



## Appendices

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*Kootenays. Photo: Mike Knapik*

Cover and other photos: *Judith Cullington*



## Appendix A Legislation and Regulations

### A.1 Provincial Legislation

For a full listing of provincial government legislation, see [http://www.bclaws.ca/EPLibraries/bclaws\\_new/content?xsl=/templates/toc.xsl/group=A/lastsearch=/](http://www.bclaws.ca/EPLibraries/bclaws_new/content?xsl=/templates/toc.xsl/group=A/lastsearch=/)

**B.C. Building Code** <http://www.housing.gov.bc.ca/building/green/>

- ◆ Parts relate to reducing buildings' energy and water use.

**B.C. Carbon Tax Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_08040\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_08040_01)

The revenue-neutral Carbon Tax Act puts a price on greenhouse gas emissions, providing an incentive for sustainable choices that produce fewer emissions. The Province started to phase in the escalating revenue neutral carbon tax in 2008.

**B.C. Clean Energy Act** [http://www.leg.bc.ca/39th2nd/1st\\_read/gov17-1.htm](http://www.leg.bc.ca/39th2nd/1st_read/gov17-1.htm).

- ◆ Objectives with local development implications include: to achieve electricity self-sufficiency, to take demand-side measures and conserve energy, to generate at least 93% of B.C.'s electricity from clean or renewable resources, to encourage communities to reduce greenhouse gas emissions and use energy efficiently, to reduce waste by encouraging the use of waste heat, biogas and biomass, and to encourage economic development and the creation and retention of jobs.

**B.C. Community Charter** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/03026\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/03026_00)

- ◆ Purposes of a municipality include “providing for stewardship of the public assets of its community,” and “fostering the economic, social and environmental well-being of its community” (Part 2, Section 7)
- ◆ Allows councils to make bylaws that regulate, prohibit, and impose requirements in relation to the “protection of the natural environment” notably... (c) Trees, ... (h) dealing with invasive plants; (j) Protection of the natural environment, (l) Buildings and other structures, and ... (m) The removal of soil and the deposit of soil or other material.” (Part 2 [8])

**B.C. Drinking Water Protection Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_01009\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_01009_01)

- ◆ Primary legislation regulating water sources used as drinking water supplies
- ◆ Protects water quality if a drinking water health hazard is imminent

**B.C. Energy Efficiency Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96114\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96114_01)

- ◆ Promotes the efficient use of energy



**B.C. Environmental Assessment Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_02043\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_02043_01)

- ◆ Determines the need for an provisions of an environmental assessment

**B.C. Environmental Management Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/03053\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/03053_00)

- ◆ Provides the basis for most air quality regulations, including:

**Solid Fuel Burning Domestic Appliance Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/44\\_302\\_94](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/44_302_94) (regulation of wood stoves)

**Open Burning Smoke Control Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/34\\_145\\_93](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/34_145_93)

- ◆ Governs solid waste management

**Contaminated Sites Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/375\\_96\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/375_96_00)

**Hazardous Waste Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/63\\_88\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/63_88_00)

**Spill Reporting Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/46\\_263\\_90](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/46_263_90)

- ◆ Includes the Sewerage System Regulation and Municipal Sewage Regulation

**Sewerage System Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/22\\_326\\_2004](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/22_326_2004)

**Municipal Wastewater Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/87\\_2012](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/87_2012) Provides the framework for contaminated sites legislation

**B.C. Fish Protection Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_97021\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_97021_01)

- ◆ Provides for protection of riparian areas

**Riparian Areas Regulation** [http://www.env.gov.bc.ca/habitat/fish\\_protection\\_act/riparian/documents/regulation.pdf](http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/documents/regulation.pdf)

- The Riparian Areas Regulation applies to the Georgia Basin and Southern Interior of B.C. Other communities may adopt this methodology if they choose. For more information see [Section 4.5](#).
- General information [http://www.env.gov.bc.ca/habitat/fish\\_protection\\_act/riparian/riparian\\_areas.html](http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/riparian_areas.html)
- Riparian Areas Regulation Assessment Methodology [http://www.env.gov.bc.ca/habitat/fish\\_protection\\_act/riparian/documents/assessment\\_methods.pdf](http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/documents/assessment_methods.pdf)



**B.C. Greenhouse Gas Reduction Targets Act** (GGRTA) [http://www.leg.bc.ca/38th3rd/1st\\_read/gov44-1.htm](http://www.leg.bc.ca/38th3rd/1st_read/gov44-1.htm)

- ◆ Establishes the following targets for the purpose of reducing B.C. greenhouse gas emissions (GHGs):
  - ▲ (a) by 2020 and for each subsequent calendar year, B.C. GHGs will be at least 33% less than the level of those emissions in 2007;
  - ▲ (b) by 2050 and for each subsequent calendar year, B.C. GHGs will be at least 80% less than the level of those emissions in 2007.
- ◆ Also, sets the stage to establish B.C.'s 2012 (6%) and 2016 (18%) targets, and enables the minister to set other B.C. GHGs targets for other years.

**B.C. Greenhouse Gas Reduction (Cap and Trade) Act** [http://www.leg.bc.ca/38th4th/3rd\\_read/gov18-3.htm](http://www.leg.bc.ca/38th4th/3rd_read/gov18-3.htm)

- ◆ Authorizes hard caps on GHGs, and provides authority for the Reporting Regulation (enacted in November 2009); provides the statutory basis for setting up a market-based cap and trade framework to reduce GHGs from large emitters operating in the province. The details of the system are being developed in cooperation with partner jurisdictions in the Western Climate Initiative, within which B.C. has taken a leadership role. Parts of the Act were brought into force when the Reporting Regulation was enacted. The remaining portions of the Act will be brought into force by regulation as the relevant regulations are developed.

**B.C. Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act** [http://www.leg.bc.ca/38th4th/1st\\_read/gov31-1.htm](http://www.leg.bc.ca/38th4th/1st_read/gov31-1.htm)

- ◆ This Act focuses on reducing GHG emissions from certain industrial operations, while increasing opportunities in the bioenergy sector. For example, waste-management operations (including landfills, composting facilities and sewage treatment plants) will be required to manage GHGs by reducing emissions or capturing them, with the option of tapping into their energy-generation potential as an economic opportunity. The Act provided authority for the Landfill Gas Management Regulation (enacted in January 2009). Additionally, the Act enables regulation of zero and net zero GHG emissions for electricity generation.

**Landfill Gas Management Regulation** [http://www.env.gov.bc.ca/epd/codes/landfill\\_gas/pdf/lg-reg-12-08.pdf](http://www.env.gov.bc.ca/epd/codes/landfill_gas/pdf/lg-reg-12-08.pdf)

- Establishes province-wide criteria for landfill gas capture from municipal solid waste landfills. Reducing GHGs from landfills includes better managing/reducing the input of construction/demolition waste from developments.

**B.C. Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_08016\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_08016_01)

- ◆ Promote the use of renewable fuel in transportation fuel blends, by setting new requirements for transportation fuels. Provides authority for the Renewable and Low Carbon Fuel Requirements Regulation (enacted in December 2009).



**B.C. Greenhouse Gas Reduction Targets Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_07042\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_07042_01)

- ◆ This Act sets aggressive legislated targets for reducing GHGs. Under the Act, B.C.'s GHG emissions are to be reduced by at least 33 percent below 2007 levels by 2020. Interim reduction targets of six percent by 2012 and 18 percent by 2016 will guide and measure progress. A further emission-reduction target of 80 percent below 2007 levels is required for 2050. The Act provided authority for the Emission Offsets Regulation (enacted in December 2008) and the Carbon Neutral Government Regulation (enacted in December 2008).

**B.C. Greenhouse Gas Reduction (Vehicle Emissions Standards) Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_08021PH\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_08021PH_01)

- ◆ Sets vehicle GHG standards equivalent to those laid out in California's 2004 Low-Emission Vehicle II regulations. The Act will be brought into force by regulation (currently under development). Vehicle emission standards will cut GHG emissions by 30 percent relative to current vehicle models — a reduction of 600,000 tonnes of GHGs annually by 2016. The Act also enables the regulation of zero emission vehicles.

**B.C. Heritage Conservation Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96187\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96187_01)

- ◆ Automatically protects sites meeting the heritage protection criteria
- ◆ Allows for the protection of other sites through heritage designation
- ◆ Protected sites require a site alteration permit to authorise site disturbance

**B.C. Integrated Pest Management Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_03058\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_03058_01)

- ◆ Governs the sale, use, and handling of pesticide

**Integrated Pest Management Act Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/604\\_2004](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/604_2004)

**B.C. Islands Trust Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96239\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96239_01)

- ◆ Prescribes the powers of the Islands Trust and Islands Trust Fund for the Gulf Islands
- ◆ Gives the Islands Trust powers similar to a regional district
- ◆ Defines the Natural Area Protection Tax Exemptions (Part 7.1)

**B.C. Land Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96245\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96245_01)

- ◆ Governs works on Crown lands require tenures, licenses or leases



**B.C. Land Titles Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/96250\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96250_01)

- ◆ Identifies contaminated site requirements related to property subdivision

**B.C. Local Government Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/96323\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96323_00)

- ◆ Parts 25–30 address a variety of planning and land use authorities that empower local governments to make environment-friendly decisions
- ◆ Encourages the development of sustainable communities
- ◆ Allows for the creation of regional growth strategies (Chapter 323 Part 25)

**Regional Growth Strategies Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/77\\_192\\_98](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/77_192_98)

**B.C. Petroleum and Natural Gas Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96361\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96361_01)

- ◆ Allows the issuance of certificates of restoration for contaminated sites

**B.C. Property Law Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96377\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96377_01)

- ◆ Deals with real estate transactions regarding contaminated sites

**B.C. Strata Property Act, Bare Land Strata Regulations** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/98043\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/98043_00)

**B.C. Water Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96483\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96483_01)

- ◆ Part 9 of the Water Act governs all works in or about a stream that are not authorized by a water licence. Works need an approval or notification, depending on the type of work being carried out and risk to the stream.
- ◆ For more information see Approval Application or Notification for Changes In and About a Stream Under Section 9 of the Water Act and Part 7 of the Water Act Regulations [http://www.env.gov.bc.ca/wsd/water\\_rights/licence\\_application/section9/](http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/). Note that some works may also require approvals from Fisheries and Oceans and Oceans Canada.

**Groundwater Protection Regulation** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/11\\_299\\_2004](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/11_299_2004) or [http://www.env.gov.bc.ca/wsd/plan\\_protect\\_sustain/groundwater/gw\\_regulation/background.html](http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/gw_regulation/background.html)

**B.C. Water Sustainability Act** (proposed)

- ◆ This is part of the Water Act Modernization process to bring forward water laws to improve protection of ecological values, provide for more community involvement, and provide incentives to be water efficient. The new Act will support government’s shift in the natural



resource sector to an area-based model and a more integrated approach to natural resource management and decision-making. For more information see <http://livingwatersmart.ca/water-act/>

**B.C. Water Utility Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96485\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96485_01)

- ◆ Applies to water utilities in B.C.

**B.C. Weed Control Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96487\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96487_01)

- ◆ Local governments may set up weed control committees, appoint inspectors or weed control officers, and work in partnership with other municipalities.

**B.C. Wildlife Act** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96488\\_01](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96488_01)

- ◆ Protects most vertebrates from direct harm or harassment, and regulates hunting and trapping
- ◆ Allows for the control of non-native species
- ◆ Section 34 of the Act ([http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/00\\_96488\\_01#section34](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/00_96488_01#section34)) specifically protects birds and their eggs from possession, molestation or destruction; the nests of eagles, peregrine falcons, gyrfalcons, ospreys, herons, and burrowing owls year-round; and the nests of all other birds when the birds or their eggs are in the nest.

