

# Guide for Land-based Aquaculture Experimental Development Plans

## INTRODUCTION

### Purpose of this guide

The Nova Scotia Department of Fisheries and Aquaculture (the Department) has prepared this guide as a reference for proponents preparing a Development Plan for an experimental licence application for land-based aquaculture for fish and/or plants.

The Development Plan fulfills part of the requirements for an application for a new experimental land-based aquaculture licence. A completed application must consist of a Development Plan, which includes an Experiment Proposal, and an Application Form. Guidance for all of these requirements is available at the Department's website [www.novascotia.ca/fish/aquaculture/](http://www.novascotia.ca/fish/aquaculture/)

Before preparing a Development Plan for an experimental licence, proponents should first complete a meeting with Department staff to discuss the intended experiment and to review Development Plan and Experiment Proposal requirements.

This guide is not a substitute for the Fisheries and Coastal Resources Act or regulations. Proponents should obtain copies of the Act and regulations for their reference (Appendix A). Where the process and time frames given in this document differ from the regulations, the regulations shall prevail.

Updated versions of this guide will be available on the Aquaculture Division website [www.novascotia.ca/fish/aquaculture/](http://www.novascotia.ca/fish/aquaculture/)

### Background

The experimental licence and/or lease was included in the regulatory changes for aquaculture enacted on October 26, 2015 in Nova Scotia, including within Sections 46 through 53 of the Aquaculture Licence and Lease Regulations for Nova Scotia made under Section 64, Chapter 25 of the Acts of 1996, *the Fisheries and Coastal Resources Act*.

Aquaculture conducted under a special experimental licence must be in support of research and not be on a scale that exceeds the research purposes for which the experimental licence or experimental lease was granted.

This Development Plan is for an experimental licence for land-based sites. This may apply to a person who wishes to conduct aquaculture on land to do any of the following:

- test or develop new technology or methods;
- carry out basic research; or
- test the technical feasibility of the site.

An experimental licence cannot be assigned. Applicants seeking a renewal, or amendment to an experimental licence should contact the Department to determine Development Plan requirements for their request.

The completed Development Plan submitted, as described in this document, must provide information that will address the factors to be considered in decisions related to land-based applications according to the licencing process of the Province of Nova Scotia. These include technical viability, financial viability, and demonstration of operating in accordance with the Fisheries and Coastal Resources Act, the relevant regulations made under the Act and any guidelines or policies established by the Minister.

The Development Plan will also provide information for government network partners in order for them to fulfill their jurisdictional duties in advising the Department on the application.

### **Information collection for the Development Plan**

Information for completing the Development Plan should be acquired through whatever biological, ecological, and social data collection and analysis the applicant deems necessary to acquire the requested information.

### **Submission format**

In order to facilitate government review of submitted applications and to establish a standardized format for all applications, applicants must follow the submission format guidelines, as follows:

- All requested information, the minimum of which is the information as required in this document, is to be submitted to the Department in a durable format, such as a three-ring binder or spiral binding. An electronic copy must also be submitted.
- Each section of the Report must start on a new page and be labeled matching the sequence established in this guide.
- Each section of the Report must contain all information required for that section (including supporting information such as maps, diagrams, etc.).

### **Public notice and disclosure**

As part of the process for deciding on an aquaculture application, the Nova Scotia Department of Fisheries and Aquaculture (“Fisheries and Aquaculture”) will disclose application information to other government bodies,

In accordance with departmental policy, which seeks to promote public involvement in the process for deciding on aquaculture applications, Fisheries and Aquaculture may disclose application information – not including, however, personal or business confidential information – on the departmental website.

### **Privacy statement**

The personal and business confidential information collected as part of an aquaculture application will only be used or disclosed by Fisheries and Aquaculture for the purpose of deciding on the application.

All application information collected is subject to the Freedom of Information and Protection of Privacy Act (“FOIPOP”) and will only be used or disclosed in accordance with FOIPOP.

### **For more information**

If you would like further information, please contact the Nova Scotia Department of Fisheries and Aquaculture, Aquaculture Division.

Phone: 902-875-7439

Fax: 902-875-7429

Email: [aquaculture@novascotia.ca](mailto:aquaculture@novascotia.ca)

Mail: 1575 Lake Road,  
Shelburne, NS  
B0T 1W0

## **REQUIRED DEVELOPMENT PLAN CONTENT**

Minimum content requirements for a Development Plan for an experimental licence application for a land-based aquaculture site are as follows. (See below.)

