle, Dodd, Sharon, Oxbow, Kelly, Stanton, Crumlin);
 - ii) Contiguous or semi-contiguous habitat.
- ☐ **MEDIUM** patches indirectly connected by:
 - i) habitat gaps < 40 m;
 - ii) areas identified as Anti-fragmentation, Terrestrial Corridor, Big Picture Corridor (to enhance the viability of isolated woodlands by re-connection, buffering, expanding OR to infill disturbed areas or replace abandoned fields (Riley & Mohr 1994);
 - iii) abandoned rails, utility ROWs (hydro corridors, water/gas pipeline)
 - iv) Open space greenways and golf courses
 - v) Active agriculture or pasture;
 - vi) Watercourses connected by culverts;
 - vii) First or second order streams channelized.
- ☐ **LOW** patches not connected due to the presence of permanent cultural barriers:
 - i) major roads and highways with no culverts;
 - ii) urban or industrial development, large parking lots;
 - iii) infrastructure;
 - iv) dams, buried watercourses, channelized third or greater order watercourses
 - v) very active recreational (campground, parks with major facilities – community centres, arenas).

c) Patch Distribution (isolation & arrangement of patches / patch clusters*). Based on RULE "C": *Large patches are usually better than clusters of smaller patches with the same total area* and RULE "F": *Closely clustered patches are usually better than less closely clustered patches*. The interaction or flow of organisms among patches appears to be influenced by the size of patches and the distance separating them – the "gravity model" theory**

- ☐ **HIGH** patch clusters with total area > 40 ha OR identified as a Meta Core in the Carolinian Canada Big Picture Project (2000) OR is an isolated patch > 20 ha size.
- ☐ **MEDIUM** patch clusters with total area 20 – 40 ha OR identified as an Island Core in the Carolinian Canada Big Picture Project (2000) OR is an isolated patch >10 to 20 ha size
- ☒ **LOW** patch clusters with total area < 20 ha OR is an isolated patch < 10 ha.

Score for criterion 1.2 based on the highest standard achieved for any one of the three standards

*Patch Clusters were defined by patches within 250 m of each other not separated by major roads, highways, railways or urban development.

** Gravity Model Theory – A Gravity Model can be used to predict the migration and interaction potential between populations or communities of species from nearby patches based on co-efficients for distance, habitat heterogeneity (or indices of patch similarity), and the dispersal behaviours of organisms. This was demonstrated in the Middlesex Natural Heritage Study (UTRCA 2003) in which a statistically significant negative relationship was shown between the number of native plant species to distance from a recognized natural heritage feature (ANSI and Wetland). In other words, the closer the distance between the woodland patch and a recognized natural heritage feature, the greater the number of native plant species in the woodland.

2. CRITERION 15.4.5 (ii) The Woodland provides important ecological functions and has an age, size, site quality, diversity of biological communities and associated species that is uncommon for the planning area.

2.1 Age and Site Quality

a) Community successional stage / seral age. Community age is based on definitions in the provincial Ecological Land Classification for Southern Ontario (Lee et. al. 1998). Seral age reflects the composition of the plant community (especially trees) with respect to light tolerance and moisture conditions). Generally, mature or advanced seral stage community types are under-represented in the London Subwatershed (Bowles 1995); Middlesex County (MNHS, 2003) and Oxford County (OCTES, 1997).

- ☐ **HIGH** patch contains one or more mature or older growth community
- ☒ **MEDIUM** patch contains one or more mid-aged community
- ☐ **LOW** patch contains only pioneer to young community

b) Mean Coefficient of Conservatism (MCC) of communities or whole patch. The MCC is based on the Floristic Quality Assessment System for Southern Ontario (Oldham et.al. 1995), analysis of distribution in the London Subwatershed area (Bowles & Bergsma 1999), results of the MNHS (UTRCA 2003) and OCTES (UTRCA 1997).

- ☐ **HIGH** one or more vegetation community with a MCC ≥ 4.6 ; OR MCC of patch > 4.5
- ☒ **MEDIUM** one or more vegetation community with a MCC 4.2 – 4.5; OR MCC of patch $\geq 4.0 - 4.5$
- ☐ **LOW** all vegetation communities with a MCC < 4.2 ; OR MCC of patch < 4.0 .

c) Disturbance related to Human Activity. Based on the assessment of vegetation patches to classify them as Excellent, Good, Fair, Poor for overall condition.