**B.C. Wildlife Amendment Act** (2004) [http://www.leg.bc.ca/37th5th/1st\\_read/gov51-1.htm](http://www.leg.bc.ca/37th5th/1st_read/gov51-1.htm)

- ◆ Allows the provincial government to list animals, fish, plants or invertebrates as species at risk, and to define and protect the residence of a listed species at risk. Listing provides prohibitions against the killing, harming, harassing, importing, exporting, trafficking, possession and transport of that species on both provincial Crown land and private land, except as authorized by regulation, permit or agreement. As of March 2012, the Wildlife Amendment Act has not been brought into force, and regulations to list species and prescribe residences have thus not been prepared
- ◆ For more information, see the Recovery Planning website <http://www.env.gov.bc.ca/wld/recoveryplans/rcvry1.htm>

**Vancouver Charter** [http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/vanch\\_00](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/vanch_00)

- ◆ Provides several authorities similar to the Local Government Act, including acquisition of park land (Part III[179]), planning and development [Part XXVII], and protection of trees (Part XXIX)

**Occupational Health and Safety Regulation** <http://regulation.healthandsafetycentre.org/s/Introduction.asp>



## A.2 Federal Legislation

For a full listing of federal government legislation, see <http://laws.justice.gc.ca/en/>

**Canada Alternative Fuels Act** <http://laws.justice.gc.ca/en/A-10.7/index.html>

- ◆ Set standards alternative energy

**Canada Energy Efficiency Act** <http://laws.justice.gc.ca/en/E-6.4/index.html>

- ◆ Set standards for energy conservation

**Canada Fisheries Act** <http://laws.justice.gc.ca/en/F-14/>

- ◆ Protects fish and fish habitat
- ◆ Regulates the release of deleterious substances into fish-bearing waters
- ◆ Prohibits any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat (s. 35)

**Canada Migratory Birds Convention Act** <http://laws.justice.gc.ca/en/M-7.01/>

- ◆ Prohibits the possession, buying, or selling of migratory birds or their nests

**Canada Navigable Waters Protection Act** <http://laws-lois.justice.gc.ca/eng/acts/N-22/index.html>

- ◆ Controls development of docks and other potential impediments to navigation in fresh and marine waters

**Canada Pest Control Products Act** <http://laws-lois.justice.gc.ca/eng/acts/p-9.01/>

- ◆ Regulates products used for the control of pests and the organic functions of plants and animals

**Canada Shipping Act** <http://laws.justice.gc.ca/eng/acts/C-10.15/>

- ◆ May affect coastal shoreline development

**Canada Species at Risk Act** [http://www.sararegistry.gc.ca/approach/act/default\\_e.cfm](http://www.sararegistry.gc.ca/approach/act/default_e.cfm)

- ◆ Consolidates requirements under the Canada Wildlife Act, the Migratory Bird Convention Act and the Wild Animal and Plant Regulations of the International and Interprovincial Trade Act for the protection of special wildlife and species at risk
- ◆ Applies to areas designated as critical habitat for specified species at risk. This applies to federal land and federally regulated species such as migratory birds as set out in the Migratory Birds Convention Act and fish as identified in the Fisheries Act
- ◆ Requires Recovery Strategies ([http://www.sararegistry.gc.ca/sar/recovery/recovery\\_e.cfm](http://www.sararegistry.gc.ca/sar/recovery/recovery_e.cfm)) and Recovery Action Plans ([http://www.sararegistry.gc.ca/sar/recovery/default\\_e.cfm#ap](http://www.sararegistry.gc.ca/sar/recovery/default_e.cfm#ap)) to be developed for all listed species at risk and provides mechanisms for the protection of critical habitat identified in a recovery strategy or action plan



- ◆ For more information, see sections 56–64 of the Species at Risk Act (<http://laws-lois.justice.gc.ca/eng/acts/S-15.3/page-15.html>) and factsheets at [http://www.sararegistry.gc.ca/involved/you/default\\_e.cfm](http://www.sararegistry.gc.ca/involved/you/default_e.cfm)

**Canada Wildlife Act** <http://laws.justice.gc.ca/en/W-9/>

- ◆ Prohibits the possession or harming of wildlife (including plants) except as permitted by regulations

**Wild Animal and Plant Regulations of the International and Interprovincial Trade Act** <http://laws.justice.gc.ca/en/W-8.5/index.html>



## Appendix B Bio-inventory Terms of Reference

### B.1 Introduction

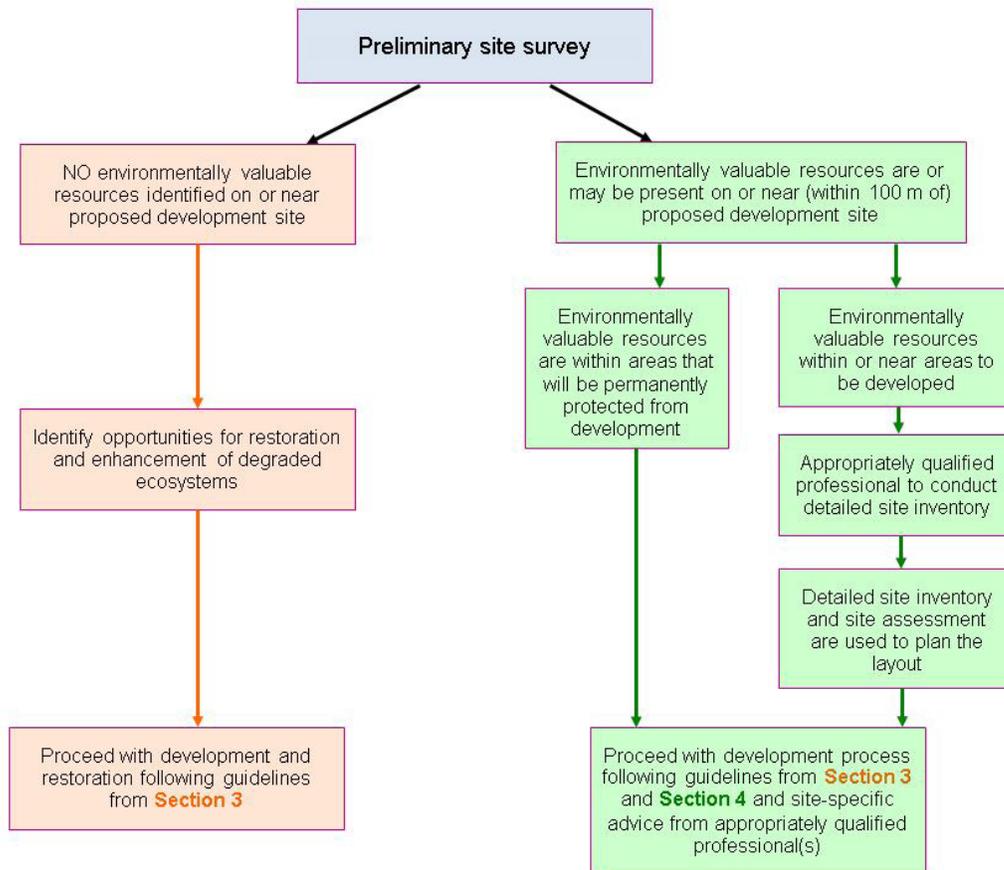
See [Section 2.1](#) and [Section 4](#) for information on Environmentally Valuable Resources.

Land use planning and development must be based on sound ecological information to effectively protect the habitats necessary to maintain biological diversity. The identification and assessment of a site's Environmentally Valuable Resources (EVRs) is an important first step in all land use planning processes. It is important that these be identified early in the planning stage to help plan for their protection.

Local governments should require developers to conduct a biological site inventory (bio-inventory) **before any land clearing takes place and before development design begins**. There are currently no provincial standards for urban bio-inventory or evaluation in British Columbia, resulting in a lack of consistency when collecting and interpreting site inventory data. This could have harmful consequences when land use planning decisions are based on incomplete data or inaccurate interpretation of site inventory data. The purpose of this Bio-inventory Terms of Reference is to present a systematic method for urban and rural site inventory. Use of the methods presented will encourage ecosystem-based land use decisions that promote representation and conservation of all natural ecosystems across the landscape.

Inventories conducted by local governments are also helpful for “flagging” locations where more detailed information would need to be collected if development is proposed. Additionally, [Sensitive Ecosystem Inventories](#) have been prepared for some regions of British Columbia which have a high incidence of rare/uncommon ecosystems and where the pace of development is particularly rapid. These inventories can provide an initial indication of the presence of EVRs. However, with a minimum polygon size of 0.5 ha, Sensitive Ecosystem Inventory maps miss many of the smaller but nonetheless important habitats; therefore, it is not a substitute for a detailed site bio-inventory. Other types of inventories and information sources also exist, some of which are listed in **Appendix D: Sources for Environmental Mapping and Inventory**.

A bio-inventory involves a *preliminary site survey* which may lead to a *detailed site inventory* and report (**Figure B-1**).

**Figure B-1: Process to determine the need for a detailed site inventory**

## B.2 Step One: The Preliminary Site Survey

Preliminary site surveys involve a literature review and reconnaissance-level site survey to determine what species and EVRs are present or likely to be present on or near (i.e., within 100 m) the proposed development site.

- ◆ Review existing inventory information to determine if EVRs are known to occur on or near the proposed development site.
- ◆ Search the B.C. [Conservation Data Centre](#) and the Wildlife Species Inventory database (through [iMap BC](#)) for the locations of Red- and Blue-listed species and ecosystems on and near the development site. Note that not all species are identified on that site, so contact the Conservation Data Centre to check for any additional available records.
- ◆ Contact local environmental or naturalist groups for help in identifying locally important species and habitats.
- ◆ Review relevant literature such as species status reports, recovery plans, and local natural history documents.
- ◆ Examine aerial photographs, orthophotos, satellite imagery from Google Earth and other sources, and ecosystem and species distribution maps. Be aware, however, that much of the regional mapping (such as [Sensitive Ecosystem Inventories](#)) has been done at a broad scale, and



therefore may miss small but important sites or EVRs.

- ◆ Identify EVRs (e.g., forested areas around lakes and creeks) on neighbouring properties (within 100 m). This is important for designing wildlife travel corridors and areas where a natural buffer may be needed on the development land. If community-level mapping is not available, use air photos or other means to identify ecological values on surrounding lands.
- ◆ See **Appendix D: Sources for Environmental Mapping and Inventory** for a list of existing inventory and environmental mapping information sources.
- ◆ Conduct a site inspection at the appropriate time(s) of the year to determine species presence/absence, and the likelihood of Red- and Blue-listed species and ecosystems occurring on the site if not found during the site inspection. Also, determine if habitat features, such as wildlife trees, are present. If EVRs are known to occur or there is a possibility that there are EVRs on the development site or nearby, an **appropriately qualified professional** should participate in the site inspection. Some EVRs can be difficult for the casual observer to identify. For example, features such as vernal pools might not be recognized, particularly during the dry season. Note that even a site that has no EVRs may provide opportunities for restoration, such as daylighting culverted creeks or removing invasive alien plant species from natural meadows.
- ◆ See **Table B-1** for a list of typical EVRs to search for on the development site. This checklist should be completed, signed by a qualified professional (if one was involved), and included in the final Bio-inventory Summary report.
- ◆ Map known and potential locations of EVRs on a site plan. Note areas where follow-up information may be required. For example, many wildflowers are visible only at certain times of the year, animals may be hibernating when the initial site inspection is done, and some sites may be used for feeding or breeding only during certain seasons; therefore, site inspections should be repeated during different seasons, especially if the presence of an EVR is suspected.
- ◆ Notify the [Conservation Data Centre](#) (CDC) and the regional rare and endangered species biologist of any findings of species or ecosystems at risk.
- ◆ Ensure that the information provided by the developer to the local government identifies
  - ▲ important wildlife habitats (such as eagle nest trees),
  - ▲ wildlife corridors and links to other wildlife habitats (with reference to both landscape- and the site-level features),
  - ▲ areas with sensitive or rare ecosystems,
  - ▲ presence (or likelihood of presence) of any species at risk or regionally significant species,
  - ▲ recommended buffers around the site, and
  - ▲ any issues associated with the development (e.g., changes in **hydrology** or plant cover) as they pertain to identified species or ecosystems.



