

Template: Waterpower Project Development Plan

For the (name of stream) Waterpower Project

(April 30, 2002)

Submitted in support of applications filed under
Water Act and the *Land Act*

(This document is a **template** for use by the proponent
in the preparation of the information required for
assessing and deciding the applications.)



Applicant: (Name and address)

Date:

TABLE OF CONTENTS

PREFACE

1. PROJECT DEFINITION

- 1.1 Decision Requested**
- 1.2 Description of Land Requirements**
- 1.3 General Arrangement of Works**
- 1.4 Parameters for Operation of Works**
- 1.5 Watershed Characteristics**
- 1.6 Water Availability**
- 1.7 Market for the Product**
- 1.8 Effects of Project on Rights of Others**
- 1.9 Schedule for the Development of Project**

2. IMPACT ASSESSMENT

PREFACE TO IMPACT ASSESSMENT

- 2.1 Instream flow for fish**
- 2.2 Wildlife and Habitat**
- 2.3 Instream flow for Recreation**
- 2.4 Flood Control**
- 2.5 Water Quality**
- 2.6 Bridges and Ferries**
- 2.7 Roads**
- 2.8 Crown Owned Resources**
- 2.9 Existing Rights- Land Tenures**
- 2.10 First Nations**
- 2.11 Aesthetic Values**
- 2.12 Mineral Claims**
- 2.13 *Navigable Waters Protection Act***
- 2.14 Hazard to Public**
- 2.15 Hazard to Environment**
- 2.16 Public Access**

PREFACE

The adjudication of applications for water licences under the *Water Act* and, where required, land tenure under the *Land Act* for a waterpower project requires information to define the project and to assess the impacts from the construction and operation of the project. The Project Definition is the information used to determine the basic conditions for any water licence or land tenure that may be granted.

The information on the assessment of the proposed project is provided to agencies for input based on their legislated responsibilities. Other water licensees, applicants for water licences, riparian owners on the stream, owners of land affected by the works and other Crown land tenure holders in the area would use the information to determine if the Project affects their rights. The assessment of the impacts of the project defines the conditions for the mitigation and/or compensation for any water licence or land tenure that may be granted.

The information requirements identified under Project Definition and Impact Assessment are important in enabling an efficient review of an application for a waterpower project and proponents are encouraged to provide complete information. Incomplete information will delay review of a project application.

The Table of Contents outlined below is the appropriate format for proponents to use when generating and submitting information on a proposed waterpower project. A description of the information required under each heading is provided for the Project Definition section according to the Table of Contents. A non-exhaustive list of potential headings is provided for the Impact Assessment section that may be adjusted to address the impacts of the individual project.

1. PROJECT DEFINITION

1.1 Decision Requested

A brief statement of the decisions required for the project. The project may require a decision under both the *Water Act* and the *Land Act*. Both decisions should be described.

Example:

***Water Act* Application**

A water licence is required for the diversion of water from (insert name of stream) for the purpose of power.

If a water licence is also required for storage purposes provide a similar statement.

Note: Generally a water licence will not include more than one powerplant. A licence may have more than one purpose, and a powerplant may have more than one water licence.

If an existing land tenure or water licence needs to be amended for the project, the required amendments should also be described.

Other decisions required under the *Water Act* should also be described, e.g. order for joint use of works that are shared with another licensee.

Land Act Application

Tenure under the *Land Act* is required for the following components of the waterpower project:

- Insert list of components to be located on Crown land (the powerhouse, penstock, intakes and staging areas). If the type of tenure is known, use the appropriate name in the description. A list of components that may be required for a Waterpower Project is provided in the section General Arrangement of Works.
- Identify requirements for road access or road building on Crown land. Also note any requirements for public use of the road and requirements for access to lands beyond.
- Identify whether Crown land will be required for all or part of the transmission line (where known).

