



CATARAQUI REGION  
CONSERVATION AUTHORITY

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## Appendix F: Guidelines for Ecological Buffer Areas

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### 1.0 PURPOSE

The purpose of this document is to provide information about protecting, enhancing and maintaining vegetated buffers around natural features such as waterbodies, wetlands and woodlands. Buffers are important for clean and plentiful water supplies and for the plants and animals that rely upon natural features for their habitat. Effective buffers can ensure the sustained health of natural features, and can contribute to the quality of life and economy of local communities.

These guidelines include considerations for designing and caring for buffers, as well as specifications for buffer plans submitted to the Cataraqui Region Conservation Authority (CRCA) for review.

This document is Appendix F to the CRCA Environmental Planning Policies (2015). Terms that are *italicized* throughout this document are defined in the glossary at its conclusion.

### 2.0 INTRODUCTION

#### 2.1 What is a Buffer?

The Provincial Policy Statement (2014) indicates that natural features such as lakes, streams, wetlands and woodlands are to be protected for their economic, environmental and social benefits. These features are sensitive to changes in surrounding areas, such as when people clear vegetation, make trails, and construct buildings, roads and parking lots.

Buffers are corridors of undisturbed, permanently vegetated areas of land. They are transitional areas that reduce the impact of *development* and *site alteration* on adjacent natural features.

Buffers perform as physical barriers that remove contaminants from water and block light, noise and other forms of disturbance (MNR, 2010; Muskoka Watershed Council, 2013). The intent is for the natural feature to be insulated from negative impacts, so that it can continue to provide ecological goods and services (Beacon Environmental Ltd., 2012). As examples, a buffer would be needed between an industrial warehouse and a wetland, and between a waterfront home and the shoreline of a lake.

A buffer may overlap with a municipal building setback or the “adjacent lands” around a natural feature, but it exists for a different purpose:

- Building and structure setbacks from lot lines and waterbodies are required by a municipal zoning by-law or development permit by-law for a variety of reasons;
- “Adjacent lands” are discussed in the Provincial Policy Statement 2014. These are lands beside a natural feature that perform one or more specific ecological functions for the feature. For example, turtles lay their eggs in upland areas beside marshes. These “adjacent lands” around the wetlands need to be incorporated into the protected area because they are functionally important for the wetlands (Beacon Environmental Ltd., 2012; Environment Canada, 2012).

Buffers may be publicly or privately owned. There is no automatic expectation of public access to a buffer area.

## **2.2 Benefits of Buffers**

Buffers provide many benefits, some of which are listed below (Environment Canada, 2012; MNR, 2010; Muskoka Watershed Council, 2013; Palone and Todd, 1997).

- General benefits:
  - Enhancement of quality of life for people
  - Increased property values
  - Reduction of light and noise into natural features
  - Providing corridors for wildlife to move
- Clean and plentiful water:
  - Removal of pollutants delivered in urban stormwater
  - Infiltration of stormwater runoff
  - Maintenance of the base flow of streams
- Benefits around lakes, streams and wetlands:
  - Protection from flooding and other natural hazards
  - Stabilization of stream banks
  - Reduction of erosion and controlling sedimentation
  - Providing tree canopy that shades streams and promotes desirable aquatic organisms
- Benefits for healthy woodlands:
  - Protection of root zones
  - Allowance for hunting by cats and dogs
  - Reduction of encroachment (e.g. compost bins, storage)
  - Space for tree-fall
  - Protection of woodland interior

## **3.0 DESIGNING BUFFERS**

### **3.1 Buffer Width**

There is no one-size-fits-all buffer width. While a typical buffer width around waterbodies and wetlands is 30 metres, this width can be adjusted (wider or narrower) based on relevant factors for a given circumstance (Beacon Environmental Ltd., 2012; Environment Canada, 2012). An effective buffer width will vary depending on:

- The sensitivity and functions of the natural feature that is to be protected;
- The functions which the buffer is expected to perform;
- The setting (e.g. slopes, soils, surface drainage, groundwater conditions and flows); and
- The proposed adjacent land uses and activities (Beacon Environmental Ltd., 2012; Muskoka Watershed Council, 2013).