### **SECTION 1: PROJECT OVERVIEW**

Provide a summary of the project, including its species, scale, technology used, and proposed location.

### **SECTION 2: TECHNICAL VIABILITY**

#### **2.1 Experimental production plan**

Describe your experimental plan in terms of production. Include an explanation as to how the production numbers and scale of the development were determined based on the planned experiment.

For each fish (shellfish and/or finfish) species to be reared describe the following:

- Species and strain (if applicable);
- Stock source;
- Maximum site biomass (kg);
- Maximum fish number;
- Maximum feed (annual total) (tons);
- Maximum tank density (kg/m<sup>3</sup>);
- Maximum total tank volume (m<sup>3</sup>);
- Intended initial stocking date;
- Expected FCR;
- Expected production period for each group or cohort.

For each plant species to be reared describe the following:

- Species and strain (if applicable);
- Stock source;
- Maximum site biomass (kg);
- Maximum fertilizer input (mass in kg and composition);
- Maximum tank density (kg/m<sup>3</sup>);
- Maximum total tank volume (m<sup>3</sup>);
- Intended initial stocking date;
- Expected production period for each group or cohort.

## 2.2 Location

Briefly describe the location of the site. Provide the requirements listed below. Note that each map should have an inset map locating the site in the province, True North, and a scale in metric.

- Topographic map showing the general location of the site;
- Orthophoto map showing the general location of site;
- Diagram (sketch) of site layout drawn to scale (when experiment is at maximum production), including inlet and discharge lines;
- Property Identification Number(s);
- Watershed number;
- Deed/lease agreement.

If any structures will be installed below the high water mark (submerged land), a permit will be required from Nova Scotia Department of Natural Resources (NSDNR) (<https://novascotia.ca/natr/land/clo/>). Detail the status of this permit, if applicable.

If applicable, detail other permits required for access to or construction of the site and their status (e.g. right of way/ easement).

## 2.3 Water source

Describe the source(s) of the water to be used for the operation and the maximum flow required (in L per day). Include salinity and temperature profiles, if available, and water composition analyses.

Activities associated with water withdrawal or diversion or water storage may require obtaining an approval from or providing notification to Nova Scotia Environment (NSE) according to the Activities Designation Regulations made under Section 66 of the Environment Act ([https://novascotia.ca/just/regulations/regs/envactiv.htm#TOC1\\_1](https://novascotia.ca/just/regulations/regs/envactiv.htm#TOC1_1)). Detail the status of the required notifications or approvals, if applicable.

If you will be drawing water from the ocean or a lake, or another navigable water body in a way that requires a structure, device or thing—temporary or permanent—made by humans' that is in, on, over, under, through or across any navigable water, complete Section 4.5.

This will assist in determining whether an approval under the Navigation Protection Act (NPA) is required.

If you will be drawing water from a water body using a structure that is already approved; or for which it has already been determined that an approval under the NPA is not required, indicate this, and describe the intake structure and how it was/will be installed.

## **2.4 Water discharge**

Describe the water treatment prior to discharge, where the water will be discharged to, and how much will be discharged on a daily basis. An approval by NSE may be required.

If you will be discharging the water into the ocean or a lake, or another navigable water in a way that requires a structure, device or thing—temporary or permanent—made by humans, that is in, on, over, under, through or across any navigable water, complete Section 4.5. This will assist in determining whether an approval under the Navigation Protection Act (NPA) is required.

If you will be discharging water to a water body using a structure that is already approved; or it has already been determined that an approval under the NPA is not required, indicate this, and describe the discharge structure and how it was/will be installed.

## **2.5 Containment**

For all finfish facilities, describe structures and procedures to be used at the site, including monitoring, that will ensure effective fish containment.

For finfish, shellfish and/or plant facilities that will house exotic or non-native species or strains, contact the Department to determine the containment and quarantine requirements. If applicable, describe the systems and procedures, including monitoring, that will ensure these requirements are met.

Describe if the site is prone to flooding. If yes, describe mitigative measures to be used to protect against flooding.

## **2.6 Site history**

If applicable, describe past use of the site.

## **2.7 Technical viability**

Describe the experiment to be conducted within an Experiment Proposal. This proposal must be prepared according to Appendix B: Guide for Special Experimental Leases/Licences Experiment Proposal.

Describe the technical ability that will be available to ensure that the experimental protocol

will be properly conducted. Identify and include the resumes, qualifications and specific knowledge of any people involved in the design, monitoring, analysis, and reporting of the results of the experiment.

## **2.8 Compliance history**

Describe your record of compliance in previous aquaculture operations or in other operations that required management and monitoring of environmental effects.