- ☐ **HIGH** One community in excellent condition; or All communities in Good condition.
- ☒ **MEDIUM** A combination of communities in Good, Fair and Poor condition
- ☐ **LOW** All communities in Poor condition

Score for criterion 2.1 based on the highest standard achieved for any one of the three standards

2.2 Size and Shape. These parameters influence the type of bird species "guilds" that a patch may be able to support. Guilds include "interior dependent" (forest interior species), "forest dependent" (forest interior-edge species), "area dependent" (area-sensitive species) and "generalists" (edge species). The number of native plant species has been found to be positively related to patch area, and negatively related to interior habitat (MNHS 2003) which means that patches with more interior had fewer native plant species than the same size patch with less interior.

a) Patch Size. Based on RULE "B": *Large patches are usually better than smaller patches.*

Thresholds derived from cumulative frequency curve distribution for London patches.

- ☐ **HIGH** Patch > 9.0 ha in size OR patch contains a woodland > 4 ha.
- ☐ **MEDIUM** Patch 2.0 – 9.0 ha in size OR patch contains a woodland 2-4 ha.
- ☒ **LOW** Patch < 2.0 ha in size.

b) Patch Shape and Presence of Interior. Based on RULE "D": *A compact patch with a limited amount of edge is better than a narrow patch of the same area with more edge.*

Calculated as the presence of interior area based on a 100 m interior edge zone. Based on analysis of subwatershed studies patches and calculation of perimeter to area ratios.

- ☐ **HIGH** Patch contains interior habitat that is more than 100 m from the edge, or has a Perimeter:Area ratio < 1.5 m/m².
- ☐ **MEDIUM** Patch contains no interior habitat but has a Perimeter:Area ratio 1.5 – 3.0 m/m².
- ☒ **LOW** Patch contains no interior and has a Perimeter:Area ratio > 3.0 m/m²

c) Conservative Bird Species – *Birds are indicators of habitat quality and the degree of forest fragmentation.*

Evaluated based on Southern Ontario Conservation Priorities Scores for Middlesex County (Couturier 1999). Presence of species with high Jurisdictional Responsibility, Preservation Responsibility and/or Area Sensitivity as identified for all three categories of forest, marsh and open country birds.

- ☐ **HIGH** Confirmed, probable, or possible breeding of one or more species at Level 1 or two or more at Level 2 or > five at Levels 2-4 in the patch.
- ☐ **MEDIUM** Confirmed, probable, or possible breeding of one species at Level 2 or two or more at Level 3 or four to five at Levels 3-4 in the patch
- ☒ **LOW** Confirmed, probable, or possible breeding of one to three species in Level 3-4; or no conservative bird species present in the patch.

Score for criterion 2.2 based on the highest standard achieved for any one of the three standards

2.3 Diversity of Communities, Landforms and Associated Species

a) ELC Community Diversity. Based on RULE "J": *Patches that contain more than one natural heritage feature or area may be more valuable than patches with a single natural heritage feature or area.* Native plant species diversity is related mainly to the number of communities in the patch, also to patch area and landscape richness (OCTES, 1997).

Applied at the patch level to all communities (including cultural) identified at the Community Series level in the City of London digital GIS layer. Thresholds derived from cumulative frequency distribution of London patches for a total of 23 community series categories.

- ☐ **HIGH** Patch contains 6 or more Community Series
- ☐ **MEDIUM** Patch contains 3-5 Community Series
- ☒ **LOW** Patch contains 1-2 Community Series

b) Community and Topographic Diversity (variation and heterogeneity). Based on the concept that vegetation structure and landform variability positively influences biodiversity.

Applied to all communities as defined by this study and based on ELC Community Tables (Lee et. al. 1998) and topographic feature description. There are 7 possible topographic feature categories for the City of London: riverine, bottomland, terrace, valley slope, tableland, rolling upland, bluff.

- ☐ **HIGH** Patch contains 3 or more Ecosites in one Community Series OR four or more Vegetation Types OR three or more topographic features (e.g tableland, rolling upland, valley slope, terrace, bottomland).
- ☐ **MEDIUM** Patch contains 2 or more Ecosites in one Community Series OR by three Vegetation Types OR two topographic features, or one Vegetation Type with inclusions or complexes.
- ☒ **LOW** Patch relatively homogenous; 1 Ecosite OR one to two Vegetation Types on one topographic feature.

c) Diversity (species and individuals) and Critical Habitat Components for Amphibians. Based on RULE "L" *Patches that contain a high diversity of species are usually more valuable than patches that contain fewer species.* Amphibians are indicators of healthy woodlands with well functioning processes (OMNR 1999, 2000).

