WOODLAND MANAGEMENT PLAN GUIDELINES

2018

BRAMPTON
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1. Introduction

In a rapidly urbanizing municipality like the City of Brampton, the protection of woodlands and conservation of urban forest communities is critical because of their environmental features, functions and linkages, as well as the aesthetic qualities and health benefits this vegetation provides.

Woodlands and urban forests include all trees on public and private lands. In evaluating the significance of vegetation within the urban forest, their individual values as well as their contributions to the ecosystem as a whole must be considered. In the context of Brampton, the urban forest refers to the mix of the remnants of native forest cover and planted trees and vegetation on all private and public lands. The urban forest is valued for its ecological, social and economic benefits

All woodlands that are to be dedicated to the City must be assessed and remediated as necessary prior to their dedication, such that there will be no adverse short and long-term safety or maintenance issues.

Section 4.6.8.1 of the City of Brampton's Official Plan (2006) states that:

Prior to development, Watershed Plans, Subwatershed Studies, Environmental Implementation Reports, natural heritage system studies or vegetative assessments will be required to evaluate and make recommendations for the protection of woodlands and how they can be maintained, restored and/or enhanced through sensitive subdivision and site design. The proponent is required to ensure that the protection measures that are identified and deemed appropriate by the City are implemented.

Furthermore, Section 4.6.8.2 states that:

Development will be in accordance with the City's Woodlot Development Guidelines and the Province's Natural Heritage Reference Manual as updated from time to time. Where a proposed development is within or adjacent to a woodland, the City will require the proponent to submit a Woodland Management Plan for approval prior to the issuance of a grading or building permit. The Management Plan must identify preservation and specific management measures, including conservation buffers that will be observed to protect the woodland and mitigate potential impacts.

The Management Plan will also provide a detailed assessment of significant vegetation adjacent to the designated woodland and identify appropriate tree protection measures to be implemented prior to, during and after site construction or alteration.

The first section of this document outlines the requirements for Plans of Subdivision, while the second section deals with landscape submissions. The four appendices include woodland development criteria, specifications, and details that are to be followed during the planning and development of lands within or adjacent to a woodland. The final appendix outlines the management guidelines for both development proponents and City projects.

2. Plans of Subdivision: Woodland Management Plan

A Woodland Management Plan will be completed by a Registered Professional Forester and/or Ecologist specialized in terrestrial ecosystem restoration for each woodland block prior to Draft Plan approval. The completion and approval of the Woodland Management Plan will form part of the Draft Plan of Subdivision agreement between the developer and City.

The Woodland Management Plan will take its direction from recommendations in higher order studies, such as Master Environmental Servicing Plans (MESP) and/or Environmental Implementation Reports (EIR). The Woodland Management Plan can be submitted to the City as a separate report or included with an Environmental Impact Study (EIS).

2.1. Objectives of Woodland Management Plan

a. Review and update the information and recommendations of the Master Environmental Servicing Plan (MESP) and/or Environmental Implementation Report (EIR) from the Secondary Plan/Block Plan level.
b. Provide additional site study and analysis in areas requiring clarification and detail.
c. Evaluate technical development alternatives being considered, and present a ranking of preference based on the predicted impacts of each.
d. Recommend short, medium and long-term management actions that will enhance the ecological function of the woodland.
e. Outline development proponent and municipal roles and responsibilities for management actions.

2.2. Minimum Requirements for a Woodland Management Plan

A Woodland Management Plan must include the following information:

1. Woodland Evaluation

Provide a woodland evaluation that updates information from MESP/EIR in regards to Ecosystem Functions and Ecosystem Sensitivity ranking.