List any enforcement issues of the past and explain how they were resolved.

## **SECTION 3: FINANCIAL VIABILITY**

### **3.1 Financial ability**

Describe your financial ability to carry out the proposed experimental development. This should include historical and projected financial resources; historical Income Statements including revenues, expenses, and EBITDA for the past three years (if applicable) and one projected production cycle forward. This could also include strategic relationships that can assist with the viability of the proposed development; or other relevant information to demonstrate the financial ability to execute the proposed experimental development

Include a brief description of previous successes and failures of business ventures, if applicable.

### **3.2 Potential economic impact**

Describe the impact potential of the outcomes of the experimental development in terms of economic development.

This should include what impacts could be expected, including:

- Benefits to current industry practices, economies, efficiencies, or scale;
- Potential for the development of new industry practices, new species, or expansion of suitable locations for aquaculture development;
- Other benefits that will promote economic growth.

This should also include the economic potential of these impacts in terms of

- Infrastructure;
- Services and suppliers;
- Employment; and
- Other economic contributions to the local community and the Province.

### **3.3 Adverse economic impacts**

If applicable, describe possible adverse impacts of the outcomes of the experimental development on the economic development of the community and the Province and how these will be mitigated.

## **SECTION 4: OTHER USERS OF AREA SURROUNDING THE PROPOSED AQUACULTURAL OPERATION**

### **4.1 Description of other users**

Provide a description of the other users identified in the region of the proposed development. This should include those who are directly and substantially affected by the proposed experimental development. Include a list of uses and the relative level of use per user group. You may use a map to indicate the location of these users relative to the proposed site. Include the source(s) of the information.

Other users may include:

- Adjacent property owners;
- Fishers (commercial, recreational, food, social and ceremonial);
- Pleasure craft and commercial boat traffic;
- Anchorages and moorings;
- Other watershed users;
- Processing plants (within 10 km);
- Campgrounds;
- Communities (including cottage communities);
- Municipal, industrial and agricultural users which may be sources of effluent;
- Tourism or recreational operations;
- Private and government wharves;
- First Nations territories/reserves;
- Other aquaculture sites;
- Any known or suspected pre-contact or historic archaeological resources;
- Important habitats and conservation areas (refer to Appendix C for reference);
- Other known potential projects (confirmed or proposed) and activities;
- Other users.

Where applicable, describe public consultation activities that have been undertaken to allow community members to know about and provide input to the proposed experimental development. Describe the outcomes of these activities (e.g. modification of the development plan, mitigation measures to address concerns, etc.).

### **4.2 Significance of proposed area to wildlife**

Provide a description of wildlife that use the proposed experimental development area. Include migratory birds, marine mammals and other animals that inhabit or migrate through the area. (See Appendix C for possible resources for this information.)

Identify any salmon run rivers in the region and their proximity to the site. These should include designated salmon rivers within the DFO Designatable Unit. Salmon rivers and Designatable Units are to be defined based on the latest DFO Canadian Science Advisory Secretariat Science Response for the Maritimes Region, Status of Atlantic salmon in salmon fishing areas (SFAs) 19-21 and 23; and the latest DFO Canadian Science Advisory

Secretariat Science Response for the Gulf Region: Update of stock status of Atlantic salmon (*Salmo salar*) in DFO Gulf Region (Salmon Fishing Areas 15 to 18) (<http://science-libraries.canada.ca/eng/fisheries-oceans/>).

Identify local species at risk, if applicable ([http://www.registrelep-sararegistry.gc.ca/sar/index/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm)). Permits are required for activities that may affect these species. ([http://www.registrelep-sararegistry.gc.ca/sar/permit/permits\\_e.cfm#](http://www.registrelep-sararegistry.gc.ca/sar/permit/permits_e.cfm#)). Describe the status of this permit(s) (if applicable).

#### **4.3 Impacts to other users including wildlife**

Describe what aspects of this experimental development may affect other users of the area; how they may affect other users; and how you will minimize these effects during both establishment and execution of the experiment. Include a description of how operational waste will be managed. Include also a description of the type of habitat and flora and fauna that will be directly affected by the discharge.

For operation components that are to be constructed in or near water, describe construction materials, methods and equipment to be used. Include mitigation measures to be used to reduce impacts on fish and fish habitat.

Where applicable, describe how the experimental development may complement other users.

Describe the impact potential of the outcomes of the experimental development in terms of environmental and/or social sustainability.

