	**Town of Cochrane** **Policy**
Policy No.: **Policy Title:** **Approval Date:** **Revision Date:** **Department:**	**1502-02** **Wetland Conservation** **September 11, 2006** **September 23, 2013** **Planning and Engineering Services**

Introduction

The Town of Cochrane recognizes and appreciates the valuable ecosystem services, and the aesthetic appeal, that wetlands provide to our community.

The purpose of this policy is to establish guiding principles, conserve wetlands and their associated riparian areas, and to provide an implementation framework.

The guiding principles inform the procedures and associated reporting requirements. The procedures include various tools that can be utilized to achieve the principles. These tools will continue to evolve as more provincial guidance is available and more knowledge is gained from successful best practices.

Policy Statement

The Town of Cochrane will conserve and manage wetlands and associated riparian lands in accordance with this policy.

1. Reason for Policy

1.1 To improve how wetland conservation occurs within Cochrane's boundaries, to enhance our ability to seek innovative solutions, and to clarify expectations and requirements during the development process.

1.2 The wetland conservation policy and procedures have been prepared by the Town to:

(a) help the Town fulfill its legislative mandate in direction, control and management of the rivers, streams, watercourses, lakes and other natural bodies of water within the municipality, including the air space above and the ground below; (section 60 (1) Municipal Government Act);

(b) ensure that legal and statutory requirements for protection of provincial water resources are met, risks of pollution and loss of wetlands and their associated riparian lands are avoided, minimized or mitigated; (Provincial Wetland Restoration/Compensation Guide; Water Act, Provincial Land Use Policies; Public Lands Act);

(c) provide administration with clear, concise direction for use and development of all public and private lands in proximity to wetlands and associated riparian lands;(section 640 (2) Municipal Government Act); and

(d) clarify to the development industry, Town Staff, and contractors the rules regarding the potential use and development of lands in proximity to wetlands and associated riparian lands.

2. Guiding Principles

The wetland conservation policy directs administration to use the following principles when reviewing development applications.

2.1 Recognize the ecological, cultural, social, and economic value and benefits of wetlands and wetland functions.

2.2 Promote public awareness of wetlands and the important ecological, cultural, social and economic functions they provide through education and the sharing of information, including the Town of Cochrane Wetland Inventory.

2.3 Strive to maintain the integrity of local watersheds through the conservation of wetlands and associated riparian areas.

2.4 Achieve wetland conservation through sustainable development practices.

2.4.1 Sustainable development practices include but are not limited to appropriate building setbacks, application of

Low Impact Development principles, Best Management Practices for stormwater management and integrating wetlands and stormwater systems.

2.5 Maintain an inventory of natural wetlands and associated riparian lands within and directly adjacent to the Town boundary.

2.6 Work together with community stakeholders to identify natural wetlands considered a priority for conservation.

2.7 Promote a balanced approach to managing and conserving natural wetland and associated riparian lands within the context of urban development.

2.8 Incorporate wetlands into the open space system.

2.9 Require the use of science-based standards for establishing the significance of wetlands, and to develop setback requirements for wetlands and require the application of these setbacks in development planning.

2.10 Ensure the provincial Wetland Mitigation Hierarchy process and guiding principles are applied to development applications.

2.10.1 The provincial Wetland Mitigation Hierarchy process is achieved by avoiding wetlands first, then, if avoidance is not possible, minimizing the impacts of development, and finally if avoidance and minimization are not feasible, to mitigate the impacts of development through replacement. Avoiding and minimizing impacts to wetlands is the first priority for all wetlands. In the case of replacement, the applicant must make a reasonable case to the Town why avoidance cannot be fully achieved and/or why minimization cannot be achieved and provide the appropriate replacement.

2.10.2 Administration will work with developers, landowners and other stakeholders to retain wetlands within the Town and to maintain, restore, or enhance these wetlands to improve wetland condition and function.

2.10.3 In addition to provincial requirements, loss or degradation of a natural wetland may be subject to local replacement. Replacement options include but are not limited to restoration or enhancement of other natural local wetlands, or the creation of replacement constructed wetlands.

2.11 Development and uses in proximity to conserved natural wetlands shall occur in a manner that is compatible with maintaining the wetlands natural character and ecological function.

2.12 Support innovative approaches to integrating natural wetlands into the urban setting that support maintaining their natural characteristics and functions.

2.13 Pursue opportunities with the province or restoration agencies to direct compensation to local projects.

2.14 Manage wetlands within the Town through maintenance and monitoring programs to conserve their natural character and function so they may remain sustainable over the long-term.

3. Background Information

Conserving and enhancing wetlands and associated riparian lands is in the overall greater public interest, as these lands play a significant role in watershed management and they are a critical link to drinking water source protection.

Wetlands and their associated riparian lands have the capacity to improve water quality, retain sediments, absorb nutrients, degrade pesticides, reduce flood impacts and soil erosion, recharge groundwater aquifers, increase biodiversity by providing critical habitat for many species, and moderate climate conditions.

Wetlands and their associated riparian lands also contribute to aesthetic urban design and provide for recreational, educational and economic opportunities for current and future generations.

Wetlands are part of our natural capital, providing valuable environmental services to our community, and once lost are lost forever.

Alignment with the Municipal Development Plan

This Policy aligns with and supports the direction of the Municipal Development Plan:

- The Town shall encourage sustainable methods aimed at minimizing water pollution and damage to wetlands and riparian areas (6.3.1(b)iii).

- The Town shall protect ecologically significant areas from development by identifying and taking inventory of these areas and preparing management plans for their conservation and enhancement as identified through a biophysical assessment. Ecologically significant areas include those containing rare flora, wildlife habitat, wildlife corridors, watersheds (floodplains, riparian areas, and wetlands) escarpments, significant natural landforms, continuous tree cover, and natural hazards (6.3.3(a).

- Wherever possible, the Town shall use environmental reserves and statutory planning tools (environmental and conservation easements) as established in provincial legislation as the vehicles for protecting ecologically significant areas (6.3.3(b).

- The Town shall provide adequate subdivision and development setbacks from ecologically significant features in accordance with municipal documents (6.3.3(c).