2. Development Opportunities and Constraints

Opportunities

a. ELC communities
b. High quality areas of canopy and/or ground cover
c. Vistas
d. High urban tolerance areas
e. Areas of significant infestation of invasive species
f. Areas of potential and existing Emerald Ash Borer (EAB) infestation

Constraints

a. Identify areas with adverse seasonal conditions (flooding)

3. Definition of Tree Retention Zone

a. Crown area
b. Rooting area
c. Area of influence
d. Environmental buffer

4. Location of Perimeter Fencing (see Appendix 2)

a. Edges with no grade change and no drainage concern, the fencing will be located at the outer limit of the environmental buffer.
b. Edges with a grade change, the fencing will be located at the top of the bank if grades are increased, or at the toe of the slope if grades are lowered.

5. Planting Between Fence and Woodland Edge

a. Describe existing woodland edge growth.
b. Describe proposed woodland edge planting (native species, where possible).

6. Management Objectives for the Woodland

This section must include a statement of biological and physical status, which is sought and maintained throughout management process. It should also include short, medium, and long-term objectives.

a. Short-term objectives – correction of immediate problems and actions that will assist the City in achieving long term objectives (developer responsibility)
b. Medium-term objectives – Initial actions after assumption that need to move the woodland to it desired state (City responsibility)
c. Long-term objectives – ongoing actions to ensure the woodland’s desired state is maintained (City responsibility)

7. Management Strategy for Woodland

Provide a statement of actions that must be taken to meet each of the management objectives for short-term, medium-term and long-term objectives. This section will also indicate responsibilities for each action (developer and/or City).

8. Pedestrian and Open Space Linkages

a. Highlight approximate locations and type of walkways and paths to be constructed, and proposed mitigation measures to protect the woodland's ecological functions.
b. Present measures to eliminate and rehabilitate undesirable paths and conditions.
c. Present necessary treatments to areas with steep slopes.

9. Woodland Development and Mitigation Strategy

Develop measures to be undertaken to integrate the woodland into the proposed development by recommending (with regards to edge protection, restoration planting, invasive species management, tree preservation, grade adjustments, and significant biotic and abiotic features):

a. Appropriate location, size, orientation, and drainage of lots
b. Appropriate servicing considerations, pedestrian facilities and streetscapes
c. Type and dimension of buffers required
d. Location of fencing
e. Appropriate location of walkways
f. Control of access from lots and neighbourhood uses

Provide a summary of key development impacts and measures to mitigate each with the goal of achieving the desire woodland status:

a. Invasive species management plan
b. Restoration planting
c. Crown management
d. Edge protection planting
e. Resident information brochures

10. Staging and Implementation

Describe all works to be completed by the developer during the following stages:

a. Draft Plan Approval
b. Pre-servicing Approval
c. Registration

11. Mapping

Provide the following maps at a scale of 1:500 or 1:1000 to include:

a. Woodland Feature Map – highlight ELC communities, areas of high invasive species infestation (e.g. buckthorn), EAB infestation, vegetation features and area of sensitivity and significance.
b. Walkway and Features Map – summarize the recommended locations and treatments of walkways and points of interest.
c. Woodland Management Plan Map – summarizing key areas to be considered for edge restoration, restoration planting, invasive species management, extent of Tree Retention Zone, environmental buffers and location of proposed short and long-term management treatments.

3. Landscape Submission: Woodland Development Plan

Prior to Pre-servicing Approval a Woodland Development Plan need to be prepared for each woodland.

3.1. Submission Requirements

1. **Site Analysis and Topographical Survey**
   Refer to Secondary Plan/Draft Plan study (MESP/EIR). However, the City may request additional study of specific matters prior to the preparation of the Woodland Concept Plan.

2. **Aerial Photography**
   Provide an aerial photograph of the protected woodland(s) design.

3. **Landscape Submission Requirements**
   Submissions shall follow the criteria, specifications and details described in the Woodland Management Plan.

   1st Landscape Submission (Concept Plan)

   a. Identify final Tree Retention Zone – Crown Area, Rooting Area, and Area of Influence, environmental buffers
   b. Identify woodland access points, trails, and interpretive signage, and other facilities Identified at the Secondary Plan and Draft Plan levels.
   c. Identify the areas and general measures required for woodland management (recommended actions from the Woodland Management Plan).