#### **4.4 Impacts by other users including wildlife**

If applicable, describe how other users may impact the proposed experimental development. Include how you will minimize interactions with and mitigate possible negative impacts by other users.

#### **4.5 Navigation Protection Act (NPA) approval**

The assurance of the public right of navigation is determined by Transport Canada through the Navigation Protection Act (NPA) (<http://www.tc.gc.ca/eng/programs-673.html>). If the water source(s) or discharge(s) require(s) changes or additions of, or to, any structure, device or thing—temporary or permanent—made by humans, that is in, on, over, under, through or across any navigable water, include the following within this section to determine whether approval under the NPA is required:

- A completed and signed “notice of works” form with all mandatory fields completed ([https://www.tc.gc.ca/media/documents/marinesafety/Form-NOTICE\\_OF\\_WORKS\\_FORM.pdf](https://www.tc.gc.ca/media/documents/marinesafety/Form-NOTICE_OF_WORKS_FORM.pdf));
- Location map (indicating the exact location of the work);
- Legal site description and work position (in latitude and longitude);
- Plan view drawings (top down) complete with all relevant dimensions;
- Profile view drawings (side view) complete with all relevant dimensions;



- Project description (detailing the project);
- Construction methodology (outlining how the work will be undertaken);
- Anticipated start and end dates;
- Description of how the intake/discharge structure will be secured to avoid its movement or disruption.

The Department will submit this information directly to Transport Canada to allow assessment of the work and initiation of the application for an approval under the NPA, if required.

## APPENDIX A

### NOVA SCOTIA AQUACULTURE REGULATIONS

*Fisheries and Coastal Resources Act* S.N.S. 1996, c. 25:

<http://nslegislature.ca/legc/statutes/fisheries%20and%20coastal%20resources.pdf>

Aquaculture Management Regulations made under Section 64 of the *Fisheries and Coastal Resources Act*. S.N.S. 1996, c. 25 O.I.C. 2015-339 (October 26, 2015), N.S. Reg. 348/2015:

[https://www.novascotia.ca/JUST/REGULATIONS/regs/fcraquamgmt.htm#TOC1\\_1](https://www.novascotia.ca/JUST/REGULATIONS/regs/fcraquamgmt.htm#TOC1_1)

Aquaculture Licence and Lease Regulations made under Section 64 of the *Fisheries and Coastal Resources Act*. S.N.S. 1996, c. 25 O.I.C. 2015-338 (October 26, 2015), N.S. Reg. 347/2015:

<https://novascotia.ca/just/regulations/regs/fcraqualiclease.htm>

## APPENDIX B

### Guide for Special Experimental Aquaculture Leases/Licences Experiment Proposal

The Nova Scotia Department of Fisheries and Aquaculture (the Department) has prepared this guide as a reference for proponents preparing an Experiment Proposal for an experimental licence and/or lease application for aquaculture.

The Experiment Proposal fulfills part of the requirements for an application for a new experimental licence and/or lease. A completed application must consist of a Development Plan, which includes an Experiment Proposal, and an Application Form. Guidance for all of these requirements is available at the Department's website [www.novascotia.ca/fish/aquaculture/](http://www.novascotia.ca/fish/aquaculture/)

Before preparing an Experiment Proposal for an experimental licence and/or lease, proponents should first complete a meeting with Department staff to discuss the intended experiment and review Experiment Proposal and Development Plan requirements.

The intent of the Experiment Proposal is to demonstrate how the proposed development meets the definition of an experimental licence and/or lease.

An experimental licence and/or lease is applicable to a person who wishes to conduct aquaculture to do any of the following:

- test or develop new technology or methods;
- carry out basic research; and/or
- test the technical feasibility of an aquaculture site.

Aquaculture conducted under a special experimental licence must be in support of research and must not be on a scale that exceeds the research purposes for which the experimental licence or experimental lease was granted.

The Experiment Proposal must include the following sections: Title, Summary, Introduction, Methods, and Reporting to the Department. A description of what these sections must include follows:

Title: Provide a brief and descriptive project title

Summary: Provide a non-confidential summary of the work to be conducted (1-2 lines). This should be a public facing statement for release on the Department's website.

Introduction: Provide a background of the work being proposed by answering the following questions:

- What is the problem that is addressed or the question that is asked in the experiment?
- Why is this an important problem to address or question to answer?

- What background information is already available on the topic?
- Give an overview of the approach to be used - how will this problem be addressed or the question answered in the experiment?

Methods: Provide a description of the methods that will be used to conduct the research. This description must justify the scale of the aquaculture activities to be conducted and the location chosen for the research.