- The Town will ensure that developments adjacent to wetlands, water bodies, and watercourses will not do any of the following (6.3.3(d):
    - Reduce water quality or impede the flow of water
    - Lead to soil erosion or shoreline damage
    - Adversely affect the natural amenities
    - Adversely affect recreational potential
    - Restrict access to the water unless safety factors dictate otherwise
    - Adversely affect the visual quality of the natural amenities
    - Adversely affect fish and wildlife habitat

Alignment with the Cochrane Sustainability Plan

We are Responsible Citizens of the Planet

- Pathway 2, We treat water as a precious resource.
- Pathway 4, We contribute to the solution on climate change.

Cochrane is a Complete Community

- Pathway 10, There is enough room for everything a community should have.
- Pathway 13, We build Cochrane on the strengths of our natural and cultural heritage.

4. Related Information and Regulations

4.1 Alberta Wetland Policy, Alberta Environmental and Sustainable Resource Development, 2013

4.2 Provincial Wetland Restoration/Compensation Guide, Alberta Environment, 2005.

4.3 Wetland Management in the Settled Area of Alberta-An Interim Policy, Alberta Water Resources Commission, 1993

4.4 City of Calgary Wetland Conservation Plan, City of Calgary, 2004

4.5 Rocky View County Wetland Conservation and Management Policy #420, 2010

4.6 Riparian Area's-A User's Guide to Health, Lorne Fitch, Cows and Fish Program, 2013

4.7 Alberta's Wetlands: A Law and Policy Guide, A. Kwasniak, Environmental Law Centre, 2002

4.8 Stewart and Kantrud Wetland Classification System: Stewart, Robert E. and Harold A. Kantrud. Classification of natural ponds and lakes in the glaciated prairie region. Resource Publication 92. Bureau of Sport Fisheries and Wildlife. U.S. Fish and Wildlife Service. Washington, D.C. (Northern Prairie Wildlife Research Centre Home Page. 1971.

4.9 Town of Cochrane Land Use Bylaw 01/2004, Section 11

4.10 Town of Cochrane Stormwater Management Study (2004), as amended from time to time

4.11 Town of Cochrane Snow and Ice Control Policy 2301-02

4.12 Federal and Provincial Legislation and Regulations

- The Fisheries Act
- Navigable Waters Protection Act
- Migratory Birds Convention Act
- Public Lands Act
- Water Act
- Species at Risk Act
- Environmental Protection and Enhancement Act
- Wildlife Act
- Municipal Government Act
- Alberta Land Stewardship Act and the subsequent land use framework for our region, the future South Saskatchewan Regional Plan

4.13 Water for Life: Alberta's Strategy for Sustainability, 2006

4.14 Stepping Back from the Water, Alberta Environment and Sustainable Resource Development, 2012

5. Definitions

5.1 "Biodiversity" means the variability among living organisms and the ecological complexes of which they are a part, and includes diversity within and between species and ecosystems.

5.2 "Pollution" means non-point source impacts on the environment from substances**,** including but not limited to sediments, nutrients, pesticides, and toxic chemicals that typically reach a water body by surface or subsurface flows through adjacent lands, and the unauthorized release of a 'deleterious substance' as defined by the *Fisheries Act (Canada)*, or the unauthorized release of any substance whether non-point or otherwise that may cause an adverse effect under the provisions of the *Environmental Protection and Enhancement Act*.

5.3 "Riparian Lands" means the lands adjacent to streams, rivers, wetlands, lakes, and other water bodies, where the vegetation and soils show evidence of being influenced by the presence

of water. Riparian areas are the green zones around lakes, rivers, and wetlands. They are the transitional zone between surface water and the drier uplands and play a vital role in the healthy functioning of both.

5.4 "Town" means the corporation of the Town of Cochrane and all the lands within its jurisdictional boundaries.

5.5 '"Wetlands" means land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation, and various kinds of biological activity which are adapted to the wet environment or; "lands that are wet, low lying areas that collect enough water to support water loving plants" (as per Town of Cochrane Land Use Bylaw 01/2004).

5.6 "Wetland Inventory" means the Town led project to identify, map and classify wetlands in accordance with the Stewart and Kantrud Wetland Classification.

6. Responsibilities

6.1 Town Council to:

6.1.1 Approve by resolution this policy and any amendments.
6.1.2 Consider the allocation of resources for successful implementation of this policy in the annual budget process.

6.2 Chief Administrative Officer to:

6.2.1 Implement this policy and approve procedures.
6.2.2 Ensure policy and procedure reviews occur.

6.3 Senior Manager of the Department to:

6.3.1 Ensure implementation of this policy and procedure.
6.3.2 Make recommendations to the Chief Administrative Officer of necessary policy or procedure amendments and recommend appropriate allocation of resources.
6.3.3 Inform all managers of procedures to allow for the successful implementation of the procedure.
6.3.4 Develop, and recommend for adoption by Council, Land Use Bylaw amendments as required to implement the procedure.

6.4 Manager to:

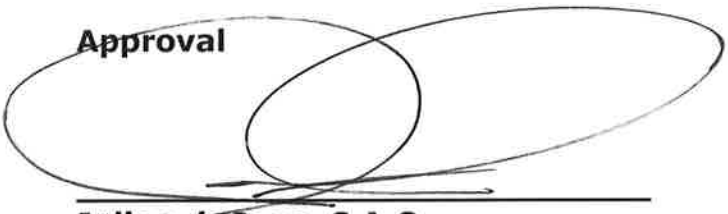
6.4.1 Understand and adhere to this policy and procedure.
6.4.2 Ensure employees are aware of this policy and procedure.
6.4.3 Appoint staff to assist with the identification of wetlands and associated riparian lands.
6.4.4 Appoint staff to assist with the implementation of the policy.
6.4.5 Inform staff of procedures to allow for the successful implementation of the policy.

6.5 All Employees to:

6.5.1 Understand and adhere to this policy and procedure.

7. End of Policy

Approval



Julian deCocq, C.A.O.

October 28, 2013
Date

cochrane HOW THE WEST IS NOW	**Town of Cochrane Procedure**
Policy No.: **Policy Title:** **Department:**	**1502-02** **Wetland Conservation** **Development and Infrastructure Services**

1. Purpose

1.1 This procedure outlines the application review process, the reporting requirements, and the report content guidelines in order to implement the approved policy.

2. Development Application Review and Approval Process

2.1 The attached flow chart is the planning framework through which development applications will be reviewed when wetlands and riparian lands are present. The chart outlines when reports are required to be included in an application. The reporting structure is intended to be cumulative to ensure each application is properly supported with the necessary information. Comprehensive information is needed in order to make informed decisions regarding wetland conservation.

