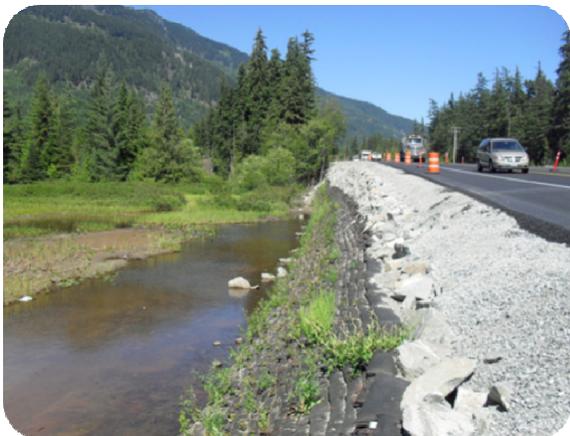


# Towards an Environmental Mitigation and Offsetting Policy for British Columbia: A Discussion Paper

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**Draft for Engagement**

**November 2010**



**Ministry of  
Environment**

# Towards an Environmental Mitigation and Offsetting Policy for Provincial Crown Land in British Columbia

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## **Cover Photos**

Top left: The BC Ministry of Transportation and Infrastructure addressed impacts to Mountain Goats (*Oreamnos americanus*) in their Highway 97 project north of Summerland. *Photo courtesy of Ministry of Transportation and Infrastructure*

Top right: BC Hydro and Ministry of Environment address impacts from hydro-electric developments through their Fish and Wildlife Compensation Program in the Peace Williston (pictured here), Bridge-Coastal and Columbia Basin. *Photo courtesy BC Hydro*

Mid left: Special care needs to be taken to avoid and mitigate environmental impacts on BC's protected lands. TELUS took responsibility for this when installing fibre optic cable in Lac du Bois Provincial Park. *Photo courtesy BC Parks*

Mid right: Grizzly Bears (*Ursus arctos*) and the ecosystems that support them, are among British Columbia's priority environmental resources. Proponents of development projects and activities are encouraged to avoid and mitigate adverse effects to environmental resources and to offset residual or unavoidable impacts. *Photo courtesy Jared Hobbs*

Bottom left: Over 1000 amphibians were trans-located to nearby protected or restored wetland habitat as part of the Sea to Sky Highway development south of Whistler. *Photo courtesy Ministry of Transportation and Infrastructure*

# Towards an Environmental Mitigation and Offsetting Policy for Provincial Crown Land in British Columbia

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## How to use this paper:

The British Columbia Ministry of Environment is the lead agency for developing environmental policies that safeguard [environmental resources](#). The new Ministry of Natural Resource Operations leads the sustainable use and allocation of [natural resources](#). A team of people from provincial natural resource management agencies has developed this paper, with the purpose of stimulating discussion about and informing development of a new Environmental Mitigation and Offsetting Policy for British Columbia. This paper is designed to help you:

1. Develop shared understanding of what environmental mitigation and offsetting means;
2. Learn about the ways in which environmental mitigation and offsetting are currently approached in British Columbia, elsewhere in Canada, as well as internationally;
3. Explore reasons for developing and some of the potential benefits of having an Environmental Mitigation and Offsetting Policy in B.C.;
4. Consider the early thinking about what the framework for an Environmental Mitigation and Offsetting Policy in B.C. could look like; and
5. Find out how to inform the development of an Environmental Mitigation and Offsetting Policy for B.C. with your ideas, and suggestions.

This document contains four parts:

**Part 1: Introduction to Environmental Mitigation and Offsetting** explains why the B.C. Ministry of Environment and the B.C. Ministry of Natural Resource Operations are developing a policy, presents our understanding of the terms [environmental resources](#), environmental [mitigation](#) and [offsetting](#); and describes some examples of how environmental mitigation and offsetting are administered in other jurisdictions;

**Part 2: Exploring the Framework for an Environmental Mitigation and Offsetting Policy** explores the draft vision, principles, scope and goals proposed to underpin an Environmental Mitigation and Offsetting Policy.

**Part 3: Policy Development Process** explains how this policy is being developed and solicits information from you about your experiences with environmental mitigation and offsetting.

**Part 4: Getting Involved and Resources** explains how to learn more about environmental mitigation and offsetting and how to submit your responses to inform the policy's development in a comment form.

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## PART 1: Introduction

### 1.1. Why develop an environmental mitigation and offsetting policy?

Development projects and activities on provincial Crown land meet a variety of economic, social and environmental objectives. However, these development projects and activities can adversely affect [environmental resources](#) unless attempts are made to avoid, mitigate and offset damage. Five issues provided impetus for the B.C. Ministry of Environment to begin developing this policy:

**Issue 1: Concerns about environmental resources.** The level of development in B.C. has consequences on environmental resources such as fish and [wildlife](#) and their habitats, [ecosystems](#) and water quality. Certain species and ecosystems are designated as at risk.

[Taking Nature's Pulse](#), an assessment of the state of British Columbia's [biodiversity](#), states that: "British Columbia's biodiversity is globally significant because of its variety and integrity but without immediate action, it is vulnerable to rapid deterioration, especially in light of climate change... Expanding human settlement and development are the most obvious but not the only threats to biodiversity in B.C. today" (Austin et al. 2008).

**Issue 2: Variation in how environmental impacts are addressed.** Advice provided and actions taken to mitigate and offset environmental damage vary across the province. Ad hoc arrangements for mitigation and offsetting have already taken place. These varied requirements, requests and arrangements for environmental [mitigation](#) and [offsetting](#) have created confusion about what the BC Government expects, and inconsistencies in negotiated agreements on environmental mitigation and offsetting.

**Issue 3: Lack of Policy.** Other than the Environmental Assessment Office legislation for major projects, little or no written guidance exists to outline government's expectations of proponents for environmental mitigation and offsetting.

**Issue 4: Lack of Awareness of Financial Tools.** If proponents cannot avoid or mitigate all damages on-site, staff in the ministries of Environment and Natural Resource Operations lack

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awareness of appropriate financial and other tools to enable environmental offsetting. Many employees are uncertain about what financial procedures can already be used to support environmental offsetting and what their options and authorities for managing financial offsets are.

**Issue 5: Concerns about Costs, Capacity and Efficiency.** The current system of referring all development project applications to government environmental staff just prior to [authorization](#) is considered inefficient and ineffective by government and proponents alike.

The Environmental Mitigation and Offsetting Policy will help to address these issues by providing guidance, procedures and tools that encourage a clear, consistent, efficient and effective approach to environmental mitigation and offsetting.

The Environmental Mitigation and Offsetting Policy will inform Statutory Decision-makers (SDMs) and enable proponents to mitigate environmental damage and to offset residual and unavoidable impacts. The statutory authority for the policy stems from the *Ministry of Environment Act*, which authorizes the minister to make policies to protect the environment, and other natural resource management statutes that provide discretion for SDMs to consider information and policy when making authorizations. Regulatory changes are not contemplated as part of this policy's development, unless they are required to support financial management related to environmental offsetting or were already in progress when this policy's development was initiated (e.g. modernizing the [Water Act](#) and the [Environmental Management Act](#)).