## If there are no Environmentally Valuable Resources...

If it can be shown that there are no EVRs on or within 100 m of the development site (for instance a brownfield site), a detailed site inventory and summary report is not required. All developments should follow the guidelines provided in [Section 3](#), and should take advantage of opportunities to enhance the natural environment through restoration and landscaping projects.

## If Environmentally Valuable Resources were found or an “unknown” box was checked-off in Table B-1 during the preliminary site survey...

If EVRs ARE or MAY BE present on or within 100 m of the proposed development site, there are two options:

1. **No impact from development:** A detailed site inventory may not be needed. The development could be designed so that there are no impacts to the EVRs. For example, if there is an appropriate buffer zone around a sensitive ecosystem, and it is connected to nearby habitats, and it will be protected from impacts during construction and after occupation (e.g., with fencing), then a detailed site inventory may not be needed. This is the advantage of designing the layout to avoid EVRs. A brief report should be produced describing the EVR(s) identified, where they are located, and how they will be protected.
2. **Possible impact or presence of EVRs is unknown:** More information needed—carry out a detailed site inventory. The information collected during the detailed site inventory will be useful for project planning/layout, and for identifying measures to reduce the environmental impacts of the proposed development.

## B.3 Step Two: The Detailed Site Bio-inventory

A detailed site bio-inventory should be conducted if development is to proceed in ways that might impact EVRs during construction or after occupation or to confirm the presence/absence of EVRs. The detailed site bio-inventory and summary report should include

- ◆ more detailed site inspections;
- ◆ a description of the EVRs present;
- ◆ an outline of options for avoiding or mitigating development impacts; and
- ◆ an outline of restoration and enhancement opportunities.

The detailed site bio-inventory should be conducted at the appropriate time(s) of the year by appropriately qualified professionals. The Province recommends that the local government hire the independent professional(s), using funds provided by the developer. This helps minimize any perception of bias in the final report. When development proceeds, the guidelines from [Section 4](#) should be followed, as well as the site-specific advice from the appropriately qualified professional(s).



☑ Determine the appropriate inventory methods and timing to use for conducting the detailed site assessment. In some cases a simple presence/absence inventory may suffice, however, generally the appropriately qualified professionals will need to do a more detailed inventory. The [Resources Information Standards Committee](#) (RISC) website provides information on inventory techniques.

☑ Gather sufficient detail to guide development decisions. The specific information to be collected will vary depending on the site being investigated, but it should identify all EVRs on the site, and, if the EVR is an ecosystem, describe it in terms of successional stage; areal extent; and degree of disturbance from erosion, trails, roads and invasive plant species. If no options exist for the development to proceed without adversely impacting the EVRs, then mitigation measures and restoration opportunities should be identified. The professional(s) should be aware of the information that needs to be collected to guide protection of the resource. **Table B-2** describes the elements that should be included in a detailed site inventory. This table should be completed and included in the Summary Report.

The search for rare species and ecological communities should be conducted by an appropriately qualified professional who has expertise in identifying such elements. The [Conservation Data Centre](#) or the regional rare and endangered species biologist may have information on species at risk and rare ecological communities in or near the proposed development area. If a species at risk or rare ecological community is found, the appropriately qualified professional is encouraged to submit the occurrence records to the Conservation Data Centre and to the regional rare and endangered species biologist.

☑ Map all EVRs according to the standards established in [Standard for Terrestrial Ecosystem Mapping in British Columbia](#). This will help ensure that data collection and results are consistent between bio-inventories. Ecosystems and wildlife habitat features should be mapped at a scale suitable for local planning purposes (e.g., 1:5,000 to 1:10,000). Local governments may also have their own mapping standards.

☑ Identify potential development impacts, and avoidance or mitigation measures. The professional's summary report should identify potential development impacts and ways to avoid them. If impacts cannot be avoided, the report should include information on mitigation options.

**If there are EVRs on the proposed development site, and avoidance or mitigation measures are not likely to be effective (for example, if there will be adverse impacts to a species at risk), the appropriately qualified professional should recommend that development be re-designed or relocated off the site.**

☑ Identify restoration and enhancement opportunities. The professional's report should also identify restoration and enhancement opportunities on or near the development site. Local stewardship groups and conservation organizations may be able to provide advice on restoration and enhancement opportunities and techniques.

☑ The summary report should include the elements listed in **Table B-3**.



## B.4 Additional Information

Conservation Data Centre website: <http://www.env.gov.bc.ca/cdc/>

E-Fauna BC website: <http://efauna.bc.ca/>

E-Flora BC: Provincial Protocols for Rare Vascular Plant Surveys. <http://www.geog.ubc.ca/biodiversity/eflora/ProtocolsforRarePlantSurveys.html>

Resources Information Standards Committee website: <http://www.for.gov.bc.ca/hts/risc/about.htm>

Sensitive Ecosystems Inventories website: <http://www.env.gov.bc.ca/sei/>

Society for Ecological Restoration website: <http://serbc.ca/>

Species at Risk Act Public Registry website: [http://www.sararegistry.gc.ca/default\\_e.cfm](http://www.sararegistry.gc.ca/default_e.cfm)



**Table B-1: Checklist for the Preliminary Site Survey**

Note: A check in the “yes” or “unknown” column either on-site or nearby means that a detailed site inventory is required. Note: “Near” development site means within 100 m.

Environmentally Valuable Resources on or near development site	Yes	No	Un-known	Comments
<b>Terrestrial ecosystems in relatively unmodified state:</b>				
• conifer-dominated older forests or mature forests (>100 years old)				
• conifer-dominated second growth forests (60-100 years old)				
• grasslands/shrub /herb communities				
• deciduous woodlands				
• coastal bluffs				
• sparsely vegetated (e.g., sand dunes)				
• cliffs/rock faces/talus slopes				
<b>Ecosystems at risk:</b>				
• ecological communities on Conservation Data Centre Red or Blue Lists				
• sensitive ecosystems (ecosystem types identified by Sensitive Ecosystems Inventories)				
• areas identified as environmentally sensitive areas by local governments				
<b>Aquatic or riparian ecosystems:</b>				
• seasonal or permanent watercourses (streams, creeks, rivers, ditches)				
• seasonal or permanent wetlands				
• groundwater springs and seepages, or vernal pools				
• lakes or ponds				
• riparian ecosystems beside these aquatic ecosystems				
• vegetated gullies				
<b>Species at risk and their habitats:</b>				
species at risk identified by COSEWIC				
species on provincial Red and Blue Lists				
regionally significant species				
habitats for any of these species				



Environmentally Valuable Resources on or near development site	Yes	No	Un-known	Comments
<b>Significant habitat features, e.g.,:</b>				
• wildlife trees				
• rotting logs and other coarse woody debris				
• caves				
• cliffs and rocky outcrops				
• seasonally flooded fields				
• hedges and shelterbelts				
• old buildings potentially used by bats or birds				
• other				
<b>Areas of significant use by wildlife—e.g.,:</b>				
• wildlife travel corridors				
• ungulate winter ranges; spring forage sites				
• den sites (badger, snake, etc)				
• perch trees, raptor or heron nest sites				
• other				

If the following elements occur on the development site, recommendations for applying restoration measures may be needed:

Potential for restoration on development site	Yes	No	Un-known	Comments
• Streams in culverts				
• Degraded ecosystems, including riparian zones				
• Invasive species control				

*I confirm that all information provided in this checklist is, to the best of my professional knowledge, true and complete.*

\_\_\_\_\_  
Professional's stamp (if applicable)

\_\_\_\_\_  
Qualified Professional (or other person completing the preliminary site survey)

\_\_\_\_\_  
Date



**Table B-2: Background Information for the Detailed Site Bio-inventory**

This table contains information that should be addressed when reporting on the potential environmental impacts of the proposed development. This information should be shown on a site map, together with the proposed development layout. Assessments may need to be conducted in more than one season to provide complete information, and may need to involve appropriately qualified professionals with expertise in various fields.

See the [Environmental Mitigation Policy for British Columbia](http://www.env.gov.bc.ca/emop/) website<sup>1</sup> for information on approaches to mitigating adverse environmental impacts.

Data	On-site	Near site (within 100 m)	Comments: Description, Impacts, Mitigation Measures, Enhancement Opportunities
<b>Regional context</b>			
<ul style="list-style-type: none"> <li>does this site provide a connection with other ecosystems (wildlife travel corridors)?</li> </ul>			
<ul style="list-style-type: none"> <li>is this site a refuge (for plants and/or animals) in a developed landscape?</li> </ul>			
<b>Watershed and land-use characteristics (e.g., urban, rural, farming, natural)</b>			
<ul style="list-style-type: none"> <li>on proposed developed site</li> </ul>			
<ul style="list-style-type: none"> <li>in adjacent areas</li> </ul>			
<b>Geology and landforms</b>			
<ul style="list-style-type: none"> <li>principal and unique landforms (e.g., rolling hills with karst-type rocks)</li> </ul>			
<ul style="list-style-type: none"> <li>south-facing slopes (that contribute to presence of grasslands and wildlife habitat)</li> </ul>			
<ul style="list-style-type: none"> <li>terrain stability (hazards—e.g., potential for landslides)</li> </ul>			
<ul style="list-style-type: none"> <li>implications for erosion and sedimentation, options for controlling</li> </ul>			
<b>Hydrology</b>			
<ul style="list-style-type: none"> <li>site and surrounding area</li> </ul>			
<ul style="list-style-type: none"> <li>floodplain presence/location</li> </ul>			
<ul style="list-style-type: none"> <li>potential for development to impact hydrology (surface/subsurface flows) on or near the development site</li> </ul>			
<b>Biota (aquatic and terrestrial)</b>			
<ul style="list-style-type: none"> <li>local and regional species that use the ecosystem</li> </ul>			
<b>Vegetation (riparian and upland)</b>			
<ul style="list-style-type: none"> <li>site and nearby</li> </ul>			
<ul style="list-style-type: none"> <li>successional stage of any forests</li> </ul>			

<sup>1</sup> <http://www.env.gov.bc.ca/emop/>



Data	On-site	Near site (within 100 m)	Comments: Description, Impacts, Mitigation Measures, Enhancement Opportunities
<b>Environmentally Valuable Resources</b>			
• rare and endangered species and ecosystems, including sensitive ecosystems			
• regionally significant ecosystems and species			
• talus slopes, rocky outcroppings, cliffs and caves			
• old field, meadow and grassland habitat			
• seasonally flooded fields			
• wetlands, seepages and vernal/ephemeral pools, even if they are wet only a few months of the year			
• alkaline or saline ponds			
• fish spawning and/or rearing areas			
• riparian vegetation, including vegetated gullies			
• basking sites for reptiles			
• den sites (badger, snake, lizard, etc.)			
• wildlife mineral licks			
• vacant buildings which may shelter bats or birds			
• large snags, veteran trees, hollow trees			
• raptor nests and perch trees; heronries			
• coarse woody debris			
• wildlife travel corridors			
• ungulate winter ranges; spring forage sites			
• other			



**Table B-3: Detailed Site Bio-inventory Summary Report Checklist**

The following items should be included in the Detailed Summary report.