Include a schedule and time line for the experiment. Milestones must be identified as the project progresses towards final goal(s). A special experimental licence/lease is valid for a term of one year and may be renewed annually for up to five years.

Reporting to the Department. Describe the reporting schedule and what information will be reported to the Department. Reporting will be required on an annual basis, at a minimum. A summary of the research results from the aquaculture conducted under the experimental licence must be made available to the Minister

For some projects, the scientific investigation to be undertaken may already be detailed in a proposal used for other purposes (e.g. application for funding). This proposal may be used as the Experiment Proposal for the application; but it is up to applicant to ensure that the above listed information is provided, at a minimum.

If you have any questions call the Aquaculture Division of the N.S. Department of Fisheries & Aquaculture for clarification at (902) 875-7439.

### **Public notice and disclosure**

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## APPENDIX C

### ADDITIONAL RESOURCES AND CONTACT INFORMATION

Below is a list of reference websites or sources that the proponent may find helpful in gathering information relating to fisheries and wildlife:

- Nova Scotia Provincial Coastal Resources Coordinators (CRC): <https://www.novascotia.ca/fish/documents/crc-map.pdf>
- Fishermen & Scientists Research Society: [www.fsrns.ca](http://www.fsrns.ca)
- Nova Scotia Fisheries Sector Council: [www.nsfsc.ca](http://www.nsfsc.ca)
- Fisheries and Oceans Canada: [www.dfo-mpo.gc.ca](http://www.dfo-mpo.gc.ca)
- Nova Scotia Salmon Association: [www.nssalmon.ca](http://www.nssalmon.ca)
- Atlantic Salmon Federation: [www.asf.ca](http://www.asf.ca)
- Nova Scotia Salmon Association: [www.nssalmon.ca](http://www.nssalmon.ca)
- Local salmon or angling associations
- SARA Registry: [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)
- CWS EA Guidance: [www.cws-scf.ec.gc.ca/publications/eval/index\\_e.cfm](http://www.cws-scf.ec.gc.ca/publications/eval/index_e.cfm)
- Committee On the Status of Endangered Wildlife in Canada: [www.cosewic.gc.ca](http://www.cosewic.gc.ca)
- Atlantic Canada Conservation Data Centre: [www.accdc.com](http://www.accdc.com)
- Atlas of Breeding Birds of the Maritime Provinces (1992): [www.mba-aom.ca](http://www.mba-aom.ca)
- Important Bird Areas of Canada: [www.ibacanada.com/](http://www.ibacanada.com/)
- Western Hemisphere Shorebird Reserve Network: [www.whsrn.org/](http://www.whsrn.org/)
- North American Waterfowl Management Plans: [www.nawmp.ca](http://www.nawmp.ca)
- Federal Policy on Wetland Conservation:  
[www.cws-scf.ec.gc.ca/publications/abstractTemplate.cfm?lang=e&id=1023](http://www.cws-scf.ec.gc.ca/publications/abstractTemplate.cfm?lang=e&id=1023)
- Implementation guide for federal land managers:  
[www.cws-scf.ec.gc.ca/publications/AbstractTemplate.cfm?lang=e&id=1027](http://www.cws-scf.ec.gc.ca/publications/AbstractTemplate.cfm?lang=e&id=1027)
- Wetlands of the Maritime Provinces: Revised Documentation for the Wetlands Inventory (1996)
- Ducks Unlimited: [www.ducks.ca](http://www.ducks.ca)
- RAMSAR Sites: [www.ramsar.org/](http://www.ramsar.org/)
- Environment Canada's Protected Areas Network: [www.hww.ca/hww2.asp?id=231](http://www.hww.ca/hww2.asp?id=231)
- Nature Conservancy of Canada: [www.natureconservancy.ca](http://www.natureconservancy.ca)
- Federation of Nova Scotia Naturalists: [www.chebucto.ns.ca/Environment/FNSN/](http://www.chebucto.ns.ca/Environment/FNSN/)
- Nova Scotia Nature Trust: [www.nsnt.ca/](http://www.nsnt.ca/)
- Other federally or provincially designated ESAs
- Canadian Wildlife Service (CWS): [www.cws-scf.ec.gc.ca/](http://www.cws-scf.ec.gc.ca/)
- Local naturalist groups
- Federal Science Library: <http://science-libraries.canada.ca/eng/fisheries-oceans/>
- Transport Canada Navigation Protection Program - Forms and Guidance Material:  
<https://www.tc.gc.ca/eng/programs-624.html>