   2nd Landscape Submission (Development Plan)

Provided detailed construction drawings of the following:

a. All works within or pertinent to the woodland
   - Temporary and permanent fencing
   - Walkways
   - Signage (location and content)
   - Lighting and other utilities
   - Entrance treatment
   - Surface and subsurface drainage
   - All earth works
   - Restoration of edges
   - Restoration planting
   - Invasive species removal
   - Seeding and sodding
b. Detailed specifications for the management of the woodland (Woodland Development Strategy Study)

Final Submission

Shall consist of the 2nd submission drawings and specifications, which have been revised to reflect City comments and requests. All working drawings must be approved prior to Registration.

4. Appendices

Appendix 1: Woodland Development Criteria
Appendix 2: Woodland Development Specifications
Appendix 3: Woodland Development Details
Appendix 4: Woodland Management

Appendix 1: Woodland Development Criteria

1. Tree and Shrub Removal

1. There shall be no removal of any trees or shrubs other than those approved by the City.
2. Trees will be felled towards the construction zone away from the Tree Retention Zone.
3. Tree and shrub stumps are to be trimmed flushed to the ground. The removal of stumps is only to occur in areas requiring sodding or regrading.
4. Standing trees over 150 millimeters in diameter that are approved for removal shall be left standing at a height of 3 meters or more, unless otherwise directed by the City.
5. Damage to trees during removal is the developer's responsibility.
6. Size and disposal means of logs and brush will be indicated on approved Site Plan drawing (may be used for habitat improvement or other works).
7. Tree removal in woodland will be confined to approved marked trees which are:
    i. Dead or dying;
    ii. Subject to windthrow;
    iii. Where pedestrian access is required; and
    iv. Where potential damage to adjacent tree or property is likely to occur.
8. Tree removal and canopy management in areas to be restored to natural cover shall occur in the dormant season.
9. Chips from disposal are to be stockpiled for later use or spread in an appropriate area.
10. Contractors shall have demonstrated skill in forestry work, preferably recommended by the Ontario Ministry of Natural Resources.
11. All work shall be supervised by a Registered Professional Forester or Ecologist.

2. Grading

1. Grade changes will not be permitted within woodlands (Crown and Rooting Areas).
2. Grade changes between developed lands and woodlands shall be accommodated outside the Crown and Rooting Areas.
3. Slopes to accommodate grade changes will not exceed 4:1, except by special arrangement with the City.

3. Drainage

1. Runoff and drainage characteristics shall reflect normal pre-development conditions.
2. Runoff from re-graded development areas shall not be permitted to flow directly into woodlands.

3. There shall be no changes to the woodland's water budget, unless specified by the City.
4. Engineered facilities that collect runoff from developed lands shall be located beyond the Crown and Rooting Areas.

4. Pedestrian Walkways

1. Walkways will consist of woodchips or limestone screening, and will be located to avoid root systems and sensitive areas, as represented by the dripline of these trees. Permeable asphalt or unit pavers will be considered under limited circumstances (i.e. designated school routes).

5. Conservation of Biotic Resources

1. Existing biotic resources (including topsoil and seedbank), which are displaced by development will be re-utilized, wherever possible.

Appendix 2: Woodland Development Specifications

1. Tree Preservation Fencing

1. **Temporary Hoarding**
   a. Shall be 1.2 metre galvanized 9 gauge wire farm fence.
   b. Shall be erected prior to any grading on the site.
   c. Silt control fabric to hoarding shall be installed wherever runoff from the development area may enter the woodland.

2. **Permanent Fencing**
   a. Shall consist of 1.2 metre high chain-link fencing.
   b. Shall be installed prior to pre-servicing that is in the vicinity of the woodland.