	<b>Acknowledgements</b>
	acknowledgement of all contributors to the bio-inventory (and their professional designation)
	<b>Development Plan and Site Description</b>
	proposed development layout
	site map of the proposed development
	map showing the regional setting of the development
	legal site description and UTM coordinates for large parcels of land
	description of the physical characteristics of the development site prior to disturbance
	all Environmentally Valuable Resources (EVRs) known to occur on or near (i.e., within 100 m) of the development site
	<b>Off-site Conditions</b>
	description of physical characteristics of nearby sites which may be affected by the development (e.g., downstream and downslope habitats, wildlife travel corridors)
	<b>Research Methods</b>
	research methods used are based on recognized scientific standards; include descriptions of all research methods used:
	<ul style="list-style-type: none"> <li>• name/type of inventory method used</li> <li>• type(s) of EVRs inventoried</li> <li>• number of inventories per EVR</li> <li>• timing of inventories (list month, day, year, and time of day of each inventory)</li> <li>• duration of inventory</li> <li>• number of plots used (transects, point counts, spot mapping sites, etc.)</li> <li>• inventory location (include general description, compass bearings, GPS bearings, etc.)</li> </ul>
	<b>Results</b>
	descriptions of all EVRs found on or nearby the development site
	descriptions of all other important features documented during the bio-inventory (e.g., ecological communities, wildlife species, rare species, aquatic and terrestrial habitats, watercourse locations, site stability and flood issues)
	summary tables of data collected
	map(s) showing the location and layout of all inventories conducted
	map(s) showing the location and geo-coordinates of all EVRs and other important features (e.g., watershed boundaries) found on or near the development site in relation to the proposed development layout



	<b>Discussion</b>
	discussion of all EVRs found on or adjacent to the development site
	how alternate project designs and locations have been considered
	descriptions of all potential impacts on development site and adjacent (100 m) area
	discussion of potential adverse impacts on any nearby protected areas (parks, ecological reserves, etc.) or species at risk habitat
	descriptions of how the potential adverse impacts of the development will be avoided or mitigated
	how priority habitats will be protected before, during and after development
	how adverse impacts that cannot be avoided or mitigated will be compensated
	descriptions of opportunities and proposals for restoration and enhancement of biodiversity on or near the development site
	<b>References</b>
	references for all image and data sources and supporting literature
	<b>Signature and Seal</b>
	signatures and seals of the appropriately qualified professional who conducted the bio-inventory and site assessment summary
	<b>Appendices</b>
	one-page curriculum vitae of all personnel working on the bio-inventory and site assessment summary report
	field data sheets and all raw data gathered for any species at risk or rare ecological communities
	photographs of the site and its important habitat features



## Appendix C Economic and Social Benefits of Environmental Protection

Environmentally Valuable Resources enhance the places where people live, work, and play. Protecting these resources brings benefits we do not often consider. Treed areas help absorb pollutants from the air and water. Snakes consume slugs, rodents, and other animals that many people consider to be pests. Raptors (e.g., eagles) clean carcasses off the roads. Birds help distribute seeds, and insects are important for crop pollination. Wetlands absorb rainfall and prevent flooding. There are also many economic and health benefits. Some of these benefits noted in research are summarized here.

### C.1 Benefits for Local Governments

#### Free Ecosystem Services

Natural ecosystems provide a range of free ‘ecosystem services’ (e.g., water and air purification, management of erosion and sediment runoff, and pest control) that would otherwise have to be paid for by local governments and taxpayers.

- ◆ **Inexpensive stormwater management:** Streams, wetlands and riparian vegetation can dramatically reduce the need for expensive storm sewer infrastructure. Johnson County in Kansas saved an estimated US\$120 million on engineered stormwater controls by setting aside US\$600,000 worth of riparian greenways (Sandborn 1996).
- ◆ **Less stormwater runoff:** For every 1,000 trees, stormwater runoff is reduced by nearly 3.8 million litres (Center for Urban Forest Research 2003). For every 5% of canopy cover, stormwater is reduced by 2% (ICLEI 2006). Stormwater management savings from trees in the District of Sooke (population 9,700) are estimated at over \$11 million per year (HAT 2008).
- ◆ **Improved air quality:** A mature tree absorbs 54–110 kg of small particles and gases of air pollution each year. (Wolf 1998). The value that trees provide in removing five common pollutants from the air is approximate \$495/ha (Wilson 2010).

*“Our wealth as a nation and our individual well-being depend critically upon the environment. It provides us with the food, water and air that are essential for life and with the minerals and raw materials for our industry and consumption. Less obviously, it provides the processes that purify air and water, and which sequester or break down wastes. It is also in our environment where we find recreation, health and solace, and in which our culture finds its roots and sense of place. Scientists refer to these services that our environment provides as ‘ecosystem services’, recognising that it is the interaction between the living and physical environments that deliver these necessities.*

*Yet we tend to take this largely for granted. While we pay for some ecosystem services like food and fibre, we are often unaware of the importance of others such as natural water or air purification, and would be alarmed at the cost of providing these artificially. This under-estimation of the value of natural processes in economic terms means that we take inadequately informed decisions on how to use these resources. The result is pollution, the loss of species and ecosystems and damage to the processes we need, with real economic costs to either recover them or provide artificial alternatives” (UK National Ecosystem Assessment, 2011).*

- 
- ◆ **Temperature control:** Trees in parking lots moderate the heat absorbed by asphalt. This lowers the air temperature, which reduces ozone concentrations by lowering hydrocarbon emissions (Scott et al. 1999). Trees placed as windbreaks can reduce winter heating costs by up to 25% (Heisler 1986).
  - ◆ **Energy savings:** A study in California found that planting shade trees could reduce the need for power plants—50 million shade trees planted in strategic, energy-saving locations could eliminate the need for seven 100-megawatt power plants (Simpson and McPherson 1998).
  - ◆ **Carbon sequestration.** Carbon dioxide—a major cause of climate change—is absorbed by trees as they grow. The six million trees that grow in Sacramento County, California store more than eight million metric tonnes of carbon and remove an estimated 304,000 tonnes of carbon per year (Harris et al. 1999).
  - ◆ **Water purification:** Environment Canada has estimated that Canada’s wetlands provide \$1.35 billion annually in water purification services (Environment Canada 1988). Wetlands in the lower Fraser Valley are worth at least \$230 million per year for their waste cleaning services alone, and much more if replacement infrastructure costs are included (Oleweiler 2004).
  - ◆ **Free clean-up crew:** Eagles, vultures, and other scavengers help reduce the spread of disease by cleaning up dead and rotting animal carcasses. Raptors consume a wide variety of prey including small mammals, birds, reptiles, amphibians, fish, and insects. They reduce pest species such as rats, mice, starlings, house sparrows, pigeons, grasshoppers, and even skunks. Reptiles and amphibians also control many species that humans consider ‘pests,’ such as insects and rodents.
  - ◆ **Pollination services:** The value of bee pollination for crops in Canada has been conservatively estimated at \$1.2 billion per year, while the B.C. Ministry of Agriculture has estimated the value of pollination in the province at \$267.3 million per year (Environment Canada 2003).

## Economic Benefit

- ◆ In 2011, the UK Government published a National Ecosystem Assessment, which attempts to put a cash price on the environmental services provided by nature. This includes services like pollination by insects, water and air purification by soils and plants, the flood alleviation provided by woods and marshes upstream of towns and cities, and even the value of living close to a green space in terms of savings to the National Health Service. Together, these services are valued at £300 (about \$500) per person per year.
- ◆ The pest control services provided by birds in Canada’s boreal forest have been estimated to be worth \$5.4 billion/year (Anielski and Wilson, 2005).
- ◆ In B.C.’s Lower Mainland, it is estimated that climate regulation provides an estimated value of \$1.7 billion per year, while water supply provides an estimated \$1.6 billion per year, and flood protection and water regulation provides an estimated \$1.2 billion per year (Wilson 2010)



## Free Ecosystem Services

- *“Even today’s technology and knowledge can reduce considerably the human impact on ecosystems. They are unlikely to be deployed fully, however, until ecosystem services cease to be perceived as free and limitless, and their full value is taken into account” (Millennium Ecosystem Report).*
- *“A recent review of natural capital in the Lower Mainland indicates that trees in the region remove about 100 kilograms of pollutants per hectare, and a total of 82.6 million kilograms per year. The annual minimum value of the removal of carbon monoxide, nitrogen dioxide, particulate matter and sulphur dioxide by trees is \$409 million per year or \$495 per hectare per year” (Wilson 2010, cited in Molnar 2011).*

- ◆ The City of North Vancouver has more than 5,350 street trees and spends just under \$100,000 per year in maintaining them (pruning, tree and stump removal, watering, replacements, etc.); however, these street trees provide a benefit of over \$500,000 per year (\$94 per tree) to City residents. Benefits include energy savings, greenhouse gas (CO<sub>2</sub>) reduction, air quality improvement, watershed and stormwater savings, aesthetic benefits, and property value increases. Over the 50-year lifespan of a typical tree, the City could realize total benefits of over \$25 million ([www.cnv.org](http://www.cnv.org)).
- ◆ When wetlands are drained or degraded, there is a financial cost incurred by society to replace the ecological goods and services these wetlands provided, such as: increased water treatment costs; increased illness and health care costs; irrigation water shortage; water hauling and deeper wells required; increased insurance costs due to flooding; decreased property value due to degraded aesthetic qualities; decreased swimming/fishing opportunities; decreased revenues from tourism activities associated with healthy ecosystems (Ducks Unlimited Canada 2006).
- ◆ 500,000 licensed and juvenile anglers in British Columbia spend about \$500 million each year on freshwater sport fishing (Bridges 2002).
- ◆ In 1996, British Columbia’s residents spent \$2.3 billion (2005\$) on recreational activities that were in or associated with natural areas (Wilson 2010).

## Community Improvement

- ◆ Enhanced property values associated with greenspace retention can contribute to greater property tax revenues and therefore the ability to provide enhanced municipal services. Higher property values resulting from greenspace acquisition in a Boulder, Colorado neighbourhood increased property taxes sufficiently to pay back the acquisition costs in just a few years (Sandborn 1996).
- ◆ Community greenspaces are an important part of the viewsapes that make a community attractive.



## New Business

- ◆ “Footloose” businesses (that can locate anywhere) are attracted by communities that offer a high quality of life for their employees. Greenspace, environmental protection and recreational opportunities are often an important part of that choice. Places such as Sacramento, California and Boulder, Colorado, vigorously promote their urban greenspaces to attract new business (Sandborn 1996).
- ◆ Eco-tourism is a rapidly growing industry for which the protection of the natural environment is vital. Expenditures related to wildlife viewing in British Columbia’s Lower Fraser Valley are estimated to generate revenue of \$53/ha/year (Olewiler, 2004).
- ◆ People are attracted to areas with natural beauty and outdoor recreation opportunities. A study of visitors to Vancouver Island (summer 2003) found that visitors were very pleased with the vacation experience, in part because of the scenic beauty (98.7%) and outdoor recreation opportunities (91.5%) (Malaspina University College and Tourism Vancouver Island 2003).

## Lower Costs, Higher Revenues

- ◆ Where one part of a site is densified to enable protection of another part of the site, there are proportionately lower costs for roads and servicing. This means lower long-term costs of maintaining these roads and services.
- ◆ There are savings in mowing and maintenance costs when lands are managed as a natural buffer rather than manicured lawn. For corporate landowners (including local governments), this can save an estimated US\$270 to \$640 per acre (CDN\$150 to \$350 per hectare) per year (Wildlife Habitat Enhancement Council 1992).
- ◆ The net property tax benefit of open space is greater than for developed lands. Agricultural land and open space pays significantly more in taxes than it requires in servicing from local governments (Curran 2001). Although developed land contributes more in property taxes, there are higher servicing costs for such things as roads, libraries, and schools.

## Avoidance of Future Costs

- ◆ Good environmental planning prevents development on hazard lands and other sites that are unsuitable for development. This may prevent expensive and time-consuming lawsuits if problems arise.

*“Biological structures such as salt marshes, sea grass beds, and coral reefs attenuate waves and as a result provide coastal protection from the damages caused by flooding and storm events. This is becoming a critical service in many regions because of the increased risk of flooding and storm events – both in terms of frequency and severity – due to present and predicted climate change. Salt marshes play a leading role in intertidal areas, dissipating wave and tidal energy and thereby reducing the cost of flood defense measures. In addition, they absorb huge amounts of water when inundated and then slowly release it afterwards, which can also prevent flooding” (Wilson 2010)*



## Tool for Decision Making

Environmental planning can:

- ◆ Assist local and senior governments with park acquisition decisions;
- ◆ Assist with siting developments, including transportation and utility corridors, in places with least impact on sensitive habitats;
- ◆ Help to define zoning, bylaws, and the configuration of future urban growth areas and urban containment boundaries; and
- ◆ Identify the location of greenways and wildlife movement corridors, especially where they are not associated with stream corridors. Connectivity is important in maintaining genetic diversity (as it allows interbreeding between different populations) and in maintaining species diversity (as it allows the species to move between habitats).