The BC Ministry of Environment may consider regulatory change in future. In situations where legal constraints to protect environmental resources on provincial Crown land apply to only one industrial sector, there may be interest in encouraging respect for those same legal constraints by other sectors. Examples include legal objectives in Land Use Plans and Special Management Zones defined in the *Forest and Range Practices Act*, *Land Act*, *Wildlife Act* and *Parks Act*. There may also be support for less discretion in applying the policy in situations where there will be impacts on environmental resources of importance to First Nations as identified through treaties, legal agreements and court cases, or where there exist known occurrences and/or

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mapped ranges of at risk species or ecological communities that are listed in the federal *Species at Risk Act* or in BC provincial statutes such as the *Forest and Range Practices Act*.

## 1.2. What do the terms “environmental mitigation” and “environmental offsetting” mean?

In this paper, environmental resources, environmental mitigation, and environmental offsetting are key terms and are therefore defined below. Other terms may be found in the [Glossary](#).

**Environmental Resources:** In this paper, environmental resources refers to specific components of the natural environment as well as the interacting natural ecological systems and processes; especially those with significant ecological, economic, social or scientific value, i.e. [Valued Environmental Components](#). Examples of environmental resources include water quality, air quality, native plants, wildlife, habitats, [ecosystems](#) and ecological functions. Of key importance are species and ecosystems of priority conservation concern as defined by the [B.C. Conservation Framework](#), and those identified as important to First Nations through treaties, negotiated agreements, and court rulings.

**Environmental Mitigation:** The term, mitigation, means to reduce. In an environmental assessment context, environmental mitigation refers to any actions taken to avoid, minimize, rectify, reduce, eliminate, compensate or offset potential adverse environmental effects during the planning, design, construction, operation, and decommissioning phases of development

projects, activities, works and undertakings. It also includes [remediation](#) or [restoration](#) of habitats disturbed, damaged, or

destroyed by the development or activity. The B.C. Ministry of Environment proposes to use the environmental mitigation hierarchy, a tiered or scaled approach described by the [U.S. Fish and Wildlife Service Mitigation Policy](#), IUCN Mitigation Framework ([World Conservation Union](#),

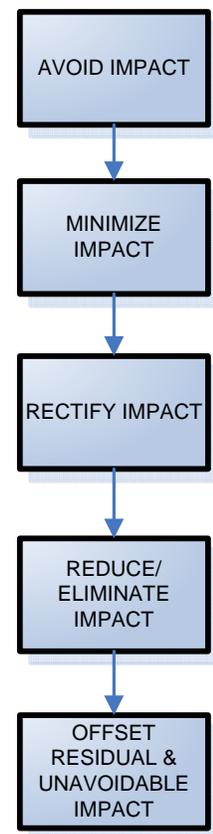


Figure 1: Mitigation Hierarchy

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[Biodiversity Offsets: Views, Experience and the Business Case](#)), and the [Business and Biodiversity Offsets Program](#) (see Figure 1):

1. Avoid the impact (do not undertake certain action);
2. Minimize the impact (limit the magnitude of the action);
3. Rectify the impact (repair, rehabilitate, restore);
4. Reduce/eliminate the impact (monitor and take corrective measures); and
5. Compensate/offset for the impact (replace or provide substitutes).

In development projects, the concept of mitigation also involves a temporal aspect. Temporal loss is the time lag between the loss of environmental resource functions caused by the permitted impact and the replacement or restoration of those functions by the offsets or mitigation measures. In the literature and in practice, compensating for a temporal loss is a consideration in the determination of the overall mitigation and offset requirements.

**Environmental Offsetting:** Offsetting involves replacing the environmental resources and/or ecological functions impacted by a project or activity, or taking action that provides some form of substitute environmental resources for the affected environmental resource. It may include creating, restoring, enhancing or preserving habitats or ecosystems, or recovering species or enhancing populations, outside of the development area, and is usually meant to replace an area equal to or greater in size and quality than that which was lost or impacted. It can also include ongoing management, e.g. removal of alien species. Financial offsetting can be considered where other forms of offsetting are not technologically feasible or cost-effective.

The basic types of environmental offsets featured in the literature include:

- 1) In-kind: Replacement or substitution of resources that are of the same type and kind as those being impacted;
- 2) Out-of-kind: Replacement or substitute resources that, while related, are of equal or greater overall value; and

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3) In-lieu-fee: Payment of funds to a natural resource management agency, foundation, or other appropriate organization for performance of offsetting that addresses environmental impacts.

Before contemplating environmental offsets, the literature and international guidance suggest that one should have first sought to avoid and minimize harm to environmental resources to the greatest extent practicable, i.e. if further mitigation is not cost effective or technically feasible, as is the case with certain contaminated sites.



**Figure 2: The BC Ministry of Transportation and Infrastructure addressed impacts to Mountain Goats (*Oreamnos americanus*) in their Highway 97 project north of Summerland. Photo courtesy of Ministry of Transportation and Infrastructure**

### 1.3. Are there examples of environmental mitigation and offsetting policies in B.C.?

Environmental mitigation and offsetting actions are already taking place here in British Columbia. Development projects and activities occur at a range of scales and intensities, from small projects that threaten individual trees with Bald Eagle (*Haliaeetus leucocephalus*) nests, to large scale mining proposals that could affect significant populations of fish and wildlife. As part of a preliminary investigation for this discussion paper, the team of people working on the policy reviewed eleven case study examples of environmental mitigation and offsetting

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activities that have occurred in B.C. For example, at a highway modification project in the Okanagan valley, the blasting necessary for road widening removed the only two known salt licks for a herd of Mountain Goats (*Oreamnos americanus*). The mitigation recommendations included temporary exclusion fencing to keep goats off construction area, re-scheduling of high-risk activities, and establishing artificial mineral licks. A Mitigation Matrix was developed as part of the 20 year life cycle plan for the Kemess Mine, a copper and gold mining operation in the Thudade Lake watershed. In another example, authorized under a BC Environmental Assessment Office certificate, an open pit mine in the Skeena would destroy sub-alpine Arctic grayling habitat. Translocation of the fish to a stream within a nearby placer staking area was required as part of the environmental mitigation and offsetting commitments.

In addition, several development proponents were contacted about their environmental mitigation and offsetting work with respect to these activities. Some of these case study examples include fisheries compensation programs with respect to mining and hydro-electric power (Northgate Minerals Corporation, BC Hydro Fish and Wildlife Compensation Program), grasslands restoration (TELUS Corporation), and offsetting for Mule Deer (*Odocoileus hemionus*) habitat loss (Tree Group Development Corporation and West Bank First Nation).

We are interested to learn more about what other development proponents are doing with respect to environmental mitigation and offsetting work. Please send in any descriptions and photographs of environmental mitigation and offsetting activities that you would like to share to [mitigate@gov.bc.ca](mailto:mitigate@gov.bc.ca).