3. Appendix – Attached – Six report content guideline documents.

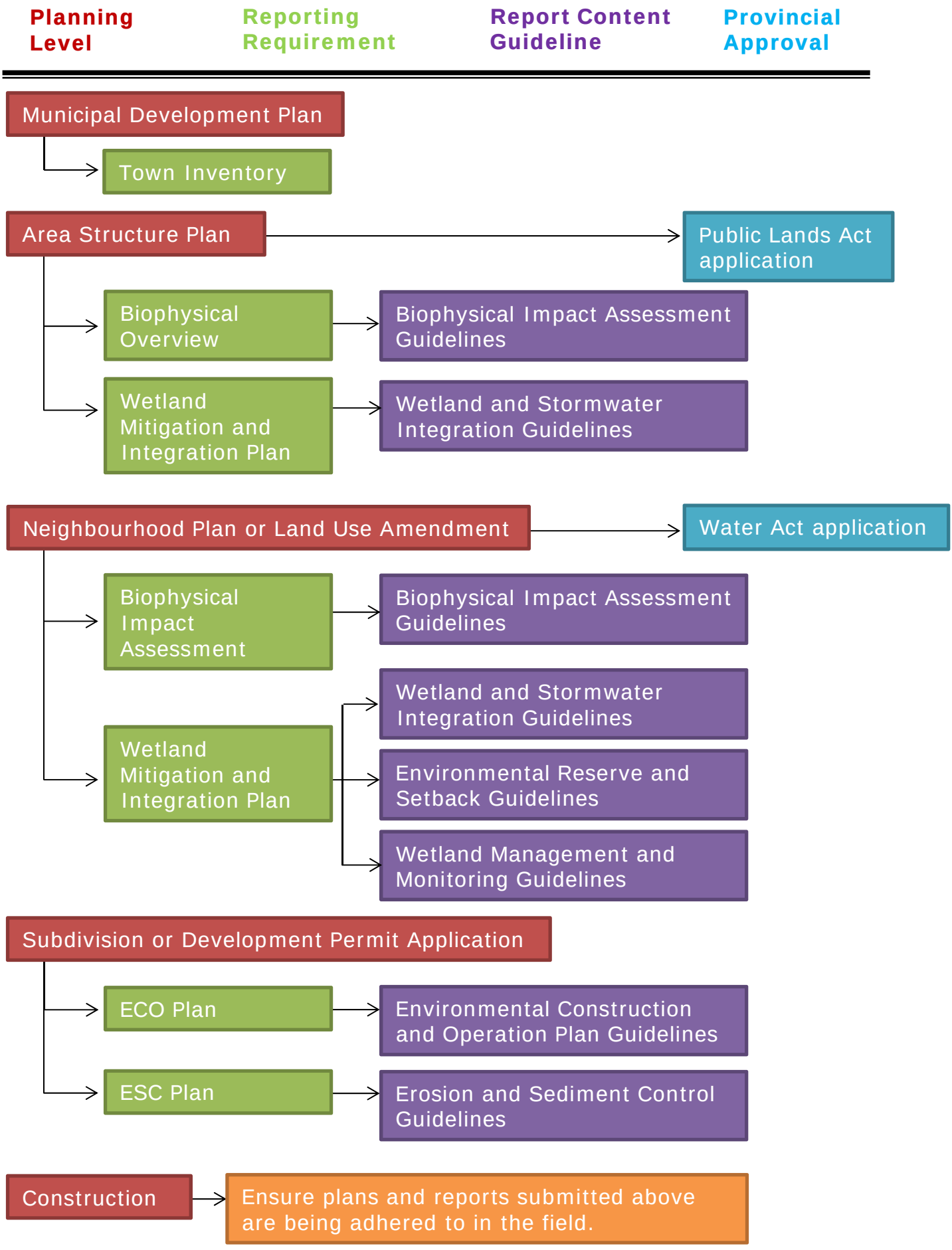
3.1 Biophysical Impact Assessment Guidelines
3.2 Wetland and Stormwater Integration Guidelines
3.3 Environmental Reserve and Setbacks Guidelines
3.4 Wetland Management and Monitoring Guidelines
3.5 Environmental Construction and Operation Plan Guidelines
3.6 Erosion and Sediment Control Guidelines

4. End of Procedure

Approval

Julian deCocq, C.A.O.

October 28, 2013
Date


Planning Level
Reporting Requirement
Report Content Guideline
Provincial Approval
Municipal Development Plan
Town Inventory
Area Structure Plan
Public Lands Act application
Biophysical Overview
Biophysical Impact Assessment Guidelines
Wetland Mitigation and Integration Plan
Wetland and Stormwater Integration Guidelines
Neighbourhood Plan or Land Use Amendment
Water Act application
Biophysical Impact Assessment
Biophysical Impact Assessment Guidelines
Wetland Mitigation and Integration Plan
Wetland and Stormwater Integration Guidelines
Environmental Reserve and Setback Guidelines
Wetland Management and Monitoring Guidelines
Subdivision or Development Permit Application
ECO Plan
Environmental Construction and Operation Plan Guidelines
ESC Plan
Erosion and Sediment Control Guidelines
Construction
Ensure plans and reports submitted above are being adhered to in the field.

TOWN OF COCHRANE
BIOPHYSICAL IMPACT ASSESSMENT GUIDELINES

2013

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Table of Contents

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1 Introduction

The Town of Cochrane has prepared this Biophysical Impact Assessment (BIA) Framework to facilitate land use planning and support the Town's Vision for sustainable development. The BIA Framework supports the goal of environmental stewardship and the Town's commitment to careful and responsible management of their natural resources and ecological assets.

This Framework aligns with other municipal, provincial and federal environmental legislation, policies and plans. It describes when, where and how a BIA is prepared and applied in land use planning within the Town. It also presents BIA objectives and required components, the timing of the assessment, and the professional requirements for BIA preparation.

1.1 Purpose

This BIA Framework addresses the requirements of the Town of Cochrane Municipal Development Plan (MDP Bylaw 07/2008). The MDP is a long-term policy document that guides Council, administration, developers, residents, and adjacent municipalities in making accountable land use decisions. Section 6.3.2 (a) indicates that a municipal environmental impact statement (MEIS) shall be prepared by proponents of development within the Town. The MDP presents general guidelines for preparing an MEIS, which includes a biophysical assessment.