## C.2 Benefits for the Development Community

### Greater Certainty

- ◆ Developers benefit from greater certainty if they know in advance that part of a development site has Environmentally Valuable Resources. They can then account for this in site development plans and avoid wasted time and expense in disputes over proposed development of this land.
- ◆ Developers can identify unconstrained or lightly constrained development areas, so that phased developments have the potential to start and recover monies on areas with lower overhead first.
- ◆ Developers can use the community-level environmental information to help direct the site-level inventory.



## Faster Approvals

- ◆ Where new developments fit into the community environmental plan, the development is likely to move more quickly through the approvals process and encounter less community resistance. This translates into time and cost savings for the developer and greater community acceptance of the development.

## Reduced Costs

- ◆ Per unit development costs are lower for higher density developments. If housing units are clustered on one portion of a site in order to protect Environmentally Valuable Resources, there are cost savings because there is less area to be cleared and less infrastructure (e.g., roads and sewers). Cluster development can reduce the capital cost of subdivision development by 10–33%, primarily by reducing the length of infrastructure needed to service the development (Schueler 1995).
- ◆ Using ‘green’ infrastructure (e.g., grassy swales rather than conventional curb, gutter and pipe design) results in savings of about \$8,000 per housing unit (Centre for Landscape Research 2005).
- ◆ Grassy swales cost about \$70 per metre, compared to \$185 per metre for conventional storm drains. (Centre for Landscape Research 2005).

## Increased Sale Values

- ◆ Property values are higher next to greenspace. A study of properties in the Lower Mainland and south Vancouver Island found that residential property values increase by 15–20% when close to greenways (Quayle and Hamilton 1999).





*“Clean air, fresh water, the sun rising through the mist on a mountain lake, an abundance of life on the land, in the air, and in the sea—the value of these things is incalculable” (Al Gore 1992).*

- ◆ Trees and landscaping increase property values by 5–20% (International Society of Arboriculture 2003).
- ◆ Lots with remaining natural habitat (other than a cleared area for the house site and access) often sell faster and for higher prices.

### **Increased Marketability**

- ◆ The ability to incorporate special environmental features into the community plans provides unique neighbourhoods based on the local features (e.g. ‘Heronwoods’ where a local heron rookery is preserved in an adjacent area).
- ◆ The U.S. National Association of Home Builders has encouraged the planting of trees because it increases the marketability of new developments (Petit 1998).

## **C.3 Benefits for Residents**

### **Improved Quality of Life**

- ◆ Residents benefit from a well planned community through the enjoyment of wildlife and natural areas. Lots of greenspace creates pleasant viewsapes throughout the community.

### **Physical and Mental Health**

- ◆ Having community greenspace encourages walking, which is good for physical fitness and lowering obesity rates. It also provides spaces for ‘re-creation’ and restoration of mental health in an often hectic lifestyle.
- ◆ In a study of patients recovering from abdominal surgery, those who had a view of woods recovered more quickly, required less medication, and had fewer complications than patients who had a view of a brick wall. Office workers who had views of natural spaces experienced less job pressure and greater job satisfaction than colleagues who had no view or a view of the built environment (Harris et al. 1999).



## Sense of Community

- ◆ People who live near greenways tend to live in their houses longer than those who do not. This lower turnover rate results in more stable neighbourhoods and a greater sense of community (Quayle and Hamilton 1999).
- ◆ Developing the community environmental plan provides an opportunity for the public to become involved in their community planning, and to assist with the identification of important natural areas.

## Clean Air

- ◆ Urban forests improve air quality by reducing atmospheric carbon dioxide levels and absorbing air pollutants (McPherson et al. 1996).
- ◆ Trees improve air quality by intercepting particulate matter and absorbing airborne pollutants such as sulphur dioxide, nitrogen oxides, and ozone. Particulates and other pollutants can be harmful to human health. A study in Germany found that streets with trees had 3,000 particles per litre of atmospheric contaminants compared to levels of 10,000–12,000 particles per litre for streets without trees. A study of New York City found that the urban forest removes 1,821 tons of atmospheric contaminants each year, a service which is valued at US\$9 million (Harris et al. 1999).

## Clean Water

- ◆ Wetlands and riparian areas filter pollutants from stormwater before the water reaches streams and creeks.
- ◆ Clean water adds to the recreational and aesthetic enjoyment of the residents.

## Recreational Opportunities

- ◆ Natural open spaces and walking/biking paths can be among the most important features in a residential neighbourhood (Warrick and Alexander 1997).

## Lower Costs

- ◆ Properly located trees can reduce the costs of heating a home in winter (because of the windbreak effect) and reduce air conditioning costs in summer (because of the shade) (Center for Urban Forest Research website).



## Appendix D Sources for Environmental Mapping and Inventory

Many sources of environmental mapping and inventory are now available from websites. Some of these are compilations of data from several different sources, with the ability to produce maps showing only the information layers of interest. Some of these sources require that you download a mapping tool such as MapGuide, and some require a password.

Below is a summary of some of the electronically available information. Note that this list is likely incomplete, as new information frequently becomes available. As well, much important information is NOT yet available in digital format. When seeking out information on a given area, remember to search for written reports, local mapping initiatives, and other data sources. Local government, provincial and federal government agencies, and conservation groups may have knowledge of additional information sources. Local community groups (such as naturalists) are often a valuable source of local knowledge.

### D.1 Province-wide Mapping and Inventory

The Province of B.C. maintains and manages several land use and resource inventory information systems. These systems constitute a record of land, mineral, vegetative and other natural resources of the Province, as well as the rights, tenures and activities of those that use these resources. This information is compiled in an integrated Land and Resource Data Warehouse. For more information, see <http://lrdw.ca/>

To make a map using the data warehouse, see <http://webmaps.gov.bc.ca/imfx/imf.jsp?site=imapbc>

**Eco-Cat** (the Ecosystem Report Catalogue) (<http://www.env.gov.bc.ca/ecocat/>) is a website where you can access data and inventory from many different sources, including project reports and associated files. Searches can be done using keywords, for example regions or vegetation type.

The **Conservation Data Centre** (<http://www.env.gov.bc.ca/cdc/index.html>) provides an Endangered Species and Ecosystems website (<http://www.env.gov.bc.ca/atrisk/index.html>) with links to provincial data sources.

Get detailed information on rare and endangered species and ecosystems in British Columbia through the **BC Species and Ecosystems Explorer** (<http://www.env.gov.bc.ca/atrisk/toolintro.html>). Information includes status, distribution, life histories, conservation needs, recovery plans and more. You can also generate lists of rare British Columbia plant and animal species and ecosystems and link to related documents.

**iMap BC** ([http://www.data.gov.bc.ca/dbc/geographic/view\\_and\\_analyze/imapbc/index.page](http://www.data.gov.bc.ca/dbc/geographic/view_and_analyze/imapbc/index.page)) allows the user to view thousands of map datasets hosted in the BC Geographic Warehouse.

Use the **NatureServe Explorer** (<http://www.natureserve.org/explorer/>) to find national and global information about species in Canada and the United States.



Use **Mapped Known Locations** (<http://www.env.gov.bc.ca/atrisk/ims.htm>) to find complete records for known locations of Red- and Blue-listed species and ecosystems.

Terrain stability mapping [http://www.env.gov.bc.ca/terrain/terrain\\_files/stds/stability/](http://www.env.gov.bc.ca/terrain/terrain_files/stds/stability/)

**GIS data** can be obtained through

- ◆ **Geographic Data Discovery Service** <https://apps.gov.bc.ca/pub/geometadata/>
- ◆ **Ministry of Forests, Lands and Natural Resource Operations**, Strategic Land Policy and Legislation Branch [http://www.ilmb.gov.bc.ca/slrp/datamgmt\\_supportdocs.html](http://www.ilmb.gov.bc.ca/slrp/datamgmt_supportdocs.html)

Many environmental atlases are available on-line through the **Community Mapping Network** (<http://www.cmnbc.ca/>). These require that you download MapGuide. Atlases include:

- ◆ B.C. Grasslands Atlas [http://www.shim.bc.ca/grassland/grassland\\_public.htm](http://www.shim.bc.ca/grassland/grassland_public.htm)
- ◆ B.C. Wetlands Atlas [http://www.cmnbc.ca/atlas\\_gallery/bc-wetlands-atlas](http://www.cmnbc.ca/atlas_gallery/bc-wetlands-atlas)

For information on nest site data and annual monitoring reports for bird species identified in Section 34 of the Wildlife Act, including Great Blue Heron, Bald Eagle, and Golden Eagle, contact regional Provincial staff, if the information is not available through online sources (see below).

- ◆ Conservation covenants: B.C. Lands in Trust Registry <http://registry.ltabc.ca/>
- ◆ Fisheries Inventory Reports <http://www.env.gov.bc.ca/fish/> provides a listing of available fish and fish habitat inventory reports.
- ◆ Eelgrass Bed Mapping Atlas <http://www.shim.bc.ca/eelgrass/main.htm>
- ◆ Fisheries Inventory Summary System (FISS) <http://www.env.gov.bc.ca/fish/fiss/index.html>
- ◆ Floodplain mapping [http://www.env.gov.bc.ca/wsd/data\\_searches/fpm/](http://www.env.gov.bc.ca/wsd/data_searches/fpm/)
- ◆ Habitat Wizard <http://www.env.gov.bc.ca/habwiz/>
- ◆ Sensitive Habitat Inventory and Mapping data <http://www.shim.bc.ca/shim/shimloginscreen2.htm>

## D.2 Species at Risk

Species at Risk and Local Governments website <http://www.speciesatrisk.bc.ca/>

**COSEWIC** (Committee on the Status of Endangered Wildlife in Canada) information on the status of plants and animals in Canada <http://www.cosewic.gc.ca/>



## D.3 Regional Mapping and Inventory

Regional Ministry of Environment websites (<http://www.env.gov.bc.ca/main/prgs/regions.htm>) provide additional local information.