In general, it is likely that a buffer will be more effective as it becomes wider, flatter and more densely vegetated. Also, surrounding land uses and activities that are busier, brighter and noisier and that generate more air and waterborne contaminants will require more buffering than quieter and cleaner ones.

An appropriate buffer width may need to be determined through an environmental impact assessment (see Appendix E to the CRCA Environmental Planning Policies, 2015). The width of shoreline buffers along inland lakes on the Precambrian Shield can be determined with reference to the site evaluation guidelines in Appendix G to the CRCA Environmental Planning Policies (2015). The potential for natural hazards (flooding, erosion, etc.) should also be considered when considering the width of a buffer.

### **3.2 Buffer Composition**

The most effective buffers consist of existing, established vegetation. It may be necessary to enhance existing buffers by adding trees, shrubs and other vegetation. It is also possible to design and install new buffers on open, un-vegetated lands. Native species should be used to enhance and create buffers (see Appendix A to the CRCA Environmental Planning Policies, 2015). It is important to plan for natural selection by encouraging a healthy mix of young and old trees (Muskoka Watershed Council, 2012).

In some situations it may be important to install fencing along the edge of the buffer. The fencing will help to clearly mark the buffer extent and minimize unwanted intrusion (e.g. pedestrian and vehicle traffic, storage sheds).

Infrastructure such as stormwater management facilities and other utilities, roads and recreational pathways may need to be located near to or within a buffer. The best practice is to

minimize the intrusion of these items into the buffer, and to keep them as separate as possible from the natural feature being protected.

### 3.3 Component Parts within Buffers

Buffers normally consist of various component parts. There is often a part on the edge of the natural feature, a part that forms the middle of the buffer, and a transition part next to the area of *development or site alteration*.

Buffers along lakes and streams are a common type of buffer in the Cataraqui Region. The following description of three-part buffers along waterbodies is based on work by the Muskoka Watershed Council (2013) and Palone and Todd (1997). As indicated previously, it is important to minimize intrusion into the buffer.

- **Part 1 (Littoral).** The first part begins in the water with submergent (underwater) and emergent plants and continues up on the land immediately adjacent to the waterbody with trees, shrubs and herbaceous (non-woody) plants. The roots of plants provide streambank stabilization and habitat for both aquatic and land-based organisms while the shoreline shrubs provide shade and detritus and large woody debris to the waterbody. Woody trees, shrubs, and vines, with deep, fibrous roots should therefore be planted along the water's edge when creating or enhancing buffers.
- **Part 2 (Riparian).** The second part extends inland from Part 1 and provides a natural area with vegetation composition and character similar to other natural areas in the area. It also removes, transforms, or stores nutrients, sediments and other pollutants flowing over the surface and through the groundwater. While the part traditionally extends 15 metres to 30 metres, it could extend up to 90 metres.
- **Part 3 (Transitional).** The third part is immediately upslope of Part 2, and is typically a grass or herbaceous area that serves as a filter strip. It can also provide amenity space around a building, or a location for recreational pathways. A minimum width of 6 metres is recommended for access purposes.

## 4.0 MANAGING BUFFERS

Buffers should be managed to enhance and maximize their effectiveness over time.

It is important that a buffer continues to exist and perform its function for as long as the natural feature needs to be insulated from surrounding land uses and activities. There are planning law tools available that could be used to help ensure the continued existence of buffers:

- A guide can be prepared for adjacent landowners on how to be a good neighbour to the natural feature and surrounding buffer;

- A protective covenant can be registered on title (i.e. the deed for the property) to indicate that a buffer shall be maintained (and as applicable, to acknowledge the landowner guide);
- A conservation easement can be granted to a recognized third-party organization, effectively committing the property owner to maintain the subject area in a certain manner over the long-term.