The BIA is an environmental assessment tool that will aid the Town in making land use decisions and support responsible management of their natural resources. The BIA describes existing environmental conditions then assesses the potential environmental impacts of a proposed land use or development. Mitigation measures are identified that may eliminate, reduce or control the identified environmental impacts. The overall goal of the BIA is to minimize or avoid negative environmental impacts and support adequate protection of Environmentally Significant Areas (ESAs). This Framework provides guidelines on preparing a Biophysical Impact Assessment compatible with other municipal and provincial standards.

When wetlands are present, the BIA Framework will apply as procedures for the Town of Cochrane Wetland Conservation Policy. The Framework will be amended, as needed, to meet wetland and riparian land conservation objectives.

1.2 Why a BIA Framework

The BIA is a standard assessment approach applied by other municipalities in the province as part of their land use planning and development application process. This Framework was prepared to:

- establish requirements and expectations of developers (project proponents);
- provide clear and consistent guidelines for identifying, evaluating and mitigating environmental impacts compatible with other local municipalities;
- support consistency and compatibility with federal and provincial environmental assessment regulations; and
- ensure council and administration have adequate information to make informed land use decisions.

2 BIA Framework

2.1 Who Prepares the BIA

The Town of Cochrane requires that all BIAs are signed and stamped by a Professional Biologist registered with the Alberta Society of Professional Biologists (ASPB). Field staff must have the appropriate skills and experience in surveying biophysical features that include, but are not limited to, upland plant communities, rare plants, soils, wildlife (birds, mammals, amphibians, reptiles), and wetlands, including wetland identification, classification, and delineation.

When wetlands are present, other professionals are required to provide their expertise in the fields of hydrology, hydrogeology and water engineering. Studies of the surface and ground water hydrology of a project site, including wetland hydrology, should be prepared, signed and stamped by a qualified professional in one of these fields of expertise.

Detailed assessments of terrain stability and suitability for development and of stormwater are not included as part of the BIA Framework. All development proposals will be reviewed and analyzed using all of the detailed assessments holistically. Recommendations from the BIA must be incorporated and addressed in the proposal.

2.2 When is a BIA Required

The MDP states that an MEIS, herein identified as a BIA, shall be required for all developments, subdivisions, or other areas as determined by the Town. A BIA is a required component of any application when there is a natural landscape feature **within and/or directly adjacent** to the land proposed for development.

Examples of Natural Landscape Features:

Agricultural Lands:	cultivated fields, croplands, pasture lands
Natural Plant Communities:	native or tame grasslands, shrublands, and forests
Natural Water bodies:	Water bodies and watercourses such as rivers creeks streams and ephemeral drainages, wetlands, ponds, lakes, riparian lands
Natural Landforms:	natural escarpments, coulees, floodplains, bedrock outcrops, prominent ridgelines
Environmentally Significant Areas:	areas that contain rare or unique environmental elements or that include environmental elements that

	may require special management consideration due to their conservation needs Town of Cochrane MDP identifies ESAs as: • areas containing rare flora • wildlife habitat and wildlife corridors • floodplains, riparian areas and wetlands • escarpments, natural hazards and significant natural landforms • continuous tree cover

2.3 Time of Year for a BIA

BIAs include field surveys of a proposed project site to adequately describe existing conditions, for example, existing vegetation communities, habitat, and wildlife use. All BIAs will require field surveys to be completed during the growing season, from approximately May to September, to ensure that the data acquired provide adequate information on species diversity within the site. As well, multiple field surveys over the growing season are required to adequately capture the range of seasonally dependent species occurring within a proposed development site.

Field surveys of a proposed project site can be prepared up to 5 years ahead of their development application. After 5 years or if there are changes to the landscape, additional follow-up field inventories will be required to confirm existing environmental conditions.

3 BIA Planning and Review Process

3.1 Where the BIA Fits in the Planning Process

BIAs are prepared at various stages in the land use planning process. The flow chart below presents the land use planning framework for the preparation and review of BIAs by proponents of development. For Subdivisions, Neighborhood Plans and Area Structure Plans, the BIA replaces the MEIS as described in the MDP. For development permits or other proposed development activities, the development officer shall advise a proponent of development to follow either the BIA or MEIS guidelines.

<<add planning flow chart here>>

3.2 BIA Preparation and Review

The general process for BIA preparation and review is as follows:

1. Conduct an initial project meeting involving Town of Cochrane, the proponent for development and associated consultants.

2. Prepare a BO (Biophysical Overview) conducting multiple surveys between May and September documenting existing environmental conditions and evaluate significance of features.

3. Prepare a BIA (Biophysical Impact Assessment) with reference to a final concept for development.

4. Submit the BIA for review by the Town of Cochrane.

An iterative approach is recommended where the proponent works with administration throughout the 4 step process.

3.3 Initial Project Meeting

An initial project review will be completed with the proponent of a new activity or development and Town planners to confirm the need for a BIA. Detailed field investigations of the proposed development site are not required at this stage in the application process. Instead, a desk-top review of the proposed development site is required to determine the nature of existing site conditions and to identify any natural landscape features.

Material Required for the Initial project Meeting:	
Location Map:	A map showing the full project site boundary and location within the Town
Aerial Photograph:	A recent aerial photograph showing current conditions within and adjacent to the proposed project site
Site Photographs	Where possible, site photographs showing different areas of the site
Existing Studies	Any previous environmental studies completed within the project site

Based on a review of this material, and at the discretion of the Town, a BIA will be required when natural landscape features are known to, or are expected to, occur within or adjacent to the proposed development site.

3.4 Biophysical Overview

A Biophysical Overview (BO) is an inventory of the current biophysical conditions of a proposed development area. The objective of the BI is to describe and document observations of the natural landscape features of the area including, but not limited to:

- Natural Subregion
- Landforms
- Soils
- Hydrology (surface and ground water)
- Plants and plant communities
- Rare ecological communities
- Rare species of plants and wildlife
- Wildlife, Wildlife Habitat, Wildlife Movement
- Wetlands and associated riparian areas
- Environmentally Significant Areas (ESAs)
- Aquatic Environmentally Significant Areas (AESAs)

Data is compiled on these natural landscape features through desk-top review of available information, field surveys in the growing season between May and September, and available standard procedures for feature classification and assessment. Methods of inventory and assessment, for example the criteria for determining ESAs and AESAs, are to be documented in the BO. Maps and site reference photographs of observed natural features are to be included in the BO.