## **1.4. What are some examples of environmental mitigation and offsetting policies in other jurisdictions?**

Environmental mitigation and offsetting policies exist in many jurisdictions throughout Canada, the U.S., and the rest of the world. The B.C. Environmental Mitigation and Offsetting Policy development team selected several policies from federal, provincial or state jurisdictions in Canada and the U.S. for more detailed review because, they had been in use for a long time,

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existed in a similar or overlapping statutory environment, or because some aspect of the policy was seen as being particularly well done or applicable to British Columbia. We contacted selected jurisdictions for advice and feedback on the policy development process, mitigation and compensation guidelines, and to discuss their experiences implementing the policies and achieving their policy objectives. Many of the other jurisdictions found that having a policy on environmental mitigation and offsetting has raised expectations and awareness about environmental mitigation, and led to better protection of the environment.

The specific policies that were included in this review were:

[The Oregon Fish and Wildlife Habitat Mitigation Policy;](#)

[U.S. Fish and Wildlife Service Mitigation Policy;](#)

[Bureau of Land Management Offsite Compensatory Mitigation for Oil, Gas, Geothermal and Energy Rights-of-Way Authorizations;](#)

[The Department of Fisheries and Oceans Policy for the Management of Fish Habitat;](#)

[The Canadian Federal Policy on Wetland Conservation;](#) and

the [Nova Scotia Wetland Conservation Policy \(in draft\).](#)

Most of the policies reviewed do not use replacement of total habitat area as the primary goal of offsetting activities; rather, the goal is replacement of lost habitat functions and values. [The Mitigation Hierarchy](#) was a common feature of all the policies, which includes the sequence of mitigation alternatives: Avoidance of impacts, Minimization of unavoidable impacts, and Offsetting (or “Compensation”) for unavoidable impacts. In many cases, the order of preference for offset locations was also specified (e.g. *Policy for the Management of Fish Habitat* hierarchy from most to least preferred is “like-for-like” habitat in the same ecological unit, unlike habitat in the same ecological unit, or unlike habitat in different ecological units). The [guide for Wetland Mitigation in Washington State](#) describes a detailed process for selecting appropriate

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offset sites (described as “mitigation sites”). The [Business and Biodiversity Offsets Program](#) offers examples of companies, governments and conservation experts coming together to explore biodiversity offsets.

**The Business and Biodiversity Offsets Program (BBOP)** is a partnership between companies, governments and conservation experts to explore biodiversity offsets. They are:

- *“Demonstrating conservation and livelihood outcomes in a portfolio of biodiversity offset pilot projects;*
- *Developing, testing, and disseminating best practice on biodiversity offsets; and*
- *Contributing to policy and corporate developments on biodiversity offsets so they meet conservation and business objectives.” – [BBOP Website](#)*

In order to deal with the demand for appropriate offset sites created by these policies, many jurisdictions have implemented, or are investigating some form of “[mitigation banking](#)”; a way of trading credit for conservation or restoration activities when offsetting is not possible or useful on the same site as the disturbance.

*“The creation of a market for biodiversity offsets –as in the US– can turn a potential environmental liability into a financial asset that can be sold.” [World Conservation Union, Biodiversity Offsets: Views, Experience and the Business Case.](#)*

The United States and Australia are the world leaders in mitigation banking and there is growing use of the concept in the European Union. The guidance of jurisdictions with experience in mitigation banking is informing the options being considered for the *Environmental Mitigation and Offsetting Policy*.

A mitigation bank is a site or suite of sites where resources are restored, established, enhanced and/or preserved for the purpose of providing compensatory mitigation for impacts. Mitigation banks create a market-based instrument by turning offsets into assets (credits) that can be

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purchased and traded by developers to compensate for unavoidable environmental impacts. The obligation to provide compensatory mitigation is then transferred from the developer to the mitigation bank sponsor. In the US, mitigation banking is used extensively for wetland, stream and species conservation, and Australia recently introduced “BioBanking”, a habitat banking system designed to offset environmental impacts of urban development. Mitigation banking programs are also under development in other jurisdictions, including in Europe and South Africa.



**Figure 3: Special care needs to be taken to avoid and mitigate environmental impacts on BC's protected lands. TELUS took responsibility for this when installing fibre optic cable in Lac du Bois Provincial Park.**  
*Photo courtesy BC Parks*

### 1.5. What benefits might environmental mitigation and offsetting create?

Environmental mitigation and offsetting are viewed as more sustainable development-friendly alternatives than a regulatory and punitive approach because development can still occur within certain constraints, whereas strict environmental laws might prohibit development. Land previously unused or impractical for development tends to acquire greater monetary value under a mitigation system.

Requiring environmental mitigation and offsetting usually spawns a "mitigation industry". By requiring those who adversely affect environmental resources to devise strategies for avoiding,

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reducing or offsetting impacts, demand rises for qualified professionals. Environmental businesses typically benefit from such a system. Also, if development proponents are required to purchase offsets, this creates a demand for mitigation credits. Environmental mitigation has potential to save and restore the most valuable environmental resources at the least cost, as long as any offsetting

regulations assure that credits adequately reflect ecological values.

Establishing environmental mitigation and offsetting systems places the

*“Most companies are now taking an approach to include mitigation and offsetting. From an environmental stewardship position it is the “right thing to do”. Also, from a hard-line cost perspective it reduces costs... you save money in the end if you do not have to deal with reclamation/remediation costs and/or if you can plan ahead.”* Environmental Advisor, Anonymous Development Proponent

environmental costs of development mostly on the proponents of the development projects and activities that are adversely affecting the environment. Without environmental mitigation, government ends up with the financial costs of alleviating the environmental damage caused by development, including threats to human health, as well as the permanent or temporary loss of environmental resources, some of which are irreplaceable. Government, in turn, passes costs on to taxpayers not directly responsible for those environmental impacts, as well as to future generations. One of the best-known examples in B.C. is the Britannia Mines north of Whistler. After that copper mine closed in 1974, the company did not clean up the site or any chemical wastes that it produced, since provincial and federal laws at that time did not require them to do so. Major problems arose years after the mine closure. The acid mine drainage will continue for centuries; hence the water treatment plant built by the BC Ministry of Environment in 2005 will be needed for hundreds of years. Although the former mine owners paid \$30 million after a court settlement in 2001, the BC Government inherited the lion’s share, paying approximately \$100 million in initial capital and operation costs for the first 20 years of the reclamation program.

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According to some development proponents in B.C. whose work was studied as case studies for this policy, several benefits arise from environmental mitigation and offsetting. The BC Ministry of Transportation and Infrastructure and Northgate Minerals Corporation noted the “social license” or social benefit from including environmental mitigation or offsetting plans within their development projects. A representative from the BC Hydro funded [Fish and Wildlife Compensation Program](#) (FWCP) stated that one of the benefits to environmental mitigation and offsetting is developing positive relationships and partnerships with regulatory bodies, local government, First Nations and the public. He also encourages development proponents to think about mitigation at the design stage so as to avoid unnecessary compensation for a project. As well, the FWCP representative finds that a mix of mitigation and offsetting strategies essentially increases “the tools in the toolbox” or opportunities to minimize environmental damage. BC Hydro spends around \$8 million annually for the Fish and Wildlife Compensation Program and has spent \$100 million on fish and wildlife compensation since 1988.

