Stewardship Plan Detailed Description

Version: 1.0

Date: November 27, 2020

Contents

Purpose and Rationale

In Toronto, ravine and natural feature protection is important for the protection of public and private property, the protection of urban forests, rare species and their habitats and the protection of our waterways. A healthy and intact ecological system also provides aesthetic, visual and recreational amenities. Trees and other ravine plants offer habitat and protection against erosion.

Specific contributions of ravine and natural features include:

- Vegetation on slopes is critical for preventing or reducing surface erosion of soil.

- Slope stability is best maintained by avoiding disturbances to grades or removing vegetation on slopes or at the base of slopes.
- Vegetation provides habitat, food sources and safe corridors for wildlife, particularly migratory birds.
- Well-vegetated ravines contribute to reducing storm flows that may otherwise cause significant impact to infrastructure and amenities in local and downstream watercourses and ravines.
- Vegetation in ravines helps to improve the quality of our lakes and streams by trapping soil nutrients and sediment that could otherwise destroy fish habitat and create silt deposits at the mouth of rivers where they enter Lake Ontario.
- Cleaner water from creeks in well-managed ravines helps to keep Lake Ontario, Toronto's source of drinking water, clean.

The purpose of developing and implementing stewardship plans falls directly in line with the City's Official Plan policies on the Natural Environment and goals and objectives of many of the City's by-laws, standards and policies including Municipal Code Chapter (MCC) 658 Ravine and Natural Feature Protection (RNFP) By-law, the Toronto Green Standard and Official Plan policies that relate to the City's Natural Heritage System. Developing and implementing stewardship plans is also supported by the Toronto and Region Conservation Authority's (TRCA) Living City Policies.

The purpose of the RNFP By-law is to promote the management, protection and conservation of ravines and natural and woodland areas and to prohibit and regulate the injury and destruction of trees and filling, grading and dumping in defined areas. Many natural areas in the City are in poor condition or are being degraded through various urban pressures such as invasive species, pollution, overuse and garbage accumulation. Regular maintenance and monitoring of natural areas is recommended and the City strongly encourages property owners to take an active stewardship role in improving the health of our ravine forests.

Authority

Specific provincial and municipal legislation enables Urban Forestry to ask for a stewardship plan to be developed and implemented. Authority is granted under the Planning Act, Chapter 41, Section 7, Subsection A.6, under EC 2.2. Ravine and Protected Areas Buffers performance measure as part of Toronto Green Standards and under the RNFP By-law specifically Section 6, Subsection B.1.

Definitions

Protected Area - A shaded area on any Data Map in Schedule A-2 (in the RNFP By-law).

Protected Feature - Any tree, woodland vegetation or slope in a protected area including ravines, tableland forests, treed portions of the Lake Iroquois shoreline, Rouge Park and publicly owned parks and golf courses located in valleys.

Ravine - A. discernable land form with a minimum two-metre change in grade between the highest and lowest points of elevation that may have vegetation cover and that has or once had water flowing through, adjacent to, or standing on, for some period of the year;

B. Contiguous buffer areas, areas of tree canopy and environmentally significant areas that contribute to the ecological function of a ravine.

Stewardship Plan - Provides a framework for planning, implementing and managing stewardship activities that would achieve the basic goals of caring for land, air and water and sustaining the natural processes on which life depends. Woodland and ravine stewardship involve the management of forest cover and trees using silvicultural techniques to achieve specific results.

Woodland - A treed area that provides environmental benefits including erosion prevention, water retention, provision of habitat and recreation.

Scope, Scale and Complexity

The scope, scale and complexity of a stewardship plan are interrelated and will depend on various factors such as existing conditions, changes to the landscape proposed by a development project, significance of vegetation losses, property owner objectives, spatial dimensions and biophysical complexity of the site proposed for management. A small parcel of land with uniform terrain and low diversity of species would require a completely different approach than a large, complex, diverse parcel of land. Proposed work must be appropriate to maintain a sustainable natural habitat over the long term.

Required Stewardship Plan Details

The following sections describe the components of a stewardship plan. Please note that seeking the aid of a professional with experience in ecological restoration in urban settings could assist in the correct preparation and implementation of a stewardship plan. A professional will be able to undertake all the important and required field data collection and analysis and assist property owners with formulating appropriate goals, objectives and strategies for managing the natural features and functions of their property.

1. Stewardship Goals

Property owners need to decide what general goals are important to them with respect to managing the natural areas on their property. Formulating general goals helps to tailor more specific objectives and strategies and will provide an idea of the scope and complexity of the stewardship plan to be developed and implemented.

Examples of goals include environmental protection, restoration/rehabilitation of natural areas, enhancement of native species diversity, protection of special natural features or rare species, creation of low impact recreation opportunities (if appropriate), creation or enhancement of wildlife habitat, nature appreciation and re-naturalization of existing previously disturbed areas. Urban Forestry will review these objectives to ensure they follow good forestry/rehabilitation practices based on sound ecological principles.