The Biophysical Overview can be prepared for a range of planning applications. The BO, if prepared for higher level plans, such as Area Structure Plans, can apply to regional planning initiatives within the Town, for example planning for a connected system of designated open space. The BO can also be applied early in the planning process to determine ESAs to be considered candidates for conservation within the Town.

A BO can be prepared up to 5 years ahead of a concept for development of a proposed project site. After 5 years or if there are changes to the landscape, additional follow-up field inventories will be required to confirm existing environmental conditions.

3.5 Biophysical Impact Assessment

The BIA includes the Biophysical Overview (BI) and applies this data in an assessment of the potential impacts of a propose activity or development on the existing biophysical conditions of a proposed project site.

The objectives of the BIA are to:

Existing Conditions	describe existing biophysical (environmental) conditions within and adjacent to the proposed project site, including ESAs
Project Description	describe the proposed activity or development
Potential Impacts:	predict the potential adverse impacts of the proposed activity or development on existing biophysical (environmental) conditions, including ESAs
Mitigation measures	recommend mitigation measures to reduce, eliminate, or control the predicted impacts
Residual Impacts	evaluate the significance of any residual environmental impacts that persist after mitigation measures are implemented
Cumulative Effects	describe the potential cumulative environment effects of the proposed activity or development when combine with over past and reasonably foreseeable land uses in the region.

A BIA is a required component of any development application when there is a natural landscape feature within and/or directly adjacent to the land proposed for development. The BIA is prepared with reference to a final concept plan for development. Conceptual plans for stormwater management within the project site should also be assessed in the BIA. Field data applied in the preparation of the BIA should be no more than 5

years old. After 5 years, additional follow-up field inventories will be required to confirm existing environmental conditions.

3.6 Review of the BIA by the Town

The BIA will be reviewed and approved at the discretion of the Town. The Town may request additional information as part of the review process.

4 BIA Requirements

4.1 Biophysical Components

The Biophysical Components to address in the Biophysical Overview are summarized below.

Biophysical Component	*Biophysical Overview Information to Provide*
Natural Subregion	Identify what Natural Subregion the project site is located in.
Landform	Describe existing terrain features such as topography, terrain variability, slope, aspect, and landscape position.
Soils	Describe soil types within the project site with reference to available databases and/or soil surveys.
Water bodies and Wetlands	Field survey to delineate, classify and map water bodies or wetlands or wetland complexes.
	Confirm whether any natural and permanent water bodies are claimed by the Province.
	Inventory each wetland with reference to Provincial Wetland Restoration/Compensation Guide (2007) (see Section 4.4).
	Compare with Town of Cochrane Wetland Inventory Data
Fish and Fish Habitat	Identify fish species and evaluate fish habitat suitability.
Plant Communities	Identify and map plant communities
Rare Species	Complete an Alberta Conservation Information Management System (ACIMS) database search.
	Complete a Fisheries and Wildlife Management System (FWIMS) database search.
	Complete field surveys and map locations for rare plants as per the Alberta Native Plant Council standards.
Wildlife	Complete field surveys to document wildlife occurrence, including breeding, by location and/or habitat type. Document wildlife occurrence for each wetland. Include systematic field surveys (breeding bird surveys, amphibian surveys, species-specific surveys are needed), and incidental observations.
Wildlife Habitat	Describe wildlife habitat conditions in terms of habitat suitability, wildlife movement, and/or level of

	disturbance.
Other Unique Features	Describe any unique natural features observed, for example springs or unusual land forms.
Land Use	Describe historical and current land use activities within and adjacent to the project site.
Environmentally Significant Areas	Identify ESA based on predetermined criteria (see Section 4.5 for details).

Additional biophysical information may be required depending on site-specific conditions and at the discretion of the Town.

4.2 When there are Water bodies

Proponents of development are responsible for determining whether there are any natural water bodies on or directly adjacent to their land that are subject to provincial regulations and guides.

Key Provincial Regulations and Guides for Water bodies :

Alberta Water Act:	A Water Act application and approval is required if water bodies, including wetlands, may be impacted by a new land activity or development
Alberta Public Lands Act:	The Crown owns the bed and shore of all permanent naturally occurring water bodies, including wetlands. Proponents of development are responsible for confirming whether the Crown claims a water body on their land and for pursuing appropriate approvals.
Provincial Wetland Restoration/Compensation Guide:	Proponents of development that may impact a wetland are required to indicate how impact to wetlands may be mitigated through avoidance, minimized impacts, or compensation.

4.3 Crown-claimed Water bodies and Wetlands

The Province, under Section 3 of the *Public Lands Act*, regulates the use and development of provincial public lands, which include most of the beds and shores of permanent and naturally occurring water bodies, including wetlands. Wetlands that are deemed permanent and naturally occurring may be claimed by the Province.

Proponents of development should confirm, as part of the Biophysical Overview, whether the Crown claims any water bodies or wetlands within a proposed project site. If claimed, certain restrictions may apply to the use or development of the water body or wetland.

The ownership of the beds and shores of a particular water body is not always obvious, and historical research may be required to verify that ownership. Few land titles in Alberta mention water bodies. More often, the title description is silent to the ownership of beds and shores.

Proponents of development can contact the Water Boundaries Division of ESRD (Environment and Sustainable Resource Development) to confirm whether a water body or wetland on their project site is claimed by the Crown.

4.4 Wetland Inventory

Under the *Water Act*, the Province regulates the diversion and use of all water. The *Water Act* requires a proponent of development to obtain an approval for any activity that may impact wetlands. The Provincial Wetland Restoration/Compensation Guide (2007) provides direction regarding how to inventory wetlands prior to making an application under the *Water Act*.

Proponents of development are required to, at a minimum, provide the following information:

- area of each wetland (include flooded portion and transition zone from aquatic to terrestrial);
- hydrological assessment of the wetland (include contributing drainage area);
- statement of wetland benefits (hydrological, ecological and economical);
- classification of each wetland based on either the Cowardin Wetland Classification System or the Stewart and Kantrud Classification System;
- identify any wetland complexes (a group of two or more wetlands that are hydrologically or ecologically connected)
- flora (plants) and fauna (wildlife) at the wetland, including presence of rare or endangered species;
- type of wetland margin;
- surrounding upland use (cropland, natural)
- historical aerial photographs;
- reference photographs depicting the wetland area, wetland margin and immediate upland area.