Regional and district Ministry of Forests, Lands and Natural Resource Operations offices provide information on rare plant communities in their area: <http://www.for.gov.bc.ca/mof/regdis.htm>

The Ministry of Forests, Lands, and Natural Resource Operations provides information on:

- ◆ Crown land management <http://www.ilmb.gov.bc.ca/category/business-area/crown-land-management>
- ◆ Coastal and marine plans <http://www.ilmb.gov.bc.ca/content/about/2010/04/08/coastal-marine-planning>

Many regional environmental atlases are available on-line, including:

- ◆ Alberni Clayoquot Regional District 'Alberni Valley Stream Atlas'. For information, contact the regional district planning department (phone 250-720-2700 or e-mail [mailbox@acrd.bc.ca](mailto:mailbox@acrd.bc.ca))
- ◆ Capital Regional District Natural Areas Atlas and Harbours Atlas <http://crdatlas.ca/>
- ◆ Central Coast Watershed Atlas <http://www.shim.bc.ca/centralcoast/main.htm>
- ◆ Comox Valley Project Watershed Society <http://www.shim.bc.ca/projectwatershed/main.htm>
- ◆ Comox Strathcona Sensitive Habitat Atlas <http://www.shim.bc.ca/atlas/comidx.htm>
- ◆ Forage Fish Atlas and Data Management System [http://www.cmnbc.ca/atlas\\_gallery/forage-fish-atlas-and-data-management-system](http://www.cmnbc.ca/atlas_gallery/forage-fish-atlas-and-data-management-system)
- ◆ Fraser River Estuary Management Program Habitat Classifications mapping <http://cmnmaps.ca/FREMP/intro%20disclaimer.html>
- ◆ Fraser Valley Regional District Habitat Atlas <http://www.shim.bc.ca/fvrd/main.htm>
- ◆ Habitat Atlas for Wildlife at Risk, Thompson-Okanagan Region <http://www.env.gov.bc.ca/okanagan/esd/atlas/atrisk.html>
- ◆ ICNRC Stream Observation Mapping Tool <http://www.shim.bc.ca/icnrc/main.htm>
- ◆ Invasive Species in Langley B.C. <http://www.shim.bc.ca/invasivespecies/main.cfm>
- ◆ North Okanagan Resource/Habitat Atlas <http://shim.bc.ca/atlas/nord/index.cfm>
- ◆ Pacific Coastal Resources Atlas [http://www.shim.bc.ca/Coastal/Coastal\\_entry.htm](http://www.shim.bc.ca/Coastal/Coastal_entry.htm)
- ◆ Sea To Sky Atlas [http://www.cmnbc.ca/atlas\\_gallery/sea-to-sky-habitat-atlas](http://www.cmnbc.ca/atlas_gallery/sea-to-sky-habitat-atlas)



- ◆ Sensitive Ecosystems Inventories (<http://www.env.gov.bc.ca/sei/index.html>) are currently available for East Vancouver Island and Gulf Islands; Sunshine Coast; Bowen and Gambier Islands; Central Okanagan; and Bella Vista Goose Lake (North Okanagan)
- ◆ Shorekeepers database <http://www.keepersweb.org/Shorekeepers/Database/index.htm>
- ◆ South Coast Cutthroat Atlas <http://www.shim.bc.ca/cutthroat/main.htm>
- ◆ South Coast Conservation Program <http://www.sccp.ca/>
- ◆ South Okanagan Lower Similkameen Habitat Atlas for Wildlife at Risk <http://www.env.gov.bc.ca/okanagan/esd/atlas/development.html>
- ◆ Sunshine Coast Habitat Atlas <http://habitat.scrd.bc.ca/>
- ◆ Upper Skeena Atlas <http://www.shim.bc.ca/skeena/main.htm>
- ◆ Wildlife Tree Stewardship Atlas [http://www.shim.bc.ca/wits2/main\\_public.html](http://www.shim.bc.ca/wits2/main_public.html) (coverage of southwestern British Columbia)



## Appendix E Checklists

### E.1 Checklist for Community Plan Development

Good environmental planning at the community level can take time and money—but the investment will pay for itself in a better quality of life, savings in infrastructure and liability costs, and payback from increased property values.

This checklist is intended for use by local governments to help determine if environmental issues are being addressed in the Official Community Plan (OCP) and other strategic planning processes. This is one part of a triple-bottom line approach that will also look at economic and social interests when developing and updating community plans. Some of these questions demand complex answers, and are included to encourage local governments and others to address these issues during the development of community plans.

Although this checklist is specifically aimed at official community plan development, many of these questions will also apply when developing watershed plans, local area plans, or comprehensive development plans.

In this checklist:

- ◆ ‘Environmentally Valuable Resources’ include all features, places, and species whose presence enhances the biodiversity of the area. Environmentally Valuable Resources range in size from single trees to extensive landscape features, and can include rare or common habitats, plants, and animals.
- ◆ ‘Hazard lands’ include areas subject to erosion, flooding, wildfires, and wildlife conflicts, as well as contaminated sites and other areas deemed to have settlement constraints.

Checks in the ‘yes’ and the ‘not applicable’ (N/A) columns indicate that environmental guidelines have been considered. Checks in the ‘no and ‘unknown’ columns suggest that further action or explanations are needed.

#### E.1.1 Community Plan Checklist

For detailed information, refer to [Section 2: Community Planning](#).



Community Plan checklist for local government	Yes	No	Un-known	N/A	Comments
<b>Inventory and Mapping ( <a href="#">Section 2.4.1</a> )</b>					
<p>1. Is there detailed (and accurate) inventory information about:</p> <ul style="list-style-type: none"> <li>▲ terrestrial and aquatic ecosystems, including riparian areas</li> <li>▲ species at risk and other wildlife (including Recovery Plans for species at risk where applicable)</li> <li>▲ protected areas (federal, provincial, regional, or municipal)</li> <li>▲ areas with conservation covenants or other protection agreements</li> <li>▲ habitat reservoirs/refuges (<a href="#">Section 2.4.1</a>)</li> <li>▲ wildlife corridors (for large and small species)</li> <li>▲ agricultural lands</li> <li>▲ groundwater and hydrology</li> <li>▲ hazard lands</li> </ul>	<input type="checkbox"/>  Include information in OCP (except selected species at risk and cultural formation—see <a href="#">Section 2.4.1</a> )	<input type="checkbox"/>  Seek out additional data (see <b>Appendices B and D</b> ), establish development permit/information areas where more detailed information may be required, or establish a plan to gather missing information	<input type="checkbox"/>	<input type="checkbox"/>	
<p>2. Does the OCP include maps at a broader (regional or multi-regional) scale, so that environmental values in adjacent areas (outside of the plan area) and cross-border wildlife corridors can be identified?</p>	<input type="checkbox"/>	<input type="checkbox"/>  Expand the area mapped	<input type="checkbox"/>	<input type="checkbox"/>	
<p>3. Does the OCP include maps at a sufficiently detailed scale to identify sites with high environmental values (where development needs to occur in a sensitive manner)?</p>	<input type="checkbox"/>	<input type="checkbox"/>  Revise scale or include additional maps	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Scope of OCP</b>					
<p>4. Do the OCP goals address a full spectrum of environmental concerns, including:</p> <ul style="list-style-type: none"> <li>▲ protection of wildlife species and their habitats</li> <li>▲ protection and enhancement of wildlife corridors</li> <li>▲ control of invasive species (plants and animals)</li> <li>▲ protection of ecological integrity (ecosystem features and functions)</li> <li>▲ protection of air quality</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>  Adjust goals accordingly	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Community Plan checklist for local government	Yes	No	Un-known	N/A	Comments
<ul style="list-style-type: none"> <li>▲ protection of surface and groundwater quality and quantity</li> <li>▲ integrated rainwater management and reduction of impervious surfaces</li> <li>▲ promotion of 'smart growth' principles</li> <li>▲ energy and water efficiency</li> <li>▲ waste reduction</li> <li>▲ avoidance of hazards (wildfire, wildlife conflicts, areas subject to flooding and erosion, etc.)</li> </ul>					
5. Has consideration been given to the impacts of development on or from neighbouring communities (e.g., shared aquifers or watercourses) or on/ from lands outside of local government control (e.g., forest lands, agricultural land reserve, Crown lands)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Has consideration been given to long-term and cumulative impacts of development (e.g., total impervious surfaces, ecosystem fragmentation)? <a href="#">(Section 2.3.4)</a>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Does the OCP establish measurable targets for environmental goals and identify how these will be monitored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Smart Growth</b> <a href="#">(Section 2.3.1)</a>					
8. Does the OCP define an urban containment boundary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the infrastructure plan encourage development within the urban containment boundary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Does the OCP provide incentives that encourage infill and re-development in preference to greenfield development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Does the OCP encourage high-density, mixed-use developments near existing infrastructure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Does the OCP encourage and enable alternative development standards (e.g., narrower roads, cluster developments) as appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Does the OCP encourage and enable energy efficient developments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. Does the OCP support healthy built environments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Community Plan checklist for local government	Yes	No	Un-known	N/A	Comments
14. Does the OCP consider impacts on agricultural lands? See <a href="#">Section 2.4.3</a> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15. Does the OCP consider the cumulative impacts of site level developments? See <a href="#">Section 2.3.4</a> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Protection and restoration of species and ecosystems (<a href="#">Section 2.4</a>)</b>					
16. Have habitat reservoirs and refuges been either designated as parkland or placed in a development permit area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17. Have adequate buffers between proposed development areas and Environmentally Valuable Resources been identified? (See <a href="#">Section 4.3.2</a> and <a href="#">Table 4.2</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
18. Does the OCP promote the protection of Environmentally Valuable Resources during development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19. Does the OCP promote the protection of Environmentally Valuable Resources after development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
20. Is there a management plan for urban wildlife?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
21. Is there a plan for the protection and enhancement of urban forests?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
22. Are plans in place to manage invasive species and restore degraded ecosystems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Development permit areas (DPAs)</b>					
23. Have environmental DPAs been established for areas where there are known (or probable) high environmental values?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24. Are the DPAs large enough to include adequate buffers? (See <a href="#">Section 4.3.2</a> and <a href="#">Table 4.1</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25. Will DPA guidelines effectively manage development and provide adequate protection for environmentally valuable resources and hazard lands?	<input type="checkbox"/>	<input type="checkbox"/> Identify appropriate guidelines	<input type="checkbox"/>	<input type="checkbox"/>	
26. Do existing zoning bylaws, DPAs and other bylaws conform to the OCP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Community Plan checklist for local government	Yes	No	Un-known	N/A	Comments
<b>Water use and management</b>					
27. Does the OCP promote integrated rainwater management, and the reduction of impervious surfaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
28. Is there sufficient water supply for all users (including fish and other wildlife) if the community is built out to the maximum under designated zoning?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
29. Have any surface water and groundwater quality issues been identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
30. Has a Well Protection Plan been prepared?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
31. Have areas with high risk of erosion and sedimentation been identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are there timing restrictions and other measures in place to prevent site clearing during periods with high erosion potential?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Air quality and climate change (<a href="#">Section 2.6</a> and <a href="#">2.5</a>)</b>					
32. Does the OCP address air quality issues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Does the OCP promote alternatives to driving, especially for single occupant vehicles?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Are there programs to provide alternatives to backyard burning (e.g. composting of yard waste)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
33. Does the OCP address ways to manage climate-related risks ( <a href="#">Section 2.5</a> )?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Have future expected climates been identified (e.g., higher winter rainfall, summer drought, winds, temperate changes)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Have other climate challenges been identified (e.g., sea-level rise, changes in flooding or other hazards)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Does the OCP include greenhouse gas emissions targets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Does the OCP address climate adaptation measures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Community Plan checklist for local government	Yes	No	Un-known	N/A	Comments
34. Are there incentives for green buildings and neighbourhoods that meet LEED or other energy efficiency standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Hazard management (Section 2.8)</b>					
35. Does the OCP preclude development in areas subject to flooding, tsunamis, or sea level rise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
36. Does the OCP preclude development in areas subject to rockfalls, slumping, erosion, and earthquake hazard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
37. Does the OCP preclude or control development in areas subject to wildfire hazard?  Are there regulations and policies in place to reduce fire risk in these areas, for example using fire-proof building materials?	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	
38. Does the OCP preclude development in areas of potential wildlife conflicts?  Are there regulations and policies in place to reduce risk in these areas, for example using appropriate garbage management?	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>	
<b>Waste management</b>					
39. Does the community have a liquid waste management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
40. Does the community have a solid waste management plan that maximizes recycling and recovery?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
41. Have resource recovery opportunities been fully explored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
42. Has the management of hazardous wastes been addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Maintaining of the intent of the OCP</b>					
43. Are there limitations on how or how often the OCP can be revised (to prevent a gradual erosion of its intent over time)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## E.2 Checklists for Site Development

This section contains two checklists: the first one intended for local governments to use when reviewing a site development proposal, to help determine if environmental guidelines are being followed. The second checklist is intended for use by developers, to help them confirm that their proposal has addressed environmental issues.

- ◆ In these checklists:
- ◆ **‘Environmentally Valuable Resources’** include all features, places, and species whose presence enhances the biodiversity of the area. Environmentally Valuable Resources range in size from small patches to extensive landscape features, and can include rare or common habitats, plants, and animals.
- ◆ **Hazard lands** include areas subject to erosion, flooding, wildfires, wildlife conflicts, contaminated sites and other areas deemed to have development constraints.