2. Site Description

A bio-physical description of the site is required and provides a basis for making the best possible management decisions. Use of the Ecological Land Classification (ELC) for Southern Ontario is recommended where natural conditions are present. The site description should include information regarding the relationship of the site with the surrounding landscape, biophysical characteristics of the site and environmental sensitivity to potential damage. The scope, scale, and complexity of the site description will be determined by the following factors.

A. Description of physical setting

   Physical factors on site, including physiography, hydrology and topography, determine the range of growing conditions that govern vegetation and ecosystem distribution.

   - Physiography – Description of the relationship among parent (e.g. rock/soil) materials, topographic features, landform, slope stability, climate and microclimate
   - Hydrology – Description of surficial or sub-surface water flow
   - Topographic sequence – Description of slope position, slope shape, slope percent, aspect, elevation, and characteristics of parent material

B. Description of Soils

   Soils are the basic medium for growth and they influence occurrence and structure of ecosystems. Soil type, quantity, fertility and distribution will influence stewardship practices.

- Soil characteristics – Description of textures, horizon depths, coarse fragments, depths to carbonates, bedrock, water table, mottles and gleying
- Humus form – Description of forest floor
- Moisture regime - Determine class, e.g. dry, fresh, moist, wet
- Drainage – Determine class, e.g. rapid, well, moderate, imperfect, poor

C. Description of Forest Ecology and Inventory of Vegetation

The vegetation found on a site is determined by climate, parent material, landform, soils, organisms and time. Vegetation is a good indicator of site conditions.

- Stand structure – Description of vertical, horizontal and temporal distribution of plant species expressed as layers, abundance and age
- Tree species composition – Percentage of each tree species comprising the forest type based on volume, density or basal area
- Vegetation sampling – Description of vascular plant communities within different vegetation layers, e.g. canopy, sub-canopy, understorey, ground layer

D. Description of anthropogenic disturbances and invasive species

Colonisation of invasive species is considered to be one of the major degrading factors of the City's natural areas. Mitigation and control of invasive species and replacement with native species is considered to be a vital component of a good stewardship plan.

- Anthropogenic disturbances and invasive species – Identification of disturbances that are impacting the site

3. Mapping of Site Conditions

A map or plan must be provided detailing the physical and vegetation features proposed for management by delineating discrete areas within the site or part of a larger landscape that generally contain homogenous site conditions, which differ visibly from the adjacent units in the landscape matrix. The delineation of these areas on the site will be determined by the description of the specific physical setting, soils and vegetation inventory.

Vegetation units can be simply described as:

- Upland or lowland
- Forest - deciduous, coniferous or mixed
- Thicket
- Meadow

- Open

Preferably specific ELC types can be applied to units identified on site when natural conditions are present.

4. Assessment of Stewardship Opportunities and Constraints

The detailed site description will identify opportunities and constraints for resource management and stewardship. An assessment of such opportunities and constraints must be included in the stewardship plan and should be developed in conjunction with objectives and strategies as indicated below. This will assist Urban Forestry in assessing whether the proposed management strategies are appropriate for the site.

Opportunities and constraints are typically a function of the physical attributes of the site and can be identified on a site or polygon level. For example a site may contain deep, fertile soils that would provide an opportunity for the planting of a certain species that otherwise could not be planted on that site, or poor light levels may preclude the planting of a desired species, as shade would be construed as a site limiting factor or constraint on that site or polygon.

5. Objectives and Strategies

The stewardship plan must present a statement of feasible objectives based on a combination of broad goals, site characteristics and land capability which will lead to site improvement and enhancement.

The stewardship plan must also present a range of management strategies and actions that could be implemented to achieve the proposed goals and objectives. Strategies should be formulated for each of the polygons or compartments as delineated. The following are examples of sets of stewardship plan goals, objectives, strategies and actions.

Example 1

Goal	Improve natural heritage value of property
Objectives	i) Enhance opportunities for wildlife habitat ii) Remove seed sources of invasive species iii) Allow filtered and direct sunlight to reach forest floor
Strategies	i) Increase native tree and shrub component on site with preference for mast (nut) producing trees ii) Reduce component of invasive species on site iii) Create canopy gaps

Actions	i) Selectively remove invasive tree and shrub species ii) Girdle one to two large invasive trees to create future snags iii) Prune and deadwood to maintain health of trees iv) Plant native oak and walnut tree species on appropriate microsites

Example 2

Goal	Enhance aesthetics of property
Objectives	Increase diversity of native plant communities on property
Strategies	i) Create mulched shrub beds along property edges ii) Create naturalised visual buffer near top of bank
Actions	i) Plant mix of shrubs and perennials with vibrant colours throughout growing season ii) Plant mix of native tree species on appropriate microsites

6. Implementation Schedules and Budgets

The stewardship plan must include proposed implementation schedules and estimated implementation costs for either the entire site as a whole or for each of the units that have been delineated. The implementation schedule is to include the timing and sequence of strategies and actions for achieving the plan objectives. Stewardship plans are typically developed for five year periods but development and implementation of stewardship plans covering longer periods are encouraged.