The wetland information compiled as per the Provincial Wetland Restoration/Compensation Guide (2007) is to be presented in the BIA submitted to the Town.

The Town may request additional hydrological studies of wetlands in areas where there are a high number of wetlands present in relative close proximity, anticipating the potential for surface or ground water

connections. Additional hydrological study may include an evaluation of both surface and sub-surface conditions associated with the wetlands. The approach and scope of the study should be determined by a qualified professional in the fields of hydro-geology and/or water engineering. Study methods applied should give some indication of the natural hydrologic signature of the wetlands including identification of wetland catchment area and precipitation patterns affecting wetland conditions. They should also provide some indication of the potential for hydrological connections between wetlands that may be adversely affected by proposed development.

A phased approach to evaluating sub-surface hydrology may be applied that begins with a desk-top review of available information including historical aerial photographs, well data, and/or bore-hole data from geotechnical studies for a given site. Further data collection may be requested based on the recommendations provided from these studies and at the discretion of Town administration. Further data collection may include field sampling of surface and groundwater conditions.

4.5 Environmentally Significant Areas

The Province describes ESAs as areas that contain rare or unique elements or that include elements that may require special management consideration due to their conservation needs. ESAs are considered important to the long-term maintenance of biological diversity, soil, water, or other natural processes at multiple spatial scales.

ESAs are not subject to province policy and do not necessarily require legal protection. However, identifying ESAs helps inform land-use planning and emphasizes environmental stewardship. Identifying ESAs also supports the Town's commitment to careful and responsible management of their natural resources.

The Province identifies ESAs in the following publications:

- Environmentally Significant Areas - Provincial Update (Fiera Biological Consulting, 2009)
- Aquatic Environmentally Significant Areas in Alberta (Fiera Biological Consulting, 2011)

Provincial Criteria for ESAs and AESAs:	
ESA	Areas that contain elements of conservation concern
	Areas that contain rare or unique landforms
	Areas that contain habitat for focal species
	Areas that contain important wildlife habitat
	Riparian Areas
	Large Natural Areas
	Sites of Recognized Significance
AESA:	Presence of aquatic focal species, species groups, or their habitat
	Presence of species of conservation concern
	Present of Rare or unique aquatic ecosystems
	Key areas that contribute to water quality
	Key areas of biological connectivity
	Key areas of intact complexity and/or biodiversity
	Key areas that contribute to water quantity

These provincial criteria are meant to be applied in an evaluation process that is objective and repeatable.

For the BIA, these provincial criteria, or a similar set of criteria, should be applied in evaluating the environmental significance of natural features within a proposed project site. The criteria used in identifying ESAs should be clearly defined and presented in the BIA. The appropriate desk-top and field data should be collected and compiled in the Biophysical Overview to facilitate the evaluation of environmental significance.

Certain natural features may also be identified as highly valued by the community. Where this information is available, it should be considered when evaluating the significance of natural features within a proposed project site. The Town of Cochrane MDP also identifies natural features considered environmentally significant on a local scale.

4.6 Project Description

Summarized below is the information to be provided in the project description. The final concept plan for the proposed development should be presented in the project description.

Component	*Information to Provide*
Project Location	Include map of location and the legal land description
Project Setting	Describe surrounding land uses
Land Titles	Include land titles documentation and any associated land caveats or easements
Description	Present a description of the size and type of land use or development proposed
Purpose	Present a rationale for the proposed land use activity or development
Design Details	Present site-specific design concept and considerations
Stormwater	Present the concept for Stormwater management and related infrastructure
Schedule	Provide anticipated project phasing and time of project completion

4.7 Potential Biophysical Impacts

Potential impacts are identified with reference to the environmental components described in the Biophysical Overview including Environmentally Significant Areas (ESAs). They include both direct impacts (for example, clearing of vegetation) and indirect impacts (example, sensory disturbance of wildlife in adjacent habitat). Examples of potential impacts are presented in the following Table.

The potential biophysical impacts of a proposed activity or development should be identified with reference to the final concept plan for the proposed development. The assessment of potential environmental impacts should include reference to the stormwater management plans for the site.

Environmental Component	Examples of Potential Impact
Landform	Altered drainage patterns, erosion and sedimentation, loss of unique landform features, slope instability
Soils	Loss of native soils, compaction, erosion
Water bodies and Wetlands	Loss or alteration of water bodies and wetlands, sedimentation, pollution, changes in the natural hydro-period, damage or loss if wetland habitat, weed invasion
Fish and Fish Habitat	Damage or loss of fish and fish habitat
Plant Communities	Damage and clearing of native plants and plant communities, reduced biodiversity, weed invasion
Rare Species	Loss or disturbance of rare species
Wildlife	Loss or disturbance of wildlife and active breeding sites such as nests and burrows
Wildlife Habitat	Loss of wildlife habitat, barriers to wildlife movement, reduced habitat suitability
Other Unique Features	Loss or alteration of unique natural features
Environmentally Significant Areas	Loss or alteration of ESAs

4.8 Mitigation Measures

Mitigation measures are measures applied to eliminate, reduce, or control the predicted negative biophysical impacts of a particular project or activity. The BIA will document mitigation measures to address all identified potential impacts. Standard methods should be identified for addressing impacts as well as experimental methods where site-specific conditions demand a more unique approach. Mitigation measures should be identified that adhere to and support municipal, provincial, and federal guidelines and regulations.

Recommended Mitigation Measures may include, but are not limited to:

- Environmental Reserve (ER) designation;
- setback identification;
- wildlife sensitive timing for construction;
- species-specific mitigation measures to avoid impacts to species of conservation concern;

- wildlife corridor designation;
- Invasive plant management;
- Preparation of an Environmental Construction and Operation Plan (ECO Plan) documenting measures to:
    - reduce vegetation disturbance
    - manage erosion and sedimentation
    - control dust and noise
    - manage risk of spills and accidental fire
    - manage waste and recycling
    - restore areas of disturbance; and
- Public Education.