Checks in the ‘yes’ and ‘not applicable’ (N/A) columns indicate that environmental guidelines have been considered. Checks in the ‘no’ and ‘unknown’ columns suggest that further action or explanations are needed.

For detailed information see [Section 3: Site Development and Management](#), [Section 4: Environmentally Valuable Resources](#), [Appendix B: Bio-inventory Terms of Reference](#), and [Appendix F](#).



**E.2.1 Site Checklist for Local Governments: Protection and Conservation Tools.**

Site development checklist for local governments	Yes	No	Un-known	N/A	Comments
<b>Local government incentives and requirements for site development</b>					
1. Is this site subject to development permit guidelines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Will development permit guidelines provide adequate protection to Environmentally Valuable Resources?	<input type="checkbox"/>	<input type="checkbox"/> Modify DPA guidelines for future applications	<input type="checkbox"/>	<input type="checkbox"/>	
2. Are there incentives in place to encourage environmental protection and restoration (e.g., density bonusing, faster approvals)?	<input type="checkbox"/> Discuss these with developer	<input type="checkbox"/> Identify and enable appropriate incentives	<input type="checkbox"/>	<input type="checkbox"/>	
3. Are there policies in place to encourage amenity bonuses (e.g., contributions to park acquisition funds) or other forms of mitigation for habitat loss?	<input type="checkbox"/>	<input type="checkbox"/> Identify and enable appropriate policies	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Availability of information for decision-making (Section 3.3.1 and Appendix B)</b>					
4. Does the Official Community Plan (or other available data/information) identify Environmentally Valuable Resources and/or hazard lands on or near the development site?	<input type="checkbox"/> Ensure developer has this information	<input type="checkbox"/> Inventory and identify in future plans	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Bio-inventory ( Appendix B)</b>					
5. Has a preliminary site survey (bio-inventory) been conducted and provided to the local government? (see Appendix B)	<input type="checkbox"/>	<input type="checkbox"/> Request a preliminary site survey before any further proposal review	<input type="checkbox"/>	<input type="checkbox"/>	
6. Does the preliminary site survey (bio-inventory) identify Environmentally Valuable Resources on or near (within 100 m) the proposed development site?	<input type="checkbox"/> See question 7	<input type="checkbox"/> Ensure the proposal follows <a href="#">Section 3</a> guidelines	<input type="checkbox"/>	<input type="checkbox"/>	

continued...





Site development checklist for local governments	Yes	No	Un-known	N/A	Comments
15. Will rainwater be managed on-site? ( <a href="#">Section 3.7.1</a> )	<input type="checkbox"/>	<input type="checkbox"/> Discuss options with developer	<input type="checkbox"/>	<input type="checkbox"/>	
16. Are measures in place to protect surface and groundwater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17. Have construction timing windows been identified?	<input type="checkbox"/>	<input type="checkbox"/> Check applicable timing windows ( <a href="#">Section 4</a> )	<input type="checkbox"/>	<input type="checkbox"/>	
18. Do septic systems meet or exceed provincial and local governments' requirements? ( <a href="#">Section 3.10.1</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19. Have wildlife travel corridors been retained (and enhanced)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
20. Are there restoration plans for degraded habitats?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Planning and design stage: Environmentally Valuable Resources present (<a href="#">Section 4.3.1</a>)</b>					
21. Has a detailed site bio-inventory and assessment of Environmentally Valuable Resources been prepared by an appropriately qualified professional, and provided to the local government?	<input type="checkbox"/>	<input type="checkbox"/> Request a detailed site bio-inventory and assessment before further proposal review	<input type="checkbox"/>	<input type="checkbox"/>	
22. Does the proposal follow the appropriately qualified professional recommendations?	<input type="checkbox"/>	<input type="checkbox"/> Reject the proposal or request revisions	<input type="checkbox"/>	<input type="checkbox"/>	
23. Have any Environmentally Valuable Resources and their buffer areas (including streams and streamside protection and enhancement areas) been identified and protected from development impacts?	<input type="checkbox"/>	<input type="checkbox"/> Discuss options with developer	<input type="checkbox"/>	<input type="checkbox"/>	
24. Is there a watercourse on site, and is it fish-bearing or flow into fish-bearing waters?	<input type="checkbox"/> A Riparian Areas Assessment may be required (see <a href="#">Section 4.3.2</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Site development checklist for local governments	Yes	No	Un- kno- wn	N/A	Comments
25. Do trails and roads avoid environmentally valuable resources?	<input type="checkbox"/>	<input type="checkbox"/> Review layout/road alignment options	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Construction stage (Section 3 and Section 4.3.3)</b>					
26. Have all permits and approvals been obtained prior to construction (e.g., for instream works)?	<input type="checkbox"/>	<input type="checkbox"/> Assist developer to identify needed permits	<input type="checkbox"/>	<input type="checkbox"/>	
27. Has an environmental monitor been hired to oversee the construction phase?	<input type="checkbox"/>	<input type="checkbox"/> Recommend developer hire one	<input type="checkbox"/>	<input type="checkbox"/>	
28. Are spill prevention measures in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
29. Are measures in place to protect Environmentally Valuable Resources during construction (including additional [timing] buffers and construction timing windows)?	<input type="checkbox"/>	<input type="checkbox"/> Work with developer to identify protection measures	<input type="checkbox"/>	<input type="checkbox"/>	
30. Is water quality being protected and erosion/sedimentation being prevented?	<input type="checkbox"/>	<input type="checkbox"/> Ensure an erosion and sedimentation plan is in place	<input type="checkbox"/>	<input type="checkbox"/>	
31. Are post development impacts being monitored for future action as needed?	<input type="checkbox"/>	<input type="checkbox"/> Have developer commit to extended monitoring	<input type="checkbox"/>	<input type="checkbox"/>	



## E.2.2 Site Checklist for Developers

Developers should consider the list below before designing the development, during construction, and post-development to confirm that they are following environmental guidelines. Checks in the ‘yes’ and ‘not applicable’ (N/A) columns imply that environmental guidelines are being followed. Checks in the ‘no’ and ‘unknown’ columns indicate that further action or explanations are needed.

Developers are encouraged to include a copy of this checklist with their development application.

For detailed information see [Section 3: Site Development and Management](#), [Section 4: Environmentally Valuable Resources](#), and **Appendix B: Bio-inventory Terms of Reference**.

Site development checklist for developers	Yes	No	Un-known	N/A	Comments
<b>Inventory (Section 3.3.1 and Appendix B)</b>					
1. Has a preliminary site survey (bio-inventory) been completed and submitted to the local government? (See <b>Appendix B</b> )	<input type="checkbox"/>	<input type="checkbox"/> Conduct preliminary site survey	<input type="checkbox"/>	<input type="checkbox"/>	
2. Does the preliminary site survey (bio-inventory) identify Environmentally Valuable Resources on or near (within 100 m of) the development site?	<input type="checkbox"/> See question 3	<input type="checkbox"/> Follow <a href="#">Section 3</a> guidelines and see question 5	<input type="checkbox"/>	<input type="checkbox"/>	
3. Are the Environmentally Valuable Resources set aside as ‘no-development’ areas (see <b>Appendix B</b> )?	<input type="checkbox"/> Follow <a href="#">Section 3</a> and <a href="#">Section 4</a> guidelines	<input type="checkbox"/> Complete a detailed site bio-inventory and assessment & see questions 14–18.	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Site concept and design (Section 3.4 and Section 4.3.1)</b>					
4. Does the proposal identify AND avoid (or address) potential hazards such as: <ul style="list-style-type: none"> <li>▲ Terrain stability (earthquakes, erosion)</li> <li>▲ Areas subject to flooding, sea level rise or tsunamis</li> <li>▲ Wildfires</li> <li>▲ Wildlife conflicts</li> <li>▲ Contaminated sites</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/> Identify and address concerns	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Site development checklist for developers	Yes	No	Un- kno- wn	N/A	Comments
5. Have smart growth options, progressive development standards, and LEED or other standards been considered and discussed with the local government?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Will rainwater be managed on-site? ( <a href="#">Section 3.7.1</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Are buildings sited to avoid air quality concerns? ( <a href="#">Section 3.8</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Do septic systems meet or exceed provincial and local governments' requirements? ( <a href="#">Section 3.10.1</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Have wildlife corridors been retained to link to nearby habitat reservoirs and refuges (off-site and on-site)? ( <a href="#">Section 2.4.1</a> and <a href="#">Section 4.3.1</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Work with local government staff to retain wildlife corridors between the development site and these habitats.
10. Have roads been designed to minimize disruption to wildlife movements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redesign the development or use mitigation techniques
11. If the site is adjacent to a protected area, have protected area staff been consulted and any impacts mitigated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Consult staff
12. Will the development avoid or mitigate off-site impacts (e.g., modified hydrology, impacts on neighbouring environmentally sensitive areas, potential for wildlife conflicts)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Redesign the development or use mitigation techniques
13. Have opportunities for restoration been identified and incorporated into the plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

continued...



Site development checklist for developers	Yes	No	Un-known	N/A	Comments
<b>Site concept and design: Environmentally Valuable Resources present (Section 4)</b>					
14. Has a detailed site bio-inventory and assessment been completed by an appropriately qualified professional and submitted to the local government (see Appendix B)?	<input type="checkbox"/> Follow <a href="#">Section 4</a> guidelines and advice from report	<input type="checkbox"/> Complete a site bio-inventory assessment	<input type="checkbox"/>	<input type="checkbox"/>	
15. Have buffers around the Environmentally Valuable Resources been identified?  Do proposed buffers meet or exceed the Provincial guidelines? ( <a href="#">Section 4, Table 4.1</a> )	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	
16. Does the proposal follow the appropriately qualified professionals' recommendations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17. Will the tentative site design retain the Environmentally Valuable Resources?	<input type="checkbox"/>	<input type="checkbox"/> Use appropriately qualified professionals to identify suitable measures	<input type="checkbox"/>	<input type="checkbox"/>	
18. Have shorelines and streambanks been protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Development and construction (Section 3.3)</b>					
19. Has an on-site monitor been hired where needed, and given authority to halt work if necessary?	<input type="checkbox"/>	<input type="checkbox"/> Hire monitor	<input type="checkbox"/>	<input type="checkbox"/>	
20. Have the permits and approvals required for construction been identified and obtained (e.g., for instream works)?	<input type="checkbox"/>	<input type="checkbox"/> Acquire needed permits	<input type="checkbox"/>	<input type="checkbox"/>	
21. Is construction work scheduled ONLY during recommended timing windows?	<input type="checkbox"/>	<input type="checkbox"/> Identify and adhere to timing windows	<input type="checkbox"/>	<input type="checkbox"/>	
22. Are measures in place to protect surface and groundwater? (See <a href="#">Section 3.7</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
23. Is there an erosion and sediment control plan in place and being followed? ( <a href="#">Section 3.7.3</a> )	<input type="checkbox"/>	<input type="checkbox"/> Address erosion and sedimentation issues before start-up	<input type="checkbox"/>	<input type="checkbox"/>	
					continued...



Site development checklist for developers	Yes	No	Un-known	N/A	Comments
24. Is air quality being protected during construction? ( <a href="#">Section 3.8</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25. Are there measures in place to prevent site contamination and spills? ( <a href="#">Section 3.9</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
26. Have steps been taken to reduce construction waste? ( <a href="#">Section 3.9</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
27. Are measures in place to protect Environmentally Valuable Resources during construction (e.g., fencing, additional timing buffers, timing windows)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
28. Is water quality being protected and erosion/sedimentation being prevented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
29. Is restoration of degraded habitats being undertaken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
30. Are trails located outside of Environmentally Valuable Resources and their buffers?	<input type="checkbox"/>	<input type="checkbox"/> Work with an appropriately qualified professional to design trails	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Post development</b>					
31. Are natural landscaping techniques being followed? ( <a href="#">Section 3.5.2</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
32. Have any potentially invasive species been eliminated from landscaping choices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
33. Has use of pesticides been minimized or avoided? ( <a href="#">Section 3.9.5</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
34. Have wildlife attractants been minimized? ( <a href="#">Section 3.9.2</a> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
35. Are post development impacts being monitored for future action as needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



### E.3 Checklist for Clearing Adjacent to Protected Area

The following checklist was developed by B.C. Parks for consideration where logging takes place adjacent to parks and protected areas. The same considerations apply wherever land is being cleared for development adjacent to a protected area.