## **PART 2: Proposals for Environmental Mitigation and Offsetting Policy**

We would like to share with you the draft Policy Framework, including scope, vision, principles and goals, that we developed, based on research about environmental mitigation and offsetting here in British Columbia and elsewhere. Your feedback will help us develop the policy, procedures and tools needed to

In 1995 the **Fish & Wildlife Compensation Program (FWCP)** was established to offset impacts resulting from construction of BC Hydro dams in the Columbia Basin. Since then the program has expanded to other areas of the province. The FWCP works on behalf of its Program Partners (BC Hydro, the B.C. Ministry of Environment and Fisheries and Oceans Canada), to conserve and enhance fish and wildlife. Nearly one-third of FWCP projects focus on species-at-risk. FWCP, BC MoE, and BC Hydro staff carry out projects, along with First Nations, industry, local community and environmental groups.

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support a consistent approach for environmental mitigation and offsetting in B.C.

## 2.1. Proposed Policy Scope

### 2.1.1. Who will the policy affect directly?

The Environmental Mitigation and Offsetting Policy is a BC Ministry of Environment policy that would be delivered by staff in the new Ministry of Natural Resource Operations. The policy would affect [Statutory Decision Makers](#) in the Ministry of Environment or Ministry of Natural Resource Operations who have been delegated to administer environmental statutes, such as the *Water Act*, *Environmental Management Act*, *Wildlife Act*, and *Parks Act*.

### 2.1.2. Who will the policy affect indirectly?

The Environmental Mitigation and Offsetting Policy could affect persons or agencies who are required or who choose to seek advice from the Ministry of Environment and/or Ministry of Natural Resource Operations about environmental mitigation and offsetting for development projects or activities. Examples include: [Statutory Decision Makers](#) in the Environmental Assessment Office (EAO) and other government agencies (OGAs)<sup>1</sup> who make [authorization](#) decisions about development projects and/or activities, as well as development proponents and qualified professionals (QPs). Conservation partners and First Nations may also be interested in, or affected by the application of this policy.

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<sup>1</sup> Updates will occur as needed to deal with reorganization of provincial ministries.

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**Figure 4: Over 1000 amphibians were translocated to nearby protected or restored wetland habitat as part of the Sea to Sky Highway development south of Whistler.**  
*Photo courtesy Ministry of Transportation and Infrastructure*

### 2.1.3. Where will this policy apply and not apply?

The Environmental Mitigation and Offsetting Policy would apply to development projects and activities on all provincial [Crown land](#) in B.C., as defined by the [Land Act](#). This includes:

- Parks and protected areas;
- Terrestrial and freshwater aquatic environments;
- Marine foreshore and seabed under provincial jurisdiction; and
- Other Crown resources, under [Land Act](#) definition: ““Crown land”, subject to section 1.1, means land, whether or not it is covered by water, or an interest in land, vested in the government”.

The policy would NOT apply to:

- Private land upon which provincial facilities exist, e.g. universities, schools, hospitals, etc., or private land on Agricultural Land Reserves, or federal lands, or existing First Nations reserves.
- Exclusions from Crown land definition, [Land Act](#): “Crown land does not include land referred to in section 6 (1) of the *Public Agency Accommodation Act* unless that

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provision of this Act is expressly made applicable to that land under section 6 (2) or (3) of the *Public Agency Accommodation Act*.”

Where we are CONSIDERING application:

Development projects and activities may have the potential to damage provincially-owned environmental resources that move across jurisdictional boundaries, such as fish and wildlife species, air, and water. Environmental mitigation and offsetting may need to be considered in these instances to address concerns of neighbouring jurisdictions, or damage to environmental resources on provincial Crown land resulting from development projects or activities on adjacent or upstream private lands.



**Figure 5: Mitigation and offsetting are especially crucial to protect habitat for species at risk such as the Spotted Owl (*Strix occidentalis*).** Photo courtesy Jared Hobbs.

## 2.2. Draft Policy Vision

*Through application of this policy and procedures, environmental impacts associated with developments and activities on provincial Crown land will be avoided, minimized, and/or offset to help maintain healthy and diverse native species and ecosystems across British Columbia.*

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## 2.3. Draft Policy Principles

### **Principle One – Seek no net loss of environmental resources on B.C. provincial Crown land:**

No net loss of environmental resources will be sought on a project-by-project basis through avoidance, mitigation, and offsetting of impacts in order to reduce or prevent cumulative effects. Environmental offsets should be designed and implemented to achieve measurable conservation outcomes that can reasonably be expected to result in no net loss, and preferably a net gain, in the specific environmental resources affected by the development or activity. An environmental offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place.

**Principle Two - Serve long-term public interest of British Columbians:** The policy should be guided by consideration of the interests of British Columbians in sustainability of environmental resources not just for today but for future generations. Positive environmental outcomes should be sought through mitigation that last at least as long as a development project's impacts, and preferably in perpetuity. In some cases, potential environmental impacts may be deemed so great that environmental mitigation and offsetting cannot adequately address the loss, and a project may be considered unacceptable by society.

**Principle Three - Follow international conventions for mitigation and offsetting by applying a scaled/tiered/hierarchical approach:** In reviewing the IUCN Mitigation Framework, the US Fish and Wildlife Service Mitigation Policy, the Business and Biodiversity Offsets Program (BBOP), and other depictions of the Mitigation Hierarchy, the policy development team proposes the following approach to mitigation:

1. Avoid the impact (do not undertake certain action);
2. Minimize the impact (limit the magnitude of the action);
3. Rectify the impact (repair, rehabilitate, restore);
4. Reduce/eliminate the impact (monitor and take corrective measures); and
5. Compensate/offset for the impact (replace or provide substitutes).

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## **Principle Four - Align the Environmental Mitigation and Offsetting Policy with similar**

**Canadian Federal policies:** The BC Environmental Mitigation and Offsetting Policy will align as much as possible with existing similar policies such as the guidelines in the *Policy for the Management of Fish Habitat* and the *Practitioner's Guide to Habitat Compensation* from the Canadian Department of Fisheries and Oceans, Canadian Environmental Assessment policies, and the *Federal Policy on Wetlands Conservation*. In principle, harmonization between federal and provincial policies on the same topic is desirable as it simplifies and clarifies consistent expectations for proponents. An agreement similar to the [Canada-British Columbia Agreement on Environmental Assessment Cooperation \(2004\)](#) may be crafted or modified to clarify this alignment.

## **Principle Five – Integrate and harmonize B.C. provincial government natural resource**

**management approach to effectively address environmental impacts:** The B.C. MoE and MoNRO Environmental Mitigation and Offsetting Policy supports an integrated and harmonized approach to effectively address environmental impacts resulting from developments and activities on provincial [Crown land](#). By providing consistent direction on where, when and how to apply environmental mitigation and offsetting procedures, natural resource management decisions can be better informed. This Policy will align as much as possible with existing B.C. provincial policies such as the [EAO Assessment Process](#), [BC Parks Impact Assessment Process](#), and the move towards an [integrated area-based natural resource management](#) .

