

## ENVIRONMENTAL RESERVE SETBACKS

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### SUMMARY/ISSUE

This report recommends guidelines for site-specific Environmental Reserve setbacks in accordance with the Municipal Government Act as a means of preventing pollution of a waterbody.

### PREVIOUS COUNCIL DIRECTION/POLICY

At the 2006 October 18 meeting the S.P.C on Utilities and Environment approved, UE2006-30, and directed the Administration to report back with final recommendations no later than April 2007.

At the 2005 February 14 Regular Meeting of Council, UE2005-03 Environmental Reserve Setbacks, Administration was directed to:

1. Develop Environmental Reserve setback guidelines for land abutting the bed and shore of any lake, river, stream or other body of water in accordance the Municipal Government Act after consultation with City Business Units and other stakeholders;
2. Integrate any recommendations for setbacks into the *Calgary Plan* and other appropriate policy documents; and
3. That the Administration be directed to report to Council, through the S.P.C. on Utilities and Environment, with a status report."

### ADMINISTRATION RECOMMENDATIONS:

That the S.P.C. on Utilities and Environment recommends that Council:

1. Direct Administration to apply the guidelines in Attachment 2 in determining Environmental Reserve dedications in accordance with the Municipal Government Act; and
2. Integrate these guidelines into the Calgary Wetland Conservation Plan and other documents, such as the Calgary Plan, as appropriate.

### INVESTIGATION

The definition of Environmental Reserve (ER) allows for a fairly narrow interpretation of the conditions under which a setback of six metres or more would be permitted. Specifically, it would be necessary to demonstrate that such a setback will prevent pollution or is needed to ensure public access. Additional setback widths to provide for buffering, habitat protection, wildlife corridors, general open space or other potentially desirable attributes cannot be provided by means of Environmental Reserve. The definition of Environmental Reserve within the Municipal Government Act (MGA) is outlined in Attachment 1.

As a basis for determining appropriate setbacks a background study of buffer protection of water bodies has been completed. Water Resources and Parks have reviewed and analyzed the report and have prepared setback guidelines based on this information (Attachment 2). The setback criteria are based on a number of factors, including waterbody type, slope, vegetation cover and local groundwater influence. Guidelines were circulated for review to stakeholder groups (Attachment 3). They have been revised and refined in consultation with watershed groups and in discussions with Alberta Environment.

A review of the Calgary Wetland Conservation Plan is anticipated upon the release of the forthcoming Provincial Wetland Policy. It is recommended that the guidelines in this report be integrated into the Wetland Conservation Plan as a part of that review.

### IMPLICATIONS

#### General

The recommendations contained in this report are consistent with several themes identified in the *Triple Bottom Line Policy Framework*, particularly themes related to Protecting Water Resources and ensuring Land Stewardship and Protection.

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A standard fixed-width setback of six metres of ER is a generally accepted practice in The City of Calgary. This is generally clearly understood and would be the easiest to apply of all the alternatives proposed. Moving away from a set guideline can potentially introduce conflict in the approvals process unless an agreed-upon standardized review procedure is developed. This approach may introduce additional complexity to development approvals.

The increased setback guidelines are not expected to have any impact on building setbacks requirements as per the Land Use Bylaw.

### **Social**

Health and sustainability of the community are dependent on a balanced environment. Where additional setbacks are warranted, there may be an incidental benefit of making more open space available to the community.

### **Environmental**

Determination of ER setbacks based upon Best Management Practices and guidelines specifically for water quality protection will have a cumulative benefit of reducing pollutant loading into water bodies.

Riparian buffers (protected through ER setbacks or other appropriate mechanisms) can help reduce imperviousness, sediment loading in streams and contribute to overall water quality improvements. Appropriate setbacks would also have a positive effect on The City's obligations to meeting Alberta Environment's Total Loading requirements for water quality.

Appropriate ER setbacks to meet pollution prevention requirements may have incidental benefits that could include more options to protect important riparian habitat, provide for habitat connections and stream bank stabilization.

### **Economic (External)**

An incidental benefit of greater setbacks adjacent to streams and rivers will be the ability to allow for stream movement and natural stream bank erosion. Restoration of disturbed, non-functional riparian buffers can be considerably more expensive than ensuring that appropriate setbacks are dedicated beforehand.

Where appropriate setbacks are in place, there will be a reduced need to invest capital funding in riverbank armouring projects to protect property and assets in or near watercourses such as pathways and utility infrastructure.

Watershed protection through the use of riparian buffers and appropriate setbacks can assist in delaying or avoiding future costly water treatment plant upgrades.

### **BUSINESS PLAN/BUDGET IMPLICATIONS**

This report is consistent with the approved business plan strategies within both the Utilities & Environmental Protection (UEP) and Community Services & Protective Services (CSPS) departments. It can assist in meeting supports UEP S3.4 and CSPS S1.1 which commit to protection and restoration of the riparian environment and wetland conservation.

### **RISKS**

Increased ER setbacks may result in conflict with the development industry in land use approvals.

This risk will be mitigated through:

1. Open communication with affected stakeholders; and
2. Recommendations that balance the needs of the development industry with the need to protect Calgary's water resources.