4.8.1 Timing of Construction

Site clearing and construction are the prime sources of impacts to existing environmental conditions, in particular wildlife that may inhabit the area to be developed. A key mitigation measure to reduce impacts to wildlife is to avoid site clearing and construction in the critical time period for many wildlife species: approximately April 1st to July 31st. This is the primary breeding period for many wildlife species.

4.9 Wetland Mitigation Plan

The Provincial Wetland Restoration/Compensation Guide (2007) provides direction regarding the approach to mitigating loss of naturally occurring wetlands. Options for mitigation measures to reduce naturally occurring wetland loss include:

- **avoiding** impacts to the wetlands;
- **minimizing** impacts and requiring applicable compensation; and
- **compensating** for impacts that cannot be avoided or minimized

An application to the provincial Water Approvals Team, under the *Water Act*, is required prior to proceeding with any part of a proposed development that may impact Project Site wetlands. The application will include a Wetland Mitigation Plan that provides specific details regarding the mitigation measures applicable to natural wetlands.

A Wetland Mitigation Plan should be prepared as part of the BIA and should include:

- the mitigation options to be pursued (avoid, minimize, or compensate) as part of the concept plan for development;
- details regarding how the mitigation options will be implemented;
- the approach to identification and implementation of wetland setbacks;

- the approach to conserving wetlands into the urban context, including stormwater/wetland integration;
- a statement indicating why it may not be possible to avoid or minimize impacting wetlands; and
- documentation of provincial approvals under the *Water Act* and, where appropriate, *Public Lands Act*.

The Wetland Mitigation Plan should be in compliance with the Town of Cochrane Wetland Conservation Policy and associated procedures.

4.9.1 Crown-claimed Water bodies

Crown-claimed water bodies may be impacted by a proposed activity or development. If this is the case, the proponent of the activity or development is responsible for consulting with the appropriate provincial authority, which is currently the Public Lands Division of Alberta Environment and Sustainable Resource Development (ESRD). The Water Boundaries Unit within Public Lands conducts all evaluations of water bodies to confirm whether they are Crown-claimed.

4.10 Monitoring

The BIA will include recommendations for monitoring when:

- more experimental mitigation measures are identified to reduce or control impacts on existing biophysical conditions;
- when sensitive biophysical features are to be retained and integrated into the development; and
- when wetlands are to be retained and/or integrated into the proposed stormwater management system.

A **Monitoring Plan** should be prepared that identifies:

- measurable environmental parameters and targets to gauge the success of the proposed management activity;
- information on sampling procedures (for example, permanent sample plots, photographic records);
- timing and scheduling of monitoring activities; and
- a schedule or reporting.

4.10.1 Wildlife Monitoring during Construction

Monitoring is also recommended in the event that site clearing and construction is planned within the critical breed period for many wildlife species: approximately April 1st to July 31st. If this sensitive time period cannot be avoided, it is recommended that on-site monitoring be conducted by a qualified Professional Biologist during site-clearing to facilitate avoidance of wildlife and wildlife residences, in particular active breeding sites.

4.11 Residual Impacts and Evaluating Significance

Residual Impacts are those impacts predicted to persist after mitigation measures are implemented. The BIA should identify the predicted residual impacts of a proposed activity or development. The significance of these residual impacts should be evaluated with reference to predetermined parameters based on criteria that may include the geographic extent, duration and magnitude or the impact or whether the impact is reversible.

4.12 Description of Cumulative Environmental Effects

Cumulative effects are the changes to the environment caused by all past, present and reasonably foreseeable future human activities. The BIA should describe predicted changes in the environment caused by the current proposed development when combined with other past, present and reasonably foreseeable future human activities.

Cumulative effects may be described with consideration for:

- a larger regional area (for example the Town of Cochrane, Rocky View Country, the Natural Subregion, or southern Alberta);
- multiple regional scales;
- an extended period of time (for example 50 years into the past and into future or as per the Town of Cochrane Growth Management Plans); and
- other past, present and reasonably foreseeable future human projects and activities (for example agricultural practices, transportation, recreation).

The description of cumulative effects may focus on certain specified Value Ecosystem Components: natural features of the landscape with ecological or even social significance.

5 Related Legislation, Policy and Plans

This BIA Framework aligns with other municipal, provincial and federal legislation, policies and plans. Current relevant environmental legislation, policies and plans include, but are not limited to:

- Environmental Protection and Enhancement Act
- Conservation and Reclamation Regulation
- Historical Resources Act
- Municipal Government Act
- Provincial Wetland Restoration/Compensation Guide, 2007
- Public Lands Act
- Water Act
- Weed Control Act
- Wildlife Act
- Canadian Environmental Assessment Act
- Fisheries Act
- Migratory Birds Convention Act
- Navigable Waters Protection Act
- Species at Risk Act, 2002, c.29;
- Cochrane Sustainability Plan
- Municipal Development Plan
- Wetland Conservation Policy

This Framework will be updated, as needed, to address relevant changes in the current regulatory scheme.

Proponents of new land use activities and development are responsible for knowing what environmental regulations, policies and plans apply to their projects and complying with the environmental regulatory framework.

5.1 Other Municipal Assessments and Plans

The MDP, Section 6.3.2 and 6.3.3 provide direction regarding other additional assessments and plans that may be required, at the Town's discretion, as part of an application for development.

Other required municipal assessments and plans may include:

- hydrological studies of surface and ground water conditions
- geotechnical studies and terrain stability/flood or subsidence hazard assessment;
- stormwater management and stormwater/wetlands integration;
- Erosion and Sediment Control (ESC) Plans;
- Construction Management Plans;

- Visual Impact Assessment; and
- Environmental Reserve (ER) designation and setback identification;

Additional guidelines for preparing these assessments and plans may be developed, as needed, to facilitate land use planning and sustainable development in the Town.

5.2 Phase I, II, III Environmental Site Assessments

A number of federal and provincial regulations deal with the assessment and reclamation of sites subject to environmental contamination. These regulations include the Alberta *Environmental Protection and Enhancement Act* (EPEA) and the *Conservation and Reclamation Regulation*.

Proponents of development are responsible for hiring qualified professionals and applying appropriate federal and provincial standards to prepare Phase I, II and III ESAs, where appropriate.