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**Figure 6: Proponents will be encouraged to avoid and reduce impacts to priority environmental resources such as Grizzly Bears (*Ursus arctos*), and to offset residual or unavoidable impacts. Photo courtesy Jared**

**Principle Six - Take a strategic risk-based approach, using decisions informed by science and traditional knowledge to select appropriate mitigation and offsetting activities:** The selection of mitigation measures and, if necessary, environmental offsetting action(s) will be guided by and commensurate with the significance or priority of the affected environmental resource(s) to the Province, and the estimated severity and magnitude of the environmental impact/effect. Proponents should consider the impacts of their project in relation to planned or anticipated future land use, as well as Aboriginal Interests of B.C. First Nations.

**Principle Seven – Take a results based approach:** In keeping with the trend in British Columbia for results-based regulatory and policy approaches, MoE and/or MoNRO employees will develop environmental standards, and provide on-line guidance, spatial data, and best management practices related to environmental resources, and mitigation/offsetting opportunities. They will also conduct compliance audits, and monitor and report environmental trends and effectiveness outcomes. There will be an increased use of criteria based, proponent driven [authorization](#)s. MoE and/or MoNRO employees will not undertake individual environmental assessments or prescribe mitigation and offsetting measures for

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individual proponents for site specific projects. The responsibility for achieving results lies with proponents, i.e., how to meet environmental standards.

**Principle Eight – Rely on professionals:** Where criteria-based [authorization](#)s cannot be used, government will rely on appropriate use of qualified professionals by proponents. Skilled and registered professionals are the best qualified and positioned people to provide advice on how to meet environmental standards set by Government. Proponents, with the assistance of qualified professionals, are responsible for assessing the potential impacts of their proposed development projects or activities, identifying and implementing appropriate mitigation measures, monitoring activities, and, if required, proposing measures to offset unavoidable or residual impacts. Government can support delivery of mitigation and offsetting through qualified professionals through the provision of information (e.g. spatial and other information about environmental resources, environmental standards, guidelines, best practices, etc.).

**Principle Nine - Apply full cost accounting fairly:** The cost of the development needs to consider the impact to the environment, and to fully understand the costs, one must incorporate the mitigation/offset costs. Application of mitigation and offsetting helps to promote the efficient and equitable use of environmental resources, since the full value of the resources affected by a project are accounted for, either through expenditures to avoid and/or mitigate impacts, offsetting actions or payments, or all of these. Existing fees or rents paid by proponents for the use of [Crown land](#) and/or [natural resources](#) , where these have explicitly factored in environmental costs, should be considered when assessing and negotiating environmental offsetting.

**Principle Ten - Foster environmental mitigation, offsetting and additional conservation actions:** Providing a variety of incentives, both non-monetary and financial mechanisms, encourages proponents to undertake project planning, design, construction, and operations that will lessen environmental impacts. By formally and informally recognizing proponents and

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sectors that lead in avoiding, reducing and offsetting environmental damage, government can foster environmental mitigation and offsetting, as well as additional conservation actions.

**Principle Eleven: Link environmental mitigation and offsets with impacted environmental resources.** Where feasible, environmental mitigation and offsetting actions should address the impacts that are proposed to affect or have affected specific environmental resources in the area affected by a development project or activity. Mitigation measures and offsets should be carried out close to the site where environmental resources are being impacted, or protect the same type of environmental resources. For example, damage to one species' habitat would necessitate [restoration](#) of that species' habitat in the vicinity of the footprint of the development or activity, or when that is not feasible, within that ecological community, watershed and/or other relevant area-based designation. For species of importance to First Nations, damage to a species' habitat in one First Nations' traditional territory would need to be addressed within that First Nations' traditional territory.



Figure 7: BC Hydro and Ministry of Environment address impacts from hydro-electric developments through their Fish and Wildlife Compensation Program in the Peace Williston (pictured here), Bridge-Coastal and Columbia Basin. *Photo courtesy BC Hydro*

## 2.4. Draft Policy Goals

We would like to share with you the draft goals that we developed based on research about environmental mitigation and offsetting here in British Columbia and elsewhere. The policy development team is working to identify objectives below these goals. Your feedback is welcome to help with policy development.

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- Goal 1:** Maintain or exceed environmental standards on provincial Crown land in British Columbia.
- Goal 2:** Increase certainty for proponents about environmental mitigation and offsetting requirements.
- Goal 3:** Maximize consistency of advice on environmental mitigation and offsetting provided by MoE staff to decision-makers and proponents.
- Goal 4:** Enable fair treatment of proponents related to sector responsibilities and accountabilities for environmental mitigation and offsetting.
- Goal 5:** Increase consideration by decision-makers authorizing developments and activities on provincial Crown land of significant adverse environmental effects along with social, economic, health or heritage effects.
- Goal 6:** Increase transparency of process for environmental mitigation and offsetting.
- Goal 7:** Increase understanding of opportunities and/or requirements for environmental mitigation and offsetting for proponents and the public.
- Goal 8:** Enable effective environmental mitigation, offsetting and foster additional conservation actions by proponents.
- Goal 9:** Increase MoE staff efficiency in environmental mitigation and offsetting.
- Goal 10:** Minimize costs to proponents in the environmental mitigation and offsetting process.
- Goal 11:** Foster a Qualified Professional workforce that is knowledgeable and skilled in mitigation and offsetting of environmental resources.

## 2.5. When will this policy be triggered?

The Environmental Mitigation and Offsetting Policy and procedures would apply to decisions made under legislation administered by the B.C. Ministry of Environment (MoE) and the B.C. Ministry of Natural Resource Operations (MoNRO) that affect environmental resources. The policy would also apply to MoE and/or MoNRO employees when they are asked to provide

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advice to decision makers in other government agencies that make land and water development [authorization](#) decisions.

This policy and procedures could be triggered when:

- a) the B.C. Ministry of Environment and/or the Ministry of Natural Resource Operations receives requests for advice about proposed developments and how they affect environmental resources;
- b) a development proposal is presented to or received by the B.C. Government (EAO, Front Counter BC, individual natural resource management agency, etc.); and/or
- c) Statutory Decision Makers are required to or choose to inform decisions authorizing the sale, use of, or commencement of developments or activities on, provincial [Crown land](#) with environmental mitigation and offsetting principles and options.

## **2.6. How will this policy help enable environmental mitigation and offsetting?**

This policy is intended to help MoE and/or MNRO employees provide appropriate guidance on when and how to apply principles of environmental mitigation and offsetting, based on specific criteria and risk assessments. Several risk assessment models are under consideration. Criteria are being developed to aid in assigning an application for a proposed development project or activity to a schedule. The schedule determines what approach to take in the provision of guidance on environmental mitigation and offsetting. Determining what goes on Schedules One and Three, which define each end of the spectrum, is proving easier than defining what goes in the middle on Schedule Two.

*Schedule One: Development proposals with low to moderate potential risk to environmental resources or having adequate legal constraints under existing statutes.*

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For developments and activities determined be low to moderate risk or having adequate legal constraints under existing statutes, the Ministry of Environment (MoE) and/or Ministry of Natural Resource Operations (MoNRO) would make available: 1) information on any existing regulatory requirements related to environmental constraints; 2) any pertinent generic advice and/or tools that could be used by proponents and their qualified professionals to address any environmental impacts; and 3) spatial and other information on environmental resources, particularly any defined Valued Environmental Components. This guidance would help proponents take actions to avoid and reduce environmental impacts where possible, and enable proponents to offset residual or unavoidable environmental impacts.