### **ATTACHMENTS**

1. Excerpt from Municipal Government Act - Section 664(1).
2. Environmental Reserve Setback Guidelines
3. External Stakeholder Groups

**Excerpt from Municipal Government Act - Section 664(1)**

The Municipal Government Act defines Environmental Reserve as follows:

*664(1) Subject to section 663, a subdivision authority may require the owner of a parcel of land that is the subject of a proposed subdivision to provide part of that parcel of land as environmental reserve if it consists of*

*(a) a swamp, gully, ravine, coulee or natural drainage course,*

*(b) land that is subject to flooding or is, in the opinion of the subdivision authority, unstable, or*

***(c) a strip of land, not less than 6 metres in width, abutting the bed and shore of any lake, river, stream or other body of water for the purpose of***

***(i) preventing pollution, or***

***(ii) providing public access to and beside the bed and shore.***

## Environmental Reserve Setback Guidelines

In accordance with section 664(1)(c) of the *Municipal Government Act*, Environmental Reserve setback zones will be determined with the following factors:

### 1. Water body Type

A site-specific variable setback width shall be applied to water bodies qualifying as Environmental Reserve based on the following water body types:

#### A. Stream Order<sup>1</sup>

1<sup>st</sup> order: 6m setback

*typically a vegetated 'draw' that conveys flow primarily during periods of moderate to heavy rainfall and may not convey flow during other periods.*

2<sup>nd</sup> order: 30m setback

*Formed when two first order streams meet, e.g. West Nose Creek*

3<sup>rd</sup> order: 50m setback

*tributary of two 2nd order streams (e.g. Nose Creek)*

4<sup>th</sup> order: 50m setback

*tributary of two 3rd order streams (e.g. Bow River, Elbow River)*

#### B. Wetland Class

Stewart and Kantrud Class 3-6 wetlands, considered to be Environmental Reserve Wetlands under the *Wetland Conservation Plan* will have a 30m base setback applied to them.

Wetlands that are engineered to serve as stormwater management facilities ('stormwater wetlands'), may, at the discretion of the Administration have an ER setback width of less than 30m applied to them if the primary function of the wetland is for the provision of stormwater treatment rather than functioning as a natural wetland. Appropriate design elements (such as buffer strips, treatment swales or site grading) would be required to demonstrate that the water body would not be subject to surface or subsurface pollutant loading.

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<sup>1</sup> In general terms, buffers have the greatest potential for control over water quality when adjacent to low-order streams. Lower order streams are small in size and have less contributing area per unit volume of water. Smaller buffers are may be adequate to maintain the desired level of protection for first order streams. As stream order increases, however, the contributing area and volume of water available to the buffer area also increases, potentially diminishing the relative capability of the buffer to filter and remove pollutants as a percent of total loading. This does not mean that the buffer's effectiveness in treating pollutants immediately upslope may be compromised, only that the magnitude of control exerted over the water in the stream diminishes.

Setback widths should be determined as early as possible in the planning process. An initial review of waterbodies and recommended setback widths should be done by the Area Structure Plan stage of planning and confirmed later in the development approvals process.

## **2. Setback modifiers**

The base setback width will be modified on a site-specific basis according to the following factors:

### **A. Slope**

The setback distance will increase on sloped lands adjacent to a water body by a factor of 1.5 metres for every percentage of slope increase above 5%. There will be no adjustment factor for slopes between 0 and 5%.

### **B. Cover type**

Where the lands adjacent to the water body are disturbed, or have a non-native riparian zone that is determined to have lower ability to prevent non-point pollutants from entering the water body, the base setback width should be doubled, **or**, the base setback zone should be restored to a condition that will allow it to effectively buffer the water body from pollutants.

### **C. Hydraulic connectivity**

Applies to areas of land adjacent to a water body with shallow groundwater deemed to be 'under the influence of a surface water', namely there is hydraulic connectivity between groundwater and surface water, such as the alluvial aquifer of streams. If it is demonstrated that pollution of shallow groundwater would reasonably lead to the pollution of a directly adjacent surface water body, then that land should be included within the ER setback zone<sup>2</sup>.

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<sup>2</sup> Alberta Environment determines if a shallow groundwater is under the influence of a surface water. The methodology for this determination is provided in Appendix E "Assessment Guideline for Groundwater Under the Direct Influence of Surface Water (GWUDI)" of Alberta Environment's Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, January, 2006.

**Summary Table**

Setback type	Base setback	Adjustment Factors		
		Slope adjustment	Hydraulic connectivity to groundwater*	Cover type
1 <sup>st</sup> order stream	6m	+1.5m/% slope over 5%	n/a	n/a
2 <sup>nd</sup> order stream	30m	“	Areas of land adjacent to water bodies that have shallow groundwater connectivity to surface water are taken as ER.	Double base setback width to provide for better buffering of water body <b>or</b> restoration of riparian lands to provide for proper riparian function
3 <sup>rd</sup> –4 <sup>th</sup> order stream	50m	“	“	“
Class 3-6 wetlands <sup>3</sup>	30m	“	“	“

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<sup>3</sup> Environmental Reserve Wetlands as defined in the *Calgary Wetland Conservation Plan*

### **EXTERNAL STAKEHOLDER GROUPS**

- Alberta Environment
- Alberta Sustainable Resource Development, Public Lands
- Bow River Basin Council – Land Use and Policy Subcommittee
- Bow Riverkeepers
- Elbow River Watershed Partnership
- Environmental Advisory Committee
- Fisheries and Oceans Canada
- Nose Creek Watershed Partnership
- River Valleys Committee
- Urban Development Institute