In general, human activities within the buffer area should be minimized. However it may be feasible to maintain the performance of the buffer while also providing access to and views of the natural feature. Some reasonable activities in buffer areas include:

- Removing individual trees within the buffer which pose a safety hazard to people, roads, pathways, buildings or structures, or that will block a stream;
- Practices necessary to manage extensive disease and pest infestations or invasive species (e.g. buckthorn, wild parsnip);
- Minor access pathways (e.g. to the water), ideally to be finished with a thick bark-chip mulch, rather than asphalt or gravel.

It should be noted that many activities in buffer areas around lakes, streams and wetlands are regulated by the Conservation Authority through Ontario Regulation 148/06: Development, Interference with Wetlands and Alteration to Shorelines and Watercourses, pursuant to the *Conservation Authorities Act*. Activities in buffers may also be subject to other Federal and Provincial legislation and/or municipal by-laws, such as a tree-cutting by-law.

## 5.0 SPECIFICATIONS FOR ECOLOGICAL BUFFER PLANS

The CRCA may recommend that an ecological buffer plan be prepared in support of a land use planning applications adjacent to a natural feature. Such a plan would normally be submitted in conjunction with the site plan for the *development*, and in some cases at the same time as an environmental impact assessment. Ecological buffer plans are prepared by environmental professionals (e.g. ecologist, landscape architect). The section below outlines the specifications for a successful ecological buffer plan.

The purposes of a buffer plan are:

- To identify the appropriate buffer extent / width;
- To outline if and how the existing vegetation needs to be augmented;
- To define the activities that should take place within the buffer;
- To describe how the buffer will insulate the natural feature from negative impacts of surrounding land uses and activities; and

- To propose how the buffer will be maintained and enhanced over time.

Each buffer plan should therefore include text and drawings to clearly describe:

1. The field-delineated and surveyed extent of the natural feature(s) to be protected, on the subject property and on adjacent properties;
2. The proposed location and type of *development* and *site alteration*, and potential negative impacts that may be associated (e.g. contaminants, light, noise, etc.);
3. The topography of the intended buffer area;
4. The location and extent of the proposed buffer;
5. The species and distribution of existing and proposed vegetation within the buffer;
6. Any required fencing, signs or other measures;
7. How the buffer will effectively insulate the natural feature from negative impacts;
8. Techniques to protect the natural feature and buffer during construction; and
9. The physical methods and legal tools that will be used to maintain and enhance the buffer over the longer term.

## GLOSSARY

*Development* means the creation of a new lot, a change in land use, or the construction of buildings and structures (including but not limited to open and enclosed decks, gazebos, swimming pools and sewage systems).

*Dripline* means the outermost extent of the canopy of a tree. This normally corresponds to the area in which there is the greatest concentration of tree roots.

*Site alteration* means activities, such as grading, excavation, and the placement of fill that would change the landform and natural vegetative characteristics of a site. (PPS 2014)

## REFERENCES

Beacon Environmental Ltd. 2012. Ecological Buffer Guideline Review. December 2012. Prepared for Credit Valley Conservation. Markham, ON.  
<http://www.creditvalleyca.ca/wp-content/uploads/2013/08/Ecological-Buffer-Guideline-Review.pdf>

Environment Canada. 2012. How Much Habitat is Enough? Third Edition. Environment Canada, Toronto, ON.

Muskoka Watershed Council. 2013. Shoreline Vegetative Buffers. January 2013.  
<http://www.muskokawatershed.org/wp-content/uploads/ShorelineVegetativeBuffers-Jan2013.pdf>

Muskoka Watershed Council. 2012. Protect your Waterfront Investment: Best Practices Series.  
<http://www.muskokawatershed.org/wp-content/uploads/2012/08/VegetationBrochure-20121.pdf>

Ontario Ministry of Natural Resources. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Queen's Printer for Ontario.

Palone, R.S. and A.H. Todd (editors.) 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. USDA Forest Service. NA-TP-02-97. Radnor, PA.

### **FOR MORE INFORMATION**

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