*Schedule 3: High Risk proposals that meet the criteria set out in the BC Environmental Assessment Act for major projects or review by Federal Entities.*

Many high risk proposals are already reviewed under Environmental Assessment Office (EAO) process, the Canadian Environmental Assessment Agency, the National Energy Board, or other independent agencies. **This policy would not change those requirements.**

According to the EAO website, [Major projects](#) may include the following: Industrial projects: chemical manufacturing, primary metal and forest product industries; Energy projects: power plants, electric transmission lines, natural gas processing or storage plants and transmission pipelines; Mine projects: coal and mineral mines, sand and gravel pits, placer mineral mines, construction stone and industrial mineral quarries and off-shore mines; Water management projects: water diversions, dams, dykes, groundwater extraction; Waste management projects: special waste facilities, local government solid and liquid waste management facilities; Food processing projects: meat and meat products manufacturing and fish processing; Transportation projects: large public highway and railway, large ferry terminal and marine ports; and Tourist destination resorts: large golf marine, and ski hill destination resorts.

Projects become reviewable by the BC Environmental Assessment Office (EAO) in three ways:

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1. The Reviewable Projects Regulation (RPR) provides for a broad range of major projects to be automatically reviewable if they equal or exceed relevant measurable thresholds, such as area, production volume, etc., which are set out in the regulation. Most major projects become reviewable based on this regulation. Projects triggering these thresholds are generally those with a higher potential for environmental impacts.
2. Ministerial Designation by the Minister of Environment who has the authority to designate projects to be reviewed, which are not automatically reviewable under the RPR. The Minister will make such a designation if:
  - the Minister believes the project may have a significant adverse environmental, economic, social, heritage or health effect, and that the designation is in the public interest; and
  - if the project has not been substantially started at the time of designation.
3. Proponent "Opt In" is available in cases where projects are not automatically reviewable, but a proponent sees advantages in a formal EA review, such as a "one window" contact point with government or the ability to demonstrate the sustainability of their project.

*Schedule 2: Development proposals posing moderate to high potential risk to environmental resources and that fall below the threshold for Major Projects*

Another range of developments and activities would be designated as posing higher risk, either individually or, in some instances, collectively. In these cases, proponents would be encouraged to provide environmental impact assessments as well as mitigation plans when they submit their applications. Statutory Decision Makers could consider these environmental impact assessments, and proposed mitigation plans, along with other factors, in making authorization decisions. They could also consider any environmental offsetting proposals put forward by proponents for projects that have unavoidable or residual environmental impacts.

## **2.7. How will we know if environmental mitigation and offsetting actions are effective?**

Periodic monitoring and auditing for quality assurance purposes could be conducted for high, moderate and low -risk projects or activities. Monitoring efforts would likely focus on where

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development projects and activities pose the greatest risk to priority environmental resources. Efficiencies gained from diverting resources from referrals should be deployed to monitoring the effectiveness of environmental mitigation and offsetting efforts.

Tracking and auditing any financial offsets will also be important to safeguard the public trust. Likewise, tracking conservation actions resulting from environmental mitigation and offsetting will be necessary to protect proponent investments.

Policy options for how monitoring and auditing could be done and by which organizations still needs to be developed.

## **2.8. What is outside the scope of the Policy?**

The Environmental Mitigation and Offsetting Policy will not apply to, nor provide binding direction on, any mitigation or offset obligation imposed by administrative sanction, order, court order or other form of penalty issued in response to non-compliance with a regulatory requirement.

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## PART 3: Policy Development Process

### 3.1. How are we developing an Environmental Mitigation and Offsetting Policy for B.C.?

This policy is in its early development stage (see Figure 8). We have researched various mitigation and offsetting policies around the world, and are now working to design a policy that works best for British Columbia. This is where you come in.

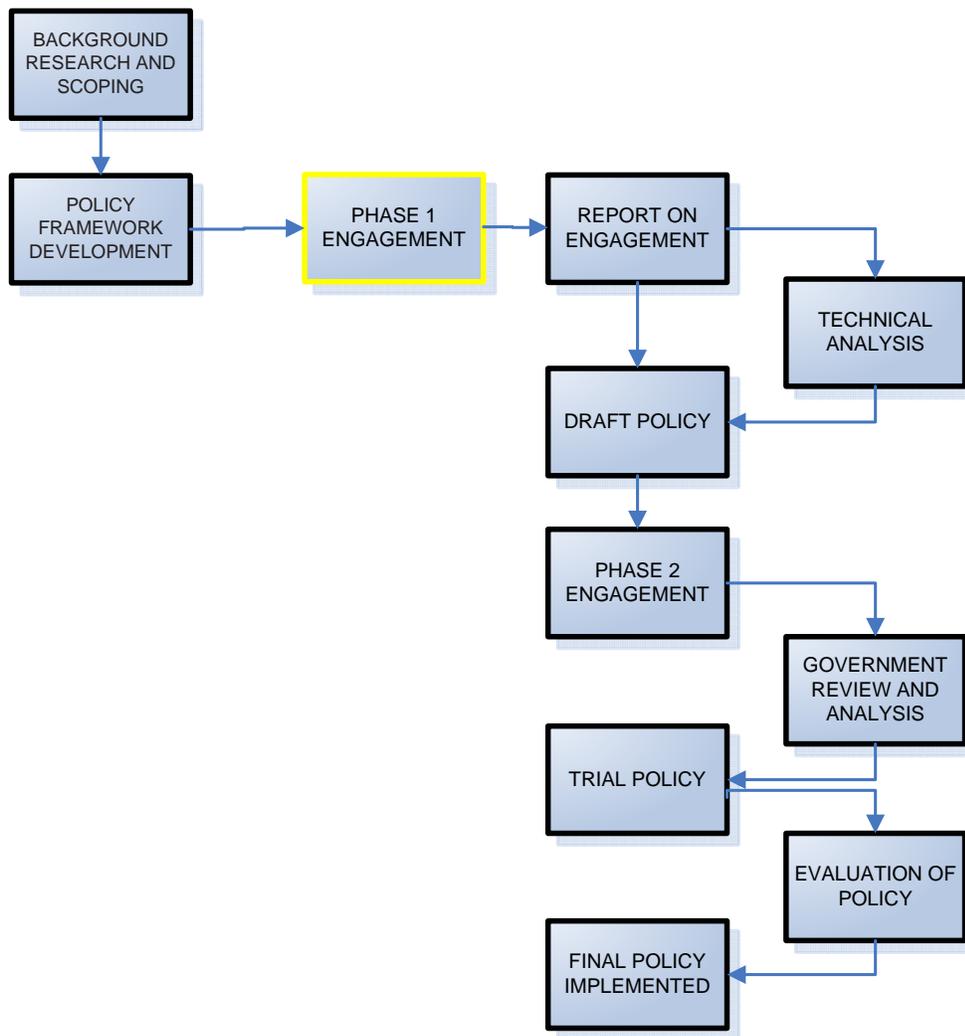


Figure 8: Diagram of Environmental Mitigation and Offsetting Policy Development and Implementation Process

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The current engagement phase is highlighted in yellow. This discussion paper is part of web-based engagement. Meetings and workshops or policy forums are part of face to face engagement.

