

Doelle-Lahey Panel
Independent Aquaculture Regulatory Review for Nova Scotia

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Executive Summary

Introduction

The regulatory framework proposed in this report is the work of the two Panel members. It could not have been completed however without the contributions of the Advisory Committee, the Roundtable, the Knowledge Roster, the Panel's Secretariat, and countless participants in the Panel's 18 month process. As Panel members, we came into this process with expertise in regulatory processes in the natural resource sector and some other sectors, but with no particular knowledge of the aquaculture industry or its state in Nova Scotia. We have benefitted greatly from the generous support we have received from the many participants in our process, from academics, government officials, community groups, environmental groups, and members of the public to those involved in the industry, with many contributing their time, knowledge and perspectives on a volunteer basis without compensation.

We were, of course, guided in our work by our mandate, which is available on our website at www.aquaculturereview.ca. Of particular note is that our mandate makes specific reference to the *Environmental Goals and Sustainable Prosperity Act*, and its goal of integrating environmental protection with economic and social prosperity. Our work was also significantly influenced by the work of the One Nova Scotia Commission, which released its report partway through our process. We were conscious of the importance of rural development to the prosperity of the province.

During the summer of 2013, we held meetings in 21 coastal communities throughout Nova Scotia to learn about the issues people in coastal communities felt we should consider in our work. A summary of what we heard is available on our website at www.aquaculturereview.ca along with meeting summaries, submissions and other information relevant to our process. In very broad terms, we heard a range of concerns about the impact of marine based salmon aquaculture on the marine environment, on wild salmon populations and on lobsters, lobster fishers and the lobster industry. About fin-fish and shell-fish aquaculture, we heard concerns about how they interfere with or disrupt the activities of other users of coastal waters and the character and quality of coastal communities. We heard distrust of and lack of confidence in the industry, the Department of Fisheries and Aquaculture (as well as other regulators) and the current regulatory framework.

We have concluded that a fundamental overhaul of the regulation of aquaculture is called for. We have concluded that this overhaul should be guided by the idea that aquaculture that integrates economic prosperity, social well-being and environmental sustainability is one that is low impact *and* high value. By this we mean aquaculture that combines two fundamental attributes: it has a low level of adverse environmental and social impact which decreases over time and it produces a positive economic and social value from the use of coastal resources which is high and increases over time.

A number of participants in our process urged us to conclude that marine based fin-fish facilities – and more particularly, salmon farms - cannot be sustainably operated, and to recommend that a permanent moratorium be imposed on this kind of aquaculture. Our conclusion, after careful

consideration of the state of the science and opportunities to reduce impacts through effective regulations, is that the regulatory framework should not be prohibitory at a provincial scale. Instead, we recommend fundamental changes to the regulation of aquaculture, which we conclude can address the serious and legitimate concerns raised without foreclosing the opportunity associated with this sector of the industry. Our reasons include the following:

- a. The risks and impacts can be significantly reduced through effective regulations;
- b. Through incremental development and continuous improvement to minimize negative impacts and risks while maximizing benefits, marine-based fin-fish aquaculture has the potential to make an important contribution to sustainable prosperity in Nova Scotia;
- c. A diverse industry that includes marine-based operations and land-based facilities is more likely to be resilient to future changes, including changes in market conditions and climate change; and
- d. In the context of our mandate to develop a regulatory framework that integrates environmental, social and economic objectives and the conclusions of the One Nova Scotia Commission on the state of Nova Scotia's economy, the potential contribution of marine-based fin-fish aquaculture to Nova Scotia's economy calls for a policy approach that addresses the risks through responsible development and robust regulation rather than prohibition.

We recognize that fin-fish operations, even if well regulated and operated, are not appropriate in all coastal waters around Nova Scotia. We conclude that a new regulatory framework must ensure that marine-based fin-fish farming only occurs in coastal waters that are suitable for that kind of aquaculture and where it is compatible with other important uses of those waters. For that reason, one of our core recommendations is the creation of a classification system under which coastal areas would be rated as green, yellow or red based on their relative suitability for fin-fish aquaculture. Under this system, the classification of a coastal area would determine how applications for a fin-fish licence would be evaluated and the likelihood of an application for such a licence being approved. It would also play a central role in determining the terms and conditions under which licences would be issued.

The regulatory framework we propose would also allow applications to the Minister to have a lease revoked if it has become clear through experience that the site is not suitable for a particular type of operation. The licensing process we have proposed also identifies the need to consider at the renewal stage, whether a site is being responsibly operated and whether the site is suitable for continuing operation of the type and scale previously permitted on the site. Finally, we make clear that existing operations will have to be brought under the new regulatory system as soon as practical, and that any new facilities should be processed under the new regulatory system we have recommended. In other words, the province should continue its commitment not to process new applications until the new regulatory system is in place.