COMPANY NAME:    YEAR:						
FDP:    ADJACENT TO:						
N/A: Not Applicable R: Requested/Required Y: Yes (Concerns) C: Completed						
Block Number						
Cutting year						
Steps	Strongly advise company about the benefits of legal surveys & consequences of trespass					
	Request base maps: block & road layouts (pesticides/herbicide prescriptions?)					
	Stress importance of windfirm boundaries. Request any windthrow hazard assessments.					
	Request any terrain stability tests					
	Stress that no danger trees are to be cut down in Protected Area (PA). WCB buffer must be outside PA					
	Stress no yarding from within the boundaries of the PA					
	Confirm if any activities (surveying etc.) will require access to the PA. If so LoP required.					
	Any water quality concerns?					
	Any visual quality concerns?					
	Any concerns regarding noise from logging operations impacting park visitors?					
	Any concerns regarding altered access to the Protected Area?					
	Any wildlife concerns?					
	Request timely deactivation of roads and stream crossings in nearby riparian areas.					
	Request an on-site visit with an appropriate representative from the company					
	Suggest annual review of forest development adjacent to PA's or as issues arise					
	CC response letter to appropriate Park staff, MOF District Timber Officer & MOE HPO					
	During site visit note concerns and document (photograph?) accordingly					
	During site visit take bearing photos of cut- block/park boundary interface					
	Complete follow up letter (Thank you etc, concerns about site visit, etc.)					
	Carry out a post-harvest inspection. Check boundaries, blowdowns etc.					
	Follow up letter if any issues are raised from post-harvest inspection					

continued...



<p>COMPANY NAME:    YEAR:</p> <p>FDP:    ADJACENT TO:</p> <p>N/A: Not Applicable R: Requested/Required Y: Yes (Concerns) C: Completed</p> <p>Questions that may need to be raised:</p> <ul style="list-style-type: none"> <li>▲ Water Quality: potable water source for public down stream?</li> <li>▲ Noise: Is this a popular place for park visitors (hikers, campers, canoeists etc.) Can they log in off-season? Can they move logging roads away from boundary or use alternatives such as cable logging?</li> <li>▲ Visual Quality: Visual impact for park visitors? Can they leave a buffer or redesign cutting layout?</li> <li>▲ Altered Access to Protected Area: Will their activities alter or improve access into PA? Gates required? Signage required? Road deactivation after harvest?</li> <li>▲ Wildlife: Habitat Fragmentation? Connectivity? Genetic Isolation? Buffer around wildlife trees (raptors)? Fish/Aquatic values? Nesting birds? (Suggest an alternative season?) Adjacent to a deer winter range?</li> <li>▲ Upstream Ecological Integrity? Trees should be retained in the RMZ to maintain large organic woody debris at levels similar to pre-logging condition and to protect water quality and aquatic habitat. Some windfirming treatment may be required as well along streams to protect these values.</li> <li>▲ Use fish presence instead of gradient to classify streams.</li> <li>▲ Best Management Practices as described in the RMA Guidebook should be applied on all waters flowing into the Protected Area.</li> </ul>
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## Appendix F Protection and Conservation Tools

This section provides a very brief summary of some conservation tools. Professional advice (including legal advice where necessary) and additional detail should be sought before entering into any agreements.

Tools for the protection and conservation of natural areas fall into five categories:

- ◆ Land acquisition
- ◆ Planning tools
- ◆ Incentives
- ◆ Landowner stewardship
- ◆ Landowner agreements

For more detail on these tools, and examples of how they are applied, see *Securing Private Lands for Biodiversity Conservation* (Abrams and Gardner 2006), [\*The HAT Manual: Protecting Natural Areas in the Capital Region\*](#) (Habitat Acquisition Trust 2004) and [\*Keeping it Green: A Citizen's Guide to Urban Land Protection\*](#) (Evergreen 2005).

### F.1 Land Acquisition

The most effective way to protect a natural area may be to purchase the land outright.

#### F.1.1 Acquisition by Local Government

Local governments may acquire land in several ways:

- ◆ During subdivision of more than three lots, the municipality can require a developer to provide for up to 5% of the site for parkland (or provide a cash equivalent into the park acquisition fund). The developer can voluntarily provide more than 5%.
- ◆ Local governments may negotiate for larger park/greenspace donations in return for other development concessions.
- ◆ The local government may purchase lands outright using park acquisition funds or other monies.
- ◆ Local governments may jointly purchase land with another agency, such as land trust organizations or other levels of government.
- ◆ Private landowners may donate their land to a local government, and qualify for a tax credit (see **F.3.2: Incentives**). Some landowners negotiate the right to stay on the land for their lifetime, with the property passing to the local government after their death.



### F.1.2 Acquisition by Senior Government Agency

- ◆ Land may be donated or returned to the provincial Crown (i.e., the provincial government). This can include riparian areas, land surrounding nest trees, and other Environmentally Valuable Resources. Private landowners donating their land to the province can qualify for a tax credit (see Section **F.3.2: Incentives**)
- ◆ The federal and provincial governments purchase or acquire land from time to time as parks, ecological reserves, etc. The area in question must have outstanding ecological or other values to be worthy of consideration.

### F.1.3 Acquisition by Land Trusts or other Non-government Organizations

- ◆ Lands may be purchased by land trust organizations, sometimes in conjunction with local or senior governments. These lands may be managed by the land trust, or transferred leased to an appropriate government agency for long term management or transferred to an appropriate government agency. A conservation covenant may be put in place to ensure the long term protection of ecological values.
- ◆ Lands may be given to land trust organizations. The donor would qualify for tax breaks as an Eco-gift (see **Section F.3.2: Incentives**).
- ◆ The Province of British Columbia supports third party acquisition of important habitats through the [Habitat Conservation Trust Foundation](#) and other funding sources.

### F.1.4 Acquisition of Partial Interest

Local governments or conservation organizations may acquire only a partial interest in the land.

- ◆ Easements and rights of way are usually used for utility corridors, but could also be acquired for parkland, trails, or wildlife corridors, with the landowner's consent.
- ◆ 'Profits à prendre' is the right to enter land owned by another and to take something off the land. It has been used for conservation purposes, where a landowner gives the right to log their land to a conservation organization. The conservation group choose not to log, but as they hold the timber rights they can prevent others from logging the property.
- ◆ Some or all of a property may be leased or licensed to a conservation organization that manages the area for its natural values.



## F.2 Planning and Regulatory Tools

Local governments can use policies and bylaws to protect natural areas:

- ◆ Official Community Plans can be used to
  - ▲ promote awareness, understanding and appreciation of conservation issues;
  - ▲ advocate policies to promote good practices
  - ▲ reduce development pressure, cluster development, etc.
- ◆ Zoning bylaws may be used to:
  - ▲ Create zoning for conservation of amenities
  - ▲ Zoning regulations may protect natural areas. For example zoning may designate building setbacks (e.g., from a stream or other environmentally valuable resource), and establish comprehensive development zones for large sites with guidelines for environmental protection.
- ◆ Sometimes very low density zones are used to protect natural areas, as typically only a small portion of the lot is developed. However, low density developments also contribute to rural sprawl, and there is no guarantee that the landowner will not log or otherwise modify the natural vegetation of the property. This is usually only a successful strategy if conservation covenants are placed in the undeveloped parts of the properties.
- ◆ Public lands may be zoned as parks. Setting aside a natural area as a ‘municipal park’ has to be carefully planned, as ‘municipal parks’ also include playing fields, playgrounds and other activities that can conflict with habitat protection. Some municipalities have created a special category for ‘natural parks’ where habitat retention is the primary goal, and some are either placing conservation covenants or having a shared interest on title with a conservation organization on the park to ensure that future councils protect the natural values.
- ◆ Official community plans can establish development permit areas (DPAs) with specific guidelines for development. DPAs do not prevent development, but they can help to control how development occurs.
- ◆ Subdivision proposals are examined and approved by approving officers. An approving officer may refuse to approve the subdivision if it is ‘not in the public interest’ (e.g., where a proposed development would destroy Environmentally Valuable Resources).
- ◆ Local governments can pass a variety of bylaws that can be used to protect natural features including
  - ▲ tree protection bylaws
  - ▲ soil deposit and removal bylaws
  - ▲ animal control bylaws
  - ▲ landscaping bylaws
  - ▲ watercourse protection bylaws.



## F.3 Incentives

### F.3.1 Incentives to Develop in the Least Sensitive Areas

- ◆ Local governments can make it more attractive for developers to site developments away from Environmentally Valuable Resources through the use of:
  - ▲ Clustering. This benefits developers and local governments as the costs of putting in and maintaining infrastructure is cheaper than for sprawling developments.
  - ▲ Density bonusing. A developer is allowed to increase the density of development on the site, in return for public amenities (such as greenspace) in other areas.
  - ▲ Density transfer. Permitted density from land with Environmentally Valuable Resources is transferred to another parcel of land.
  - ▲ Progressive development standards. Standards such as narrower roads may allow more of the site to be set aside for habitat protection.

### F.3.2 Economic Incentives

- ◆ Assessment relief. Local governments can offer income tax relief to landowners in exchange for a conservation covenant on ecologically valuable lands. For example, the Islands Trust [Natural Areas Property Tax Exemption Program](#) offers property tax reductions to landowners with a conservation covenant on their property.
- ◆ Ecological Gifts. ‘Eco-gifts’ are gifts of full title to a property, or the value of a conservation covenant. Landowners can receive federal and provincial tax relief for donations of environmentally sensitive areas and for conservation covenants. Recipients of Eco-gifts can be eligible land trusts and other non-government organizations, local government or the provincial government.

## F.4 Landowner Agreements

Landowners can enter into informal or legal agreements with others to protect natural values on their property.

- ◆ Handshake agreements. Landowners may enter agreements with a conservation organization that will protect or manage the land in certain ways (e.g., removing invasive species). For a list of land trust organizations, see <http://ltabc.ca/member-directory>. For a list of conservation and environmental organizations in Canada, see <http://www.planetfriendly.net/ecportal.html>
- ◆ Management agreements. These are more formal agreements with a simple written contract to manage the land in certain ways. This type of agreement is not binding on future owners. For more information see [Stewardship Options: A Guide for Private Landowners in British Columbia](#).



- ◆ Conservation covenants. This is a voluntary legal agreement that allows landowners to permanently protect specified natural and/or cultural features of the land, while still retaining ownership and use. It can cover all or part of a parcel of property. These covenants run with the title of the land and are binding on future landowners. Local governments, some conservation organizations and land trusts are eligible to hold conservation covenants. Conservation covenants are an increasingly popular tool, but have to be well written and regularly monitored to be effective. There are many excellent references on conservation covenants (see [Bibliography](#)).

## F.5 Stewardship

There are many things individual landowners can do to help protect natural areas on their property or in their region.

- ◆ Stewardship of land. There are many stewardship programs such as Living by Water (<http://www.bcnature.ca/projects/completed-projects/living-by-water/>) which provide advice to landowners on ways to take care of natural values on their properties.
- ◆ Naturescaping. By going 'natural', landowners can provide food sources for native species and reduce the risk of introducing invasive alien species into neighbouring habitats. For more information on the Naturescape program see <http://www.naturescapebc.ca/>
- ◆ Stewardship groups. There are many local groups who have formed 'Friends of' or similar community based groups to help protect and restore streams and other natural areas. Popular roles include the removal of invasive species, stream restoration, and tree-planting.