Applied at the patch level, based on presence of amphibians and/or important habitat components including 1) unpolluted shallow water that remains wet for the breeding season (presence of vernal pools); 2) emergent and submergent aquatic vegetation (presence of aquatic ELC community types); 3) presence of instream logs and shoreline shrubs (fish habitat data); 4) closed canopy offering a shaded moist understorey environment (presence of forest or treed swamp communities); 5) abundance of coarse woody debris (deadfall/logs, firm or decayed in the 10-24, 25-50 or >50 cm size classes).

- ☐ **HIGH** 3 or more species of amphibians present in the patch, OR 1 species of amphibian that is abundant in one or more communities; OR 2 or more critical habitat components present in the patch.
- ☐ **MEDIUM** 1-2 species of amphibians present in the patch; OR 1 species of amphibian that is occasional in one or more communities; OR 1 critical habitat components present in the patch.
- ☒ **LOW** No species of amphibian present in the patch, OR no critical habitat components present in the patch.

d) Presence of Conifer Cover. Important for providing winter food and shelter for a variety of wildlife species (OMNR 1999, 2000). Conifer communities include FOC, FOM, SWC, SWM and CUP.

- ☐ **HIGH** Patch contains conifer communities that are > 4.0 ha in size.
- ☐ **MEDIUM** Patch contains conifer communities that are between 2.0 and 4.0 ha in size.
- ☒ **LOW** Patch contains conifer communities < 2.0 ha in size or no coniferous, mixed forest, swamp or plantation communities.

e) Fish Habitat Quality. The health of an aquatic habitat is determined by the health of the water body and surrounding land use practices. Even intermittent watercourses can provide critical habitat for many species. Fish provide an early warning of environmental problems.

- ☐ **HIGH** Dissolved oxygen > 8.0 mg/L or abundant instream woody debris and rocks and watercourse with a natural channel located within or contiguous with the patch.
- ☐ **MEDIUM** Dissolved oxygen 5.0 – 8.0 mg/L or moderate amount of instream woody debris and rocks and portions of channelized watercourses within or contiguous with the patch.
- ☒ **LOW** Dissolved oxygen < 5.0 mg/L or no instream woody debris and sparse structure and entire watercourse channelized within or contiguous with the patch.

Note: Insufficient flows to measure

Score for criterion 2.3 based on the highest standard achieved for any one of the five standards

3. CRITERION 15.4.5.(iv) The Woodland provides significant habitat for endangered or threatened species.

[Note: refer to Policy 15.4.4 re: Endangered and Threatened Species habitat]

Identification, evaluation and listing of provincially endangered or threatened species (species-at-risk (SAR) in Ontario designated by both COSEWIC/COSSARO) is the responsibility of the MNR. Planning Authorities may wish to have assessments of the significant portions of the habitat of SAR reviewed by the MNR. The MNR and Planning Authorities may take a co-operative approach on identification of the extent of habitat, with differing roles depending on the status of the species and if there is a recovery plan or not (OMNR 1999).

SAR present or previously identified ☐ YES ☒ NO

The presence of SAR will add one HIGH score to the over-all assessment

4. CRITERION 15.4.5 (v). The Woodland contains distinctive, unusual or high quality natural communities or landforms.

4.1 Distinctive, unusual or high quality communities. Applied at the patch level to all community types present.

a) ELC Community SRANK. Based on Bakowsky (1996) OR current status from NHIC web page (<http://www.mnr.gov.on.ca/MNR/nhic/veg/lists/commmlist.html>).

- ☐ **HIGH** One or more communities with an SRANK of S3/S4 or higher.
☐ **MEDIUM** No communities with an SRANK higher than S4.
☒ **LOW** No communities with an SRANK higher than S5.

b) Specialized or rare species presence/absence. Based on RULE "M": *Patches that contain rare species are generally more valuable than patches without rare species.*

See glossary for definitions and lists of species that qualify.