The plan needs to include costs associated with implementation of each strategy and/or phase of the plan. The following are examples of typical implementation plans that cover various stewardship strategies.

Short Term

- Site Cleanup Plan
- Site Preparation Plan

Mid to Long Term

- Erosion Control Plan
- Tree Maintenance Plan
- Invasive Species Control Plan
- Planting Plan
- Monitoring and Maintenance Plan

7. Notes on Planting Plans

A planting plan is an essential component of any good stewardship plan. Tree, shrub, and herbaceous plantings are to be determined by site conditions, opportunities and/or constraints as identified in each of the units. A planting list must show quantities, plant stock size and spacing for each of the polygons delineated on site. It is not necessary to depict all the planting stock on the planting plan as the ultimate location of a particular plant should be determined by the person undertaking the planting.

The following is a list of some requirements and recommendations with respect to planting.

- Planted trees, shrubs and herbs must be non-invasive, native and preferably indigenous grown from an acceptable local seed source. Appropriate species must be matched to existing site conditions.
- Species proposed for planting should be species that are typically associated with specific indigenous forest ecosystems such as those detailed in the ELC Guide for Southern Ontario.
- In addition to the ELC Guide, Urban Forestry has native plant lists available on the City website. Other sources of information include the Society of Ecological Restoration Plant Guide, the Ontario Ministry of Natural Resources and Forestry and the TRCA.
- Planting stock should be acquired from a nursery that grows stock from a local seed source to ensure optimal success. Trees and shrubs grown from local stock will produce more vigorous and healthy specimens as they will be adapted to our local climates. The Society of Ecological Restoration (SER) Ontario Chapter website may be able to assist property owners in finding a suitable nursery recommendations.
- Species diversity should be enhanced in order to enhance the quality and function of existing ecosystems.
- Planting greater numbers of trees and shrubs of smaller caliper allows for the planting of a more diverse vegetation complex than the planting of large specimen trees and would create appropriate habitat that would normally exist in the forest ecosystem on site. This layered effect will also create vertical structural diversity that is typically found within a healthy forest ecosystem.
- On treed sites where large canopy openings exist, the continuity of the forest and canopy cover should be maintained or enhanced. New plantings should be clustered in gaps or more evenly distributed to effectively maintain forest continuity and canopy cover.
- Additional planting notes regarding mulch, topsoil amendments, tree guards, staking, watering schedule and minimum two (2) year planting warranty.

8. Maintenance and Watering

A section describing how the planted material will be maintained until established, typically including a plan for supplemental watering and invasive species management in proximity to the new plantings must be included. This section should also include site specific issues such as protection from animal browsing and protection from use of the area by dogs and people.

Supplemental water is generally needed during the first two seasons while root systems are still forming. In the case of drought conditions supplemental watering is required in order for the planted material to survive.

Invasive species management in proximity to new plantings is normally required through at least the first two seasons to give the newly planted stock a chance against these competitive species. Some invasive species are not easy to eradicate and may require a long-term commitment in order to be controlled effectively.

9. Evaluation and Monitoring

A section describing the efforts to be taken to monitor the site and ensure that appropriate implementation actions have been undertaken, the strategies employed are succeeding and that objectives are being achieved over the term of the stewardship plan, be it short or long term, must be included.

Urban Forestry will monitor stewardship sites for typically a period of two to five years after planting to ensure planting requirements are met. This timeframe is dependent on the agreed to time between the property owner and Urban Forestry. Ongoing evaluation and monitoring beyond this period is the responsibility of the property owner.

10. Deliverables

The stewardship plan must include the following items:

- Statement of goals, objectives and strategies
- Comprehensive, detailed site description
- Maps (plans) delineating polygons or compartments showing detailed site description information
- Implementation plans, schedules and budgets
- Statement of monitoring protocols

Incomplete applications or missing information will result in the delay of plan review and processing. Please note that a landscape plan together with an arborist report is not considered a stewardship plan.

Additional Information

External list of native plant nurseries/plant databases

- https://can-plant.ca/where-to-buy.htm
- https://inthezonegardens.ca/where-to-find-native-plants/
- http://frontyardrestoration.com/index.html

Guidelines for Preparing a Stewardship Plan

Native Plant Lists – City of Toronto Website

- https://www.toronto.ca/services-payments/water-environment/trees/tree-planting/

New York City Parks – Guidelines for Urban Forest Restoration

- https://www.nycgovparks.org/pagefiles/84/guidelines-to-urban-forest-restoration.pdf

Ravine and Natural Feature Protection – City of Toronto Website

- https://www.toronto.ca/services-payments/building-construction/tree-ravine-protection-permits/permit-to-undertake-work-in-ravines/

Approved By

Manager, Tree Protection and Plan Review

Project Manager, Tree Protection and Plan Review - Ravine and Natural Feature Protection

Contact

Ravine and Natural Feature Protection Office, RNFP@toronto.ca, 416-392-2513