For fin-fish and other kinds of aquaculture, the regulation of aquaculture will change in fundamental ways under the proposed framework. For example:

- a. The regulation of aquaculture will be functionally separated from the promotion of the aquaculture industry;
- b. Environmental monitoring will be moved to the Department of the Environment from the Department of Fisheries and Aquaculture;
- c. Important regulatory standards that are currently only addressed in the terms and conditions of individual licences written under statutory discretion will be addressed in legislation;
- d. More generally, the regulatory process will be much less discretionary than it currently is under the *Fisheries and Coastal Resources Act*;
- e. There will be a pervasive emphasis on openness and transparency, both in the licensing and leasing process and in the monitoring of compliance by licensed and the enforcement of regulations;
- f. The health and well-being of farmed fish will become a central concern of the regulatory process and a core mechanism for ensuring the compatibility of aquaculture with its coastal environment;
- g. The public will have multiple opportunities, including a mandatory hearing on every application for a licence, to contribute to decision-making in the licensing process;
- h. The licensing and leasing process will be conducted as a kind of specialized environmental assessment that incorporates an integrated understanding of environmental, social and economic issues into licensing and leasing decisions;
- i. Licensing will be guided by statutory licensing principle and subject to a requirement for written reasons that together will require licensing decisions to be justified in terms of regulatory objectives and the compatibility of aquaculture with public rights of navigation, fishing; local biophysical conditions, other uses of the waters proposed for aquaculture, the cumulative effect of aquaculture in the area and the contribution of the proposed operation to net community socio-economic benefit;
- j. Subject to standardized safeguards to ensure openness, transparency and participatory fairness in decision-making, the licensing process will vary to reflect the differences between shell-fish and fin-fish aquaculture as well as the differences between fin-fish aquaculture in green, yellow and red areas;
- k. Salmon farms will be required to institute a comprehensive containment system to prevent escapes such as is required in the State of Maine;
- l. Compliance monitoring and enforcement will be strengthened by:
 - Increasing the monitoring and enforcement staff and other resources;
 - Unscheduled inspections;
 - Targeting oversight to higher risk operations;
 - Penalizing violations with prosecutions and licence and lease revocation where warranted; and
- m. Creation of a standing Regulatory Advisory Committee that includes First Nations and stakeholders such as coastal communities, municipalities, the aquaculture

industry and environmental organizations to provide ongoing advice on the implementation of the regulatory framework and the continuing improvement of regulation in the face of new and changing conditions, challenges, opportunities and learning.

In developing our recommendations, we have been mindful that a regulatory system for Nova Scotia's diverse aquaculture industry must reflect the differences between fin-fish and shell-fish aquaculture and between large and small business while strengthening the regulation of the industry in a comprehensive way. We note three options for addressing this concern in the design and implementation of the new regulatory system.

One is to ensure that the requirements imposed by the regulatory framework on large and small operators are proportionate to the risks that the framework is intended to control in an effort to minimize the additional burden the framework places on small operators. A second option is to ensure the framework leaves regulated organizations with reasonable levels of flexibility as to how they implement or meet the regulatory requirements. The third option is for the regulatory agency, often in partnership with industry associations, to invest in programs that assist small and medium size enterprises (SMEs) in meeting their regulatory obligations. We have carefully considered these options in our work, and urge the province to give due consideration to these issues in the design and implementation of the regulatory system, as we see great value in a diversity of operators, and in the size and type of operations.

Foundational Elements of the Regulatory Framework

The success of the regulatory framework we have proposed will depend on the creation of a number of fundamental enabling conditions.

- a. The attitude which informs regulation must take the concerns of those who live in coastal communities seriously and at face value;
- b. The critical role that effective regulation plays in constituting social licence and in building upon social licence once it is established must be embraced by government and the industry;
- c. The pervasive discretion built into the current regulatory framework must be limited in a new regulatory framework if the new framework is to enjoy the trust and confidence it needs to be successful;
- d. The capacity of the Department of Fisheries and Aquaculture to carry out its regulatory mandate must be significantly enhanced;
- e. There must be a fundamental emphasis in regulation of the industry on the compatibility of licensed aquaculture with other uses of coastal waters;
- f. The Department of Fisheries and Aquaculture must become more proactive in promoting, enabling and using the results of research in its regulatory activities and in particular, in supporting the research that will improve collective knowledge of the interaction of aquaculture and the specific biophysical and socio-economic conditions of coastal Nova Scotia;

- g. Nova Scotia must work to ensure that regional cooperation in the regulation of aquaculture are consistent Nova Scotia's policy and regulatory objectives and include cooperation on matters, such as the capacity to address and manage disease outbreaks, that require regional cooperation because of the limited scale of the industry in each province; and
- h. The commitment to improvement in the regulation of aquaculture must be sustained for the long-term.