2. Site Works

1. **Tree and Shrub Removal**
   a. Trees and shrubs will be trimmed at ground level and allowed to regenerate.
   b. Trees and shrubs will be marked and approved by the City before removal.
   c. Contractors are responsible to repair any damage to trees or other vegetation at their costs.

2. **Topsoil and Finish Grading**
   Topsoil placement and finish grading within woodlands will utilize topsoil excavated from the area being treated.

3. **Seedbank Treatments**
   a. Limits and depth of seedbank areas to be stripped will be staked under the supervision of the Landscape Architect.
   b. Seedbank will be stored in piles not exceeding 1.5 meters in depth for periods not exceeding 90 days.
   c. Storage piles of seedbank will be watered on a biweekly basis during the summer drought periods of more than 30 days.
   d. Seedbank will be placed at the receiving site within 60 day of excavation.
   e. Seedbank will be spread uniformly over the receiving area at a depth of 30 to 100 millimeters.

4. **Walkways**
   a. Asphalt, limestone, and unit pavers with a standard base shall be located a minimum of 5 metres from mature woodland trees.

b. Pipe culverts should be utilized at drainage channels and swales crossings, or where the walkway base will impede the normal runoff.

3. Drainage Works

1. Site Micro-drainage

a. The woodland's exiting drainage pattern will be maintained.
b. Where seepage flow areas or swales, which enter the woodland and are disturbed by upstream development, these features will be reinstated prior to approval.
c. Paths and walkways will be equipped with boardwalks, culverts, or permeable bases to prevent ponding and to permit normal surface flows.

4. Woodland Signage

As per City standards.

5. Woodland Maintenance

1. Site Cleanup

a. All garbage and fill that does not naturally occur in the woodland will be removed.
b. Tree forts and other such objects will be carefully dismantled. Damage trees and broken limbs will be removed.
c. Campfire sites will be dismantled and scattered.
d. Fallen trees will not be disturbed unless they are obstructing formal walkways or paths, or presenting imminent hazard to pedestrians.
e. Trees that require disposal will be cut in 3 meter lengths and laid in secure positions.
f. Small quantities of brush not exceeding 1 meter in height may be placed in piles or windrows, and placed to discourage informal paths. Larger quantities will be chipped and used as mulch in the appropriate locations.
g. The owner shall be responsible for the remove of dead trees, with the approval of the City.

Appendix 3: Woodland Development Details

The following schematics and details are available on the City's website:

http://www.brampton.ca/en/Business/planning-development/guidelines-manuals/Pages/Streetscape-Parks-Construction-Standard-Detail.aspx

1. Site Work Schematics

- Woodland Buffer and Edge Treatment
- Woodland Edge Replanting
- Woodland Restoration Planting
- Woodland Edge Management
- Woodland Protective Measures
- Topsoil and Seedbank Removal and Re-Application

2. Site Work Detailed Drawings

- Asphalt Walkway
- Walkway Culvert Plan and Section
- Limestone Walkway
- Unit Pavers
- Deciduous Tree Planting
- Conifer Tree Planting
- Specimen Multi-stem and Mass Shrub Planting
- Silt Fence

Appendix 4: Woodland Management

1. Hazardous Conditions

Each woodland will be examined for potential hazards prior to Final Acceptance and at least twice thereafter, and following major storm events.

2. Permitted Activities

a. The following activities will NOT be permitted in the Crown and Rooting Areas of the Tree Retention Zone, in woodland buffer areas, or in interior areas of the woodland:
   - mowing or clearing of overstorey, understorey, or groundcovers
   - gardening, sodding, fertilizing, composting, or herbicide use
   - excavations or removal by transplanting of any tree, shrub or ground cover.

b. No fences will be installed that provide direct access into the woodland from residential lots.

3. Canopy Management Procedures

a. Selective harvesting of canopy trees will consist of lowering the basal area within a woodland unit by a pre-specified, site-specific amount to be determined by the Registered Professional Forester or Ecologist.

b. High-grading of canopy trees will consist of the selective removal of certain species in favour of other species.