1.2 Description of Land Requirements

All of the Crown land and privately owned land that is required for every aspect of the project is to be described with dimensions (in meters) and area (in hectares). This includes the land on which the works will be located and any corridors that will be required for access roads (detailed road building specifications will be required by the Ministry of Forests), transmission lines, etc.

The proponent must indicate whether the various pieces of land required for the project are located on Crown or private land, and the manner in which an interest in the land is to be obtained. This interest can range from an agreement to purchase from a private landowner(s), to an application for Crown land.

The proponent should conduct a search at the Land Title Office for the correct legal description and ownership of all parcels of land required for the Project. Known Crown land encumbrances (i.e. power lines, commercial recreation activities) must be indicated. Transportation and utility corridors that may be affected should also be described.

- The land required for the project must be shown on maps and drawings as described in Step 1 of the Waterpower Project Application Guidebook.

1.3 General Arrangements of Works

The general arrangement of the project and its components must be described and referenced to the maps and drawings provided under the previous section.

Works required for a waterpower project include all those components needed to generate electricity and convey it to the user. For those projects connecting to the

provincial grid, the point of transmission line connection to the grid is the end of the works that will be licenced under the *Water Act*.

The following list may be used as a guide to the various components of a waterpower project:

- intakes on all streams to be diverted,
- canals, tunnels and natural watercourses to be used for conveying water to the intake of the penstock,
- intake of the penstock,
- penstock, powerhouse and tailrace,
- access roads required for operation and maintenance of completed project,
- switchyard and transmission lines,
- dam for the purpose of storage of water.

Note: Water impounded behind an intake is not for storage purpose, unless it changes the seasonal flow in the stream or is used for shaping the power output on a daily basis.

- area flooded by the storage or impoundment of water.

Note: An intake that impounds water above the natural boundary of the stream is considered to be flooding land, and the area of such flooded land must be identified.

- staging areas for the construction of the works,
- access roads to be used only for construction.

1.4 Parameters for Operation of Works

The parameters for the operation of the works are determined by the definition of the project, the shape and quantity of electricity to be provided by the project, and the impacts to be mitigated. The parameters are influenced by the conditions in the stream that exist at the time of the application.

Parameters determined by the definition of the project and the demand for electricity from the Project could include the following:

- The electricity is to be supplied to a customer that has a specific demand for electricity.
- The electricity is to be sold to a company that will accept the energy regardless of its shape. The storage of water at the intake during periods of low stream flow to shape the electricity to follow a particular demand during the day. Such shaping is also called load factoring.
- The operation of the waterpower plant is to be coordinated with several other powerplants to meet a demand of some specified shape. The other plants are not necessarily waterpower plants.
- The diversion of water during periods of seasonal low stream flow at the Waterpower plant is supported by storage. This storage may also be used for load factoring.

Parameters determined by impacts to be mitigated would include the impacts that are identified in section 2. Impact Assessment.

1.5 Watershed Characteristics

Describe the characteristics of the watershed that will contribute flow to the project. The climatic, topographic, slope, soils, tree-cover and other characteristics of the watershed and the Project site should be described. If available, pictures to illustrate these characteristics are helpful.

1.6 Water Availability

The information in this section is to describe the availability of water for use by the project including the following:

- Boundaries of the watershed that contributes water to the Project.
- Area – elevation curves for the contributory areas.
- The location of hydrometric and climatic stations that provide data for the analysis of water availability.
- The methodology for estimating the runoff to the points of diversion.
- Estimates of runoff should include the following:
 - ⇒ Peak flow for the design of structures
 - ⇒ Annual volume for various return periods, e.g. average, 5, 10, 20 and 50 years.
 - ⇒ Monthly volumes for each annual volume and monthly duration curves.
 - ⇒ Low flow in regard to instream flow requirements and providing water for other licensees.
- If storage is to be provided, describe the conditions for routing runoff through the reservoir and the results of the analysis.
- Location of the hydrometric and/or climatic stations used to estimate the availability of water.