5.3 Historical Resources Impact Assessments

Historic resources are susceptible to impacts from land use activities and development. Alberta Culture regulates the protection of historical resources. Under Section 37 of the *Historical Resources Act*, the Province provides the framework for Historic Resources Impact Assessments (HRIAs) and mitigative studies. When, in the opinion of the Minister of Alberta Culture, an activity will or will likely result in the alteration, damage or destruction of an historic resource, the person or company undertaking the activity can be required to:

- conduct an HRIA on lands that may be affected by the activity,
- submit to Alberta Culture a report discussing the results of the HRIA,
- avoid any historic resources endangered by activity, or
- mitigate potential impacts by undertaking comprehensive studies.

HRIAs and mitigative studies are paid for by the person or company undertaking or proposing to undertake the activity. Professional private-sector historians, archaeologists and palaeontologists perform the required work. Alberta Culture regulates archaeological and palaeontological fieldwork through a permit system.

All decision-making in regard to the management of historic resources rests with Alberta Culture. Any proponent of an activity or development that may impact an historical resource identified within the Town of Cochrane is responsible for adhering to these Provincial requirements and regulations.

TOWN OF COCHRANE
WETLAND AND STORMWATER INTEGRATION GUIDELINES

2013

Goal

To establish wetland and stormwater integration criteria for a development area in order to help create the wetland mitigation and integration plan for area structure plans, neighbourhood plans or land use amendments, and subdivisions or development permits as per the wetland conservation procedure.

Outline

Wetland Mitigation and Integration Plans are required, as per the wetland conservation procedure, to describe how a development area intends to meet the wetland mitigation hierarchy of avoidance, minimization, and replacement. A significant part of the integration plan is to plan for how rain events will be accommodated on the landscape once development occurs. Wetlands are nature's stormwater ponds. Changes to the natural stormwater system through development can involve a variety of mitigation activities.

Proposed mitigation or management activities subject to these guidelines include but are not limited to: conserved wetlands, constructed wetlands, naturalized stormwater facilities, naturalized low impact development areas, and integrated wetland and stormwater systems.

Conceptual planning and design intent should occur in the early planning stages in order to encourage innovative approaches and explore the greatest number of options for avoidance, minimization and replacement.

When integrating stormwater with wetlands, conserved or constructed, the following will be required:

- Using the BIA information, which identifies wetlands that will be preserved or enhanced, describe how preservation or conservation will be achieved, including pre-development catchment areas and water volumes to the wetlands areas, and proposed mitigation measures.

- If wetlands are to be conserved or enhanced, description of how they are to be included into the post-development stormwater system, with inflow rates, frequency of inundation, control devices, vegetation and habitat management.

    - Include the statement of objectives from the management plan to ensure the long term goals of the project are the basis of the design intent.

- Only treated stormwater may be discharged to wetlands; the type and level of treatment and expected inflow water quality should be described

TOWN OF COCHRANE
ENVIRONMENTAL RESERVE AND SETBACKS GUIDELINES

2013

Goal

To establish a code of practise for determining wetland area, environmental reserve area, and setback areas in order to help create the wetland mitigation and integration plan for neighbourhood plans or land use amendments, and subdivisions or development permits as per the wetland conservation procedure.

Outline

Wetland Mitigation and Integration Plans are required, as per the wetland conservation procedure, to describe how a development area intends to meet the wetland mitigation hierarchy of avoidance, minimization, and replacement. A significant part of the integration plan is how to establish what the setback area should be and apply the setbacks or buffer areas to the wetland in order to conserve the functions of the wetland, prevent pollution, and provide access.

There are many tools that could be used in the conservation of wetlands during carious planning processes. This guideline will explore the various tools and when they should be applied.

Potential tools include, but are not limited to:

- Land use districts
- Direct control districts
- Development permits
- Subdivision
    - Environmental reserve
    - Environmental reserve easement
    - Municipal reserve
    - Public utility lot
- Building development setbacks
- Provincial conservation easements
- Land purchase

This guideline will define:

- Wetland area or boundary
- Acceptable scientific approaches to deciding setback areas surrounding the wetland area
- Permitted activities within the setback or buffer areas.

TOWN OF COCHRANE
WETLAND MANAGEMENT AND MONITORING GUIDELINES

2013

Goal

To establish monitoring plan and management plan criteria for a wetland or a proposed mitigation or management activity in order to help create the wetland mitigation and integration plan for area structure plans, neighbourhood plans or land use amendments, and subdivisions or development permits as per the wetland conservation procedure.

Outline

The monitoring and management plans are to be based on the detailed design of the project. Standards for sampling procedures, timing and scheduling of monitoring activities, plan submissions will be established. Vegetation, wildlife, landform goals will depend on the type of mitigation activity is being proposed.

Proposed mitigation or management activities subject to these guidelines include but are not limited to: conserved wetlands, constructed wetlands, naturalized stormwater facilities, naturalized low impact development areas, and integrated wetland and stormwater systems.

Monitoring plans are intended to address the establishment of a mitigation activity in a development area and evaluate how the wetland mitigation and integration plan was successful, and to identify necessary changes for future success. A Monitoring Plan should be prepared that identifies:

- measurable environmental parameters and targets to gauge the success of the proposed management activity;
    - i.e. vegetation, wildlife, landform, water level, water quality
- information on sampling procedures (for example, permanent sample plots, photographic records);
- timing and scheduling of monitoring activities; and
- a schedule for reporting.
    - i.e. regular updates, final report on results of the proposed measures, and recommendations on future monitoring.

Management plans address the long term treatment and maintenance of a wetland or mitigation activity. A Management Plan should be prepared that identifies:

- Statement of objectives for the project
- Water quantity and water level management goals
- Water quality management goals
- Weed control strategy
- Public access management strategy
- Identification of operational and maintenance tasks required for optimum performance during the life-cycle of the wetland or integrated stormwater function

Environmental Construction and Operation Plan Guidelines

Goal

To supplement the existing Construction and Operation Plan Guidelines with specific practices related to environmental concerns, work near Environmental Reserves or sensitive habitat, including but not limited to wetlands.

Status

Review document with Planning and Engineering Services and Professional Biologist to identify gaps, incorporate lessons learned to date, and anticipate future development challenges.

Erosion and Sediment Control Guidelines

Goal

To use and support the Erosion and Sediment Control Guidelines with regarding to surface water control and sediment movement on development sites.

Status

Work with Planning and Engineering Services to identify gaps, review plan submission requirements, issues in the field, and enforcement. Planning and Engineering Services have dedicated staff time to monitoring crews on site currently.