During the development of this policy, the views of potentially affected parties<sup>2</sup> will be gathered through a variety of ways – interviews, workshops, and responses to this discussion paper. Once we have gathered a broad range of input, we will use it to inform the policy. A report summarizing what we heard will be sent to all formal submitters and workshop participants, as well as posted online.

With help from technical experts, input will be carefully considered and analyzed, and used to inform the development of draft policy options. Further analysis of the draft policy options will help us to understand the social and environmental costs and benefits of the policy. The policy and procedures will be written early in 2011.

Despite best intentions, new policies can have unintended consequences. Therefore, this policy and associated procedures will be applied on a trial basis in 2011/12. After the trial period (one or more years), an evaluation will be conducted and course corrections made to address any unintended consequences. Following those revisions, the final Environmental Mitigation and Offsetting Policy will be fully implemented.

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<sup>2</sup> Groups and individuals who may be affected by a provincial Environmental Mitigation and Offsetting Policy include: provincial natural resource management agencies, First Nations, development proponents (be they provincial or local government agencies, Crown corporations, industries, private businesses), qualified professionals, conservation partners and federal government agencies.

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## 3.2. Implementation Considerations

Implementing new policies can pose challenges. Barriers or obstacles to taking voluntary action to mitigate and offset environmental damage may exist. We are interested in learning about your practical experiences with environmental mitigation and offsetting. What has worked well and what has not worked during the implementation of environmental mitigation and offsetting work that you have been involved in through your organization, company or community? Please share your ideas on how to address any barriers, obstacles or concerns.



**Figure 9: Willard Sparrow, head streamkeeper for the Musqueam Ecosystem Conservation Society, demonstrates a water quality test on the banks of the Musqueam Creek for former Environment Minister Barry Penner** *Photo courtesy of Ministry of Environment*

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## PART 4: Getting Involved and Resources

### 4.1 Getting Involved:

#### a. Response to this Discussion Paper

The team of people working on the Environmental Mitigation and Offsetting Policy welcomes your feedback on this discussion paper by mail, electronic mail, and fax. We ask that all submissions follow the format of the comment form provided. All ideas are welcome, and will be considered, with the understanding that some may not be able to be incorporated into the policy and procedures, given budgetary and other constraints.

#### b. Submission guide

All submissions must include your name, contact information, and date, which will be kept confidential as per BC Government [Privacy Act \[RSBC 1996\] c. 373](#). All submissions should address the questions on the online comment form. Please email: [mitigate@gov.bc.ca](mailto:mitigate@gov.bc.ca) if you have questions about the comment form or wish to provide suggestions or other feedback.

### 4.2 Glossary and Resources:

#### 4.2.1. Glossary of Terms:

In the context of this policy, the following terminology is used as follows:

**Authorization:** The legal granting of permission by a regulatory agency to applicants for the access to and the use of provincial [Crown land](#) and/or [natural resources](#). Examples of authorizations include licenses, permits, tenures, etc.

**Biodiversity:** Biodiversity is the variety of life in all its forms. From the Canadian Biodiversity Strategy (Environment Canada 1995): “the variety of species and ecosystems on Earth and the ecological processes of which they are a part - including ecosystem, species and genetic diversity components.”

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**Crown Land:** “subject to section 1.1 [of Land Act], means land, whether or not it is covered by water, or an interest in land, vested in the government” (Land Act [RSBC 1996] CHAPTER 245).

**Ecological Restoration:** Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (Society for Ecological Restoration 2004).

**Ecosystem:** the dynamic interactions between organisms (*i.e.*, plants, animals and microorganisms) and their physical environment, working together as a functional unit.

**Environmental Mitigation:** The term, mitigation, means to reduce. In an environmental assessment context, environmental mitigation refers to any actions taken to avoid, minimize, rectify, reduce, eliminate, compensate or offset potential adverse environmental effects during the planning, design, construction, operation, and decommissioning phases of development projects, activities, works and undertakings. It also includes [remediation](#) or [restoration](#) of habitats disturbed, damaged, or destroyed by the development or activity. The B.C. Ministry of Environment proposes to use the environmental mitigation hierarchy, a tiered or scaled approach described by the [U.S. Fish and Wildlife Service Mitigation Policy](#), IUCN Mitigation Framework ([World Conservation Union, Biodiversity Offsets: Views, Experience and the Business Case](#)), and the [Business and Biodiversity Offsets Program](#) (see Figure 1):

1. Avoid the impact (do not undertake certain action);
2. Minimize the impact (limit the magnitude of the action);
3. Rectify the impact (repair, rehabilitate, restore);
4. Reduce/eliminate the impact (monitor and take corrective measures); and
5. Compensate/offset for the impact (replace or provide substitutes).

In development projects, the concept of mitigation also involves a temporal aspect. Temporal loss is the time lag between the loss of environmental resource functions caused by the permitted impact and the replacement or restoration of those functions by the offsets or

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mitigation measures). In the literature and in practice, compensating for a temporal loss is a consideration in the determination of the overall mitigation and offset requirements.

**Environmental Offsetting:** Offsetting involves replacing the environmental resources and/or ecological functions impacted by a project or activity, or taking action that provides some form of substitute environmental resources for the affected environmental resource. It may include creating, restoring, enhancing or preserving habitats or ecosystems, or recovering species or enhancing populations, outside of the development area, and is usually meant to replace an area equal to or greater in size and quality than that which was lost or impacted. It can also include ongoing management, e.g. removal of alien species. Financial offsetting can be considered where other forms of offsetting are not technologically feasible or cost-effective.

The basic types of environmental offsets featured in the literature include:

- 1) In-kind: Replacement or substitution of resources that are of the same type and kind as those being impacted;
- 2) Out-of-kind: Replacement or substitute resources that, while related, are of equal or greater overall value; and
- 3) In-lieu-fee: Payment of funds to a natural resource management agency, foundation, or other appropriate organization for performance of offsetting that addresses environmental impacts.

**Environmental Resources:** This refers to specific components of the natural environment as well as the interacting natural ecological systems and processes; especially those with significant ecological, economic, social or scientific value, i.e. [Valued Environmental Components](#). Examples include water quality, air quality, native plants, wildlife, habitats, [ecosystems](#) and ecological functions. Of key importance are species and ecosystems of priority conservation concern as defined by the [B.C. Conservation Framework](#), and those identified as important to First Nations through treaties, negotiated agreements, and court rulings.

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**Goals:** General open-ended statements of long-term end results or broad aims to be achieved over an unspecified period of time.

**Guidelines:** These are suggested methods or techniques for achieving a goal or objectives. Staff normally have discretion on whether or not, and how to, implement guidelines as they are recommended methods or practices.