4. Understorey Management Procedures

a. Selective thinning of regeneration will consist of the removal of the current stand of saplings within the dripline of major trees, which will reduce moisture competition.

b. Ground cover diversification may be desirable in areas where dense shade has suppressed ground cover development, or where groundcovers have displaced by weeds, or eliminated due to compaction by pedestrians. Ground cover diversification may consist of:
   - the collection of seed from trees, shrubs, and or groundcovers during the appropriate season in one area and their dissemination on prepared seed beds in bright wooded areas which suitable habitat
   - the autumn collection of surface duff from small areas within habitats displaying good botanical diversity and deposition in suitable habitats
   - scarification of compacted soil areas.

c. Measures to control pedestrian traffic and to encourage leaf litter accumulation will be undertaken in woodland areas identified with compaction problems. i.e. signage, plantings, brush piles.

d. Bioengineering techniques may be required on slopes to control erosion and encourage leaf litter accumulation.

5. Edge Re-establishment and Buffer Planting

a. Will be required where an existing edge is disturbed by grade changes or damage during development, or where additional edge cover is recommended to protect sensitive interior areas from post-development conditions.
b. Based on the Woodland Management Plan, all tree, shrub and ground cover species must reflect the native species present in the adjoining woodland.
c. Suggested densities and spacing:
    - 2200 shrubs per hectare (50-100 centimeters, 1.5 meters O.C.)
    - 480 trees per hectare (200 centimeters, 2.5 meters O.C.)
    - 80 trees per hectare (caliper 45 millimeters, 3.5 meters O.C.)
    - 440 trees per hectare (2-3 year seedlings or 30-50 centimeters, 1.5 meters O.C.)
d. Edge planting of groundcovers will utilize regeneration from seedbank, or may be seeded with a nurse crop of rye grass.
e. Edge plantings shall not be sodded.

6. Restoration Planting

a. Restoration planting will be required where forest cover is to be restored over large areas. For example, areas that are or will be in the near future experiencing significant mortality due to development or biological factors (disease, bug infestation etc.) Suggested densities and spacings:

<u>Year 1</u>

- 80% successional trees (890 per hectare, 3 meters O.C.)
- 20% shrubs (890 per hectare, 1.5 meters O.C.)
- Ground cover seeded to low maintenance grass blend or woodland seedbank

<u>Year 3</u>

- Thin successional trees by 40%
- Plant shade tolerant trees 495 per hectare (2-3 year seedlings 30-50 centimeters, 5 meters O.C.)

<u>Year 5-10</u>

- Thin successional trees by additional 10%
- Additional shade tolerant trees and shrubs as required (2-3 year seedlings or 30-50 centimeters)
- Add ground cover nodes (25 per hectare in prepared beds of 2.25 square meters each; plants 0.5 meters O.C (varies))

b. Restoration of plantings of groundcovers will utilize regeneration from the seedbank, or may be seeded with a nurse crop of low maintenance grasses if the seedbank is unavailable.
c. Restoration planting will not be sodded.

7. Invasive Species Measures

a. Invasive species that detract from biological diversity and inhibit pedestrian movement in woodlands will be controlled.
b. Herbaceous species will be controlled by repeated pulling of plants prior to seed set.
c. Woody invasive species will be controlled by trimming flush to the ground followed with treatment of stubs with a herbicide approved for use.
d. In areas with severe infestations, canopy and soil management may be required to alter environmental conditions of the woodland.

8. Wildlife Habitat Enhancement

a. Preserve large standing dead or decaying trees that do not present a hazard to pedestrians.
b. Edge planting will consist, when possible, of native shrub and tree species.
c. Planting nodes of native coniferous species along woodland edges is desirable.
d. Dispose of fallen trees by cutting them into 3 meter or longer logs and placing them in secure locations where they do not endanger pedestrians.
e. Brush piles must not exceed 1.5 meters in height.
f. The provision of bird houses and bat roost in strategic locations is desirable.