The results of the analysis of the availability of water for the Project should be described and presented graphically to:

- clarify the way the Project will divert and use water, and
- understand the impacts of the Project.

1.7 Market for the Product

The *Water Act* requires the beneficial use of water as a condition of keeping a licence in current standing. The test for beneficial use of water for a waterpower project is the delivery of electricity to the user. If the user of the electricity is also the licensee, the category for determining water rentals is either "Residential" or "Commercial". For delivery of the electricity to any other user, the category is "General" for calculating water rentals.

Markets for electricity from a waterpower project could include the following:

- An individual customer, such as an industrial plant.

- A utility holding a Certificate of Public Convenience and Necessity (British Columbia Utilities Commission).
- Use by the holder of the water licence, who may be a utility, a municipality, an industry, etc.
- Export through Powerex.

The Project may be operated as a merchant plant, which means that the electricity will be sold on the open market.

1.8 Effects of Project on Rights of Others

This section should identify all owners of land, including holders of tenures on Crown land, and holders of water licences that may be affected by the Project. Discussions with these potentially affected persons should be described.

Information on water licences is available on the Internet at the following address:
<http://lwbc.bc.ca/>

Information on the status of Crown lands or information on water licences that is not obtainable from the Internet is available at offices of Land and Water BC.

1.9 Schedule for the Development of Project

The timeframe for constructing and commissioning the project should be indicated. This timeframe can be absolute if the project has an energy purchase agreement with a customer for the output of the project. Otherwise the timeframe can be relative to other factors that may affect the construction schedule, such as seasons of the year.

2. IMPACT ASSESSMENT PREFACE TO IMPACT ASSESSMENT

The impacts identified in the sub-headings of this section are not a comprehensive listing of all potential impacts of a waterpower project. Nor is every project expected to have all of the listed impacts. The proponent is expected to investigate the impacts based on the definition of the project.

Each sub-heading in this part of the development plan should include:

- A concise statement of the impact.
- The proposed mitigation or compensation of the impact.
- A summary of the data on which the assessment of the impact is based, and where a copy of the data may be obtained. Unless the volume of data is small, it should be made available separately from the Development Plan. This may be in the form of a separate paper document or in digital form.
- The standards for the collection of the data used to assess the impacts.
- Terms of reference (ToR) for additional studies if the proponent is unable to fully assess the impact.

- Sub-headings that are absent of impacts should still be included with a note explaining that no issues are present.

The proponent should always attempt to fully assess all impacts from the project. Sometimes this may not be possible because of insufficient data or the assessment of the impact requires input from agencies. In such cases, the proponent should indicate the information that is available and provide ToR for completing the assessment of the impacts. The proposed ToR will be referred to the appropriate agencies for input and finalized by the decision-maker who has jurisdiction to set conditions for the mitigation or compensation of the impact.

In addition, the decision-makers under the *Water Act* and the *Land Act* may require the proponent to provide additional information for a greater assessment of some impacts. Terms of reference for such additional information will be prepared in consultation with the proponent and the agencies that have the expertise to provide the appropriate input.

The assessment of impacts should be based on information collected in accordance with standards set by the Resources Inventory Committee (RIC). Information on the standards is available on the Internet at the following address:

<http://www.for.gov.bc.ca/ric/>

Note: The RIC standards applicable to the impacts identified in each of the following sections will be identified to the extent possible. This will be completed at a later date.

- 2.1 Instream flow for fish**
- 2.2 Wildlife and Habitat**
- 2.3 Instream flow for Recreation**
- 2.4 Flood Control**
- 2.5 Water Quality**
- 2.6 Bridges and Ferries**
- 2.7 Roads**
- 2.8 Crown Owned resources**
- 2.9 Existing Rights- Land Tenures**
- 2.10 First Nations**
- 2.11 Aesthetic Values**
- 2.12 Mineral Claims**
- 2.13 *Navigable Waters Protection Act***
- 2.14 Hazard to Public**
- 2.15 Hazard to Environment**
- 2.16 Public Access**