**Natural Resources:** Natural resources are materials that exist naturally on Earth and were not made by human beings. They include as air, land, water, natural gas, coal, oil, petroleum, minerals, wood, soil, [biodiversity](#), [ecosystems](#), fauna, flora, and genetic material. Renewable natural resources are those that, if not over harvested, can be replaced in a timely manner, e.g. trees, grass and other plants, animal life, water, solar and wind energy. Nonrenewable resources may be irreplaceable once extracted and include soil and other landscape features, precious metals, diamonds, fossil fuels, and natural gas.

**No Net Loss:** Based on the guiding principle in the Department of Fisheries of Oceans: [“2.2.1 The Guiding Principle No Net Loss in the Productive Capacity of Habitats”](#).

**Objectives:** Concise statements of specific measurable results to be achieved over a specified period of time.

**Policy:** A policy normally reflects an operating requirement of an organization and helps to guide staff behaviour and decision-making in a certain subject. It is not a legal requirement. Typically, staff are expected to consistently apply their organization’s policies.

**Principles:** fundamental assumptions or precepts that provide the basis of reasoning or action. They normally reflect ideals that are implemented through more operational goals, objectives and policies and guidelines.

**Procedures:** These are the actions necessary or recommended for achieving a given subject, policy or guideline. Procedures are often listed sequentially in the logical or recommended

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order that they should occur. Roles and responsibilities for implementing procedures are frequently assigned.

**Remediation:** From the *Environmental Management Act* (SBC 2003): “means action to eliminate, limit, correct, counteract, mitigate or remove any contaminant or the adverse effects on the environment or human health of any contaminant.”

**Scope:** A statement of a policy’s scope defines its boundaries. It determines what will be and what will not be included as part of the policy.

**Standards:** These are measureable criteria or expectations that an organization should achieve or implement. Standards may be embedded in objectives, policies and regulations as quantitative targets or requirements. If in regulations they are legal requirements.

**Statutory Decision-makers (SDMs):** individuals who have delegated authority under a statute to [make decisions](#) or [authorization](#) that may result in an environmental impact

**Statutory Decision-making:** the process of administrative and/or quasi-judicial decision-making as stipulated in law. “Administrative decisions” deal with the exercise of a public power that affects the rights and interests of specific parties and typically do not involve SDM discretion. In contrast, “quasi-judicial decisions” more closely resemble the decision-making process of the courts and generally involve detailed findings of fact, higher levels of discretion, higher stakes and greater procedural protections for the parties.

**Valued Environmental Component (VEC):** Elements of the environment associated with the structure, composition and / or functioning of ecological systems.

**Vision:** This is a desired long-term state or outcome providing a unifying direction and context.

**Wildlife:** all native terrestrial and aquatic animal species (vertebrates and invertebrates), and native terrestrial and aquatic plant species. Also includes captive bred and hybrid forms of wildlife. It does not include controlled alien or invasive species.

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## 4.2.2. Policy Resources:

Some resources we recommend on environmental mitigation and offsetting policies include:

Department of Fisheries and Oceans (DFO) 4486. Policy for the Management of Fish Habitat.

<http://www.dfo-mpo.gc.ca/habitat/role/141/1415/14155/fhm-policy/pdf/policy-eng.pdf>

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[RSBC 1996] CHAPTER 245.

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<http://www.gov.ns.ca/nse/wetland/docs/Nova.Scotia.Wetland.Conservation.Policy.pdf>

IM 2008-204. September 30, 2008. Offsite Compensatory Mitigation for Oil, Gas, Geothermal and Energy Rights-of-Way Authorizations. U.S. Department of the Interior, Bureau of Land Management. [http://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/20080/IM\\_2008-204.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/20080/IM_2008-204.html)

Oregon Administrative Rules (OAR) 635-415. Oregon Department of Fish and Wildlife Division 415 Fish and Wildlife Habitat Mitigation Policy. <http://www.dfw.state.or.us/OARs/415.pdf>

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U.S. Fish and Wildlife Service. 1981. 46 Federal Register (FR) 7656. Fish and Wildlife Service Mitigation Policy. Federal Register Vol. 46 No. 15. January 23, 1981, as corrected February 4, 1981. <http://www.fws.gov/policy/501fw2.html>

Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1). Washington State Department of Ecology Publication #06-06-011a. Olympia, WA.  
<http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/guidance/index.html>

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Archibald, Ross. 2010. *Background Research Paper Environmental Stewardship Compensatory Mitigation Policy Project*. B.C. Ministry of Environment. Unpublished report.

Austin, M.A., D.A. Buffett, D.J. Nicolson, G.G.E. Scudder and V. Stevens (eds.). 2008. *Taking Nature's Pulse: The Status of Biodiversity in British Columbia*. Biodiversity BC, Victoria, BC. 268 pp. Available at: [www.biodiversitybc.org](http://www.biodiversitybc.org).

Australia Government Department of Environment and Water Resources. 2007 *Discussion Paper: Use of Environmental Offsets Under the Environment Protection and Biodiversity Conservation Act 1999* <http://www.environment.gov.au/epbc/publications/pubs/draft-environmental-offsets-discussion.pdf>

Brinkman, Dirk, and Richard Hebda. 2009. *Credible Conservation Offsets for Natural Areas in British Columbia - Summary Report 2009*. Land Trust Alliance British Columbia.  
<http://landtrustalliance.bc.ca/docs/LTABC-report09-web2.pdf>

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Environment Canada. 1995. *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity*. Environment Canada, Biodiversity Convention Office, Hull, Quebec.

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Madsen, Becca et al. 2010. *State of Biodiversity Markets: Offset and Compensation Programs Worldwide*. Ecosystem Marketplace.

Penn, Briony. 2010. *Conservation Offsets: Revenue Tool to Conserve Natural Areas, Watersheds and Community Resilience*. Land Trust Alliance British Columbia. <http://landtrustalliance.bc.ca/docs/conservation%20offsets%20intro%20booklet%20small.pdf>

PricewaterhouseCoopers LLP on behalf of Business and Biodiversity Offsets Programme and UNEP Finance Initiative. 2010. [http://bbop.forest-trends.org/documents/PwC\\_BBOP\\_UNEPFI\\_FINAL%20040310.pdf](http://bbop.forest-trends.org/documents/PwC_BBOP_UNEPFI_FINAL%20040310.pdf)

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Tucker, Graham and Alexandra Vakrou. 2009. "Chapter 7: Addressing losses through regulation and pricing" in *The Economics of Ecosystems and Biodiversity (TEEB) Report for National and International Policy Makers*.

<http://www.teebweb.org/LinkClick.aspx?fileticket=DHu461Rko28%3d&tabid=1019&language=en-US>

Vincent Goodstadt, Maria Rosário Partidário, Silvia Wissel. 2010. *The Economics of Ecosystems and Biodiversity (TEEB) Report for Local and Regional Policy Makers*.

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Wruck, Harry. 2006. "THE LONG AND WINDING ROAD TO THE RECOVERY OF ENVIRONMENTAL DAMAGES IN CANADA", *Proceedings of the 18<sup>th</sup> Annual Environmental Lawyers in Government Conference*.