Type and Status of Species	HIGH	MEDIUM	LOW
Rare tree or shrub	1		✓
Rare herbaceous	1		✓
Northern and Specialized habitat tree/shrub	3	2	1 ✓
Carolinian tree/shrub	6	3-5 ✓	1-2
Regionally Rare plant	4	1-3	✓
Uncommon plant			1 ✓

c) Size and distribution of trees

- ☒ **HIGH** trees > 50 cm dbh abundant in one or more communities within the patch
☐ **MEDIUM** trees > 50 cm dbh rare or occasional in one or more communities within the patch
☐ **LOW** trees > 50 cm dbh not present in any communities within the patch

d) Basal Area

This criterion is being added to evaluate stand characteristics for total basal area, and basal area by tree species and size classes for each community. The post-logging provincial standard for tolerant hardwoods will be used as a measure of high quality woodlands (MNR 2000). It has been shown in other studies that 45% (MNHS 2003) to 73% (Bowles 2001) of forests had basal areas lower than the recommended for optimal vegetation community resiliency and stability (MNR 2000).

- ☐ **HIGH** Average basal area of trees for any community in the patch $\geq 16 \text{ m}^2/\text{ha}$ for trees >25 cm DBH; OR $> 24 \text{ m}^2/\text{ha}$ for trees > 10 cm DBH; OR all diameter class sizes are represented in the stand (saplings < 10 cm; polewood 10-24 cm; small sawlog 26-36; medium sawlog 38-48 cm; large sawlogs 50-60 cm; x-large or veteran trees > 62 cm.
☐ **MEDIUM** Average basal area for any community in the patch $12 - 24 \text{ m}^2/\text{ha}$ of trees >10 cm DBH; OR missing one of polewood, small, medium, or large size classes.
☐ **LOW** Average basal area for all communities in the patch $< 12 \text{ m}^2/\text{ha}$ for trees > 10 cm DBH; OR missing two or more of polewood, small, medium, or large size classes.

Unknown

Score for criterion 4.1 based on the highest standard achieved for any one of the four standards

NOTE: 4.1c and 4.1d require site visits to conduct adequate field investigation. The list of rare and unusual species may also change, and will be based on the most up-to-date lists. It has been found in other natural heritage studies in Oxford County (OCTES 1997), City of London Subwatershed (1995) and Middlesex County (MNHS 2003) that unique species of plants and birds (i.e. where a species was recorded in only one vegetation patch) accounted for 14% to 20% of all patches. For the latter two studies, data also indicated that all physiographic types contained at least one species that was not found in any other physiographic type, suggesting the importance of all individual patches and physiographic types for maintaining species diversity.

4.2 Distinctive, Unusual or High Quality Landforms

a) Distinctive landform types. Based on RULE "A": *Natural heritage systems that include the full range of habitat-landform types are better than those that contain fewer habitat-landform types.*

As identified by the MNR (Earth Science ANSI) and City of London glacial geomorphology mapping (City of London GIS layer). Landform-vegetation representational significance was derived from calculating the proportion of all patches, including core areas, which are present and protected on each of the five major landform types.

- | | | |
|--|--|-------------------------------|
| <input type="checkbox"/> HIGH | Patch located on an Earth Science ANSI OR on the Beach | Ridge or Sand |
| | Plain | physiographic landform units. |
| <input type="checkbox"/> MEDIUM | Patch located on the Till Plain or Till Moraine physiographic landform unit. | |
| <input checked="" type="checkbox"/> LOW | Patch is located on the Spillway physiographic landform unit. | |

Score for criterion 4.2 (based on the highest standard achieved).

Beach Ridge landform is unusual and rare in the City with portions identified as Earth Science ANSI and Provincially Significant Wetland/ESA.

Sand Plain landform has very little protected areas present. It is considered high quality for the aggregate extraction industry.

Till Plain is the largest landform unit with the least amount of protected areas (No ESA's) and the highest amount of vegetation. Most of the land is considered high quality agricultural.

Till Moraine is the 3rd largest landform unit with fair amount of protected land. It accounts for the patches that fall on the heights of land (Westminster Ponds – Pond Mills ESA / Meadowlily Woods).

Spillway is the 2nd largest landform unit with the greatest proportion of protected areas and contains most of the ESA's. It is the most distinctive landform unit including the Thames River, Stoney Creek, Medway Valley and Dingman Creek.