This report lays particular stress on the need for research and on the role that the DFA should play in taking advantage of and contributing to growth in Nova Scotia's and Atlantic Canada's research capacity in aquaculture. On some matters, such as the possible impact of fin-fish aquaculture on lobsters, there is concern in Nova Scotia about questions that have received very little research attention in or beyond Nova Scotia. On other issues, there has been limited research to evaluate the applicability of findings reached elsewhere to the Nova Scotia context. The ultimate effectiveness of the regulation of aquaculture in Nova Scotia will depend on research being done to address such gaps.

Of course, any regulatory system has to function in the face of uncertainty while research to reduce the uncertainty is underway. In the case of the potential impact of aquaculture on lobster and in similar cases of uncertainty, our recommended approach is that the DFA should:

- a. Identify opportunities to reduce or eliminate the source of the risk, where this can be reasonably be done through changes in the operation of fin-fish aquaculture (for example, as set out elsewhere in the report, by eliminating the use of chemical anti-fouling agents);
- b. Where risks cannot be readily eliminated, proceed with a clear understanding that there is an unknown risk associated with the operation, and make the quantification of the risk a priority through specific monitoring and research efforts.; and
- c. Ensure that the scale of development is in line with the risk involved, by ensuring incremental development and by retaining the ability to adjust to new information expected from the additional monitoring and research.

Coastal Planning

We heard a broad range of views on coastal planning. Our conclusion is that an integrated coastal plan for Nova Scotia would be a very useful tool that could do much to improve the efficiency, effectiveness and fairness of the regulatory process. At the same time, we are not in a position to determine what time and resources would be needed to complete such a process successfully, particularly given that it would likely have to have the support of all levels of government. While a coastal planning process would be very helpful to the regulatory process, we cannot predict whether or when such a process would yield results, or what the content of such a planning process would be. We have therefore decided to design the regulatory framework for aquaculture in the absence of a coastal plan. If such a plan is developed in the future, certain aspects of the regulatory process could be significantly streamlined.

Regulatory Goals and Principles

We stress the importance of the articulation of regulatory goals and principles both to guide regulation and strengthen the accountability of regulators. We conclude that the regulatory framework for aquaculture should have the following goals:

- a. Environmental protection and sustainable use of environmental services;
- b. Fairness in allocation of public resources, i.e. coastal waters;
- c. Productive use of coastal resources in the direction of low impact for high value;
- d. Compatibility with other sectors of the economy;
- e. Ensuring social and economic benefits proportionate to the value of the resources used;
- f. Protection of wild salmon populations;
- g. Meaningful public participation in decision-making;
- h. Attentiveness to plans, objectives, needs and priorities of local communities;
- i. Supporting the efforts of the industry to grow by combining business success with higher environmental performance; and
- j. Regulation that is achievable, enforceable, incorporates incentives to comply, is efficient, timely, predictable, and affordable for taxpayers and for industry.

We similarly conclude that 7 guiding principles should guide the design and implementation of the regulatory system:

1. Effectiveness
2. Openness
3. Transparency
4. Accountability
5. Proportionality
6. Integration
7. Precaution

Key Regulatory Design Issues

Role of and Cooperation with Federal Regulators

Federal regulators play a critical role in regulating aspects of the industry. In particular, Fisheries and Oceans (DFO), Health Canada, the Canadian Food Inspection Agency (CFIA), and Transport Canada each contribute in important ways to the regulation of the industry. It will continue to be important for the province to work closely with federal regulators to ensure effective coordination. Therefore, we conclude that Nova Scotia should continue to work with the DFO and other federal regulators through the mechanism of an MOU to ensure the entire regulatory framework for aquaculture in Nova Scotia is as effective, cohesive, coordinated and streamlined as it can be despite the division of regulatory authority between the two levels of government. A strong and clear

delineation of roles built on a clear articulation of shared regulatory objectives would help to achieve desired levels of cohesion. The province should not, however, treat federal decisions on issues subject to federal regulation as precluding additional provincial action to ensure the comprehensive effectiveness of the regulation of aquaculture in Nova Scotia.

Departmental Responsibilities for Regulating Aquaculture

The dual role of the Department of Fisheries and Aquaculture (DFA) as promoter and regulator of the industry was a matter of concern to many participants. We were urged to recommend a regulatory framework under which responsibility for regulating aquaculture would be moved to the Minister of Environment. The issue goes to the heart of the lack of trust that is at the centre of much of the dissatisfaction with the current regulatory framework. In the end however, subject to what we say below on the issues of environmental monitoring, we have concluded that responsibility for regulation of aquaculture should remain with the DFA. There is however, an important proviso to this conclusion: it depends on acceptance and implementation of the other elements of our proposed regulatory framework, many aspects of which are designed to address by other means the palpable distrust and potential for conflict which exists with the current regulatory framework. We have reached this conclusion for the following reasons:

- a. Although the regulation of aquaculture is largely concerned with environmental protection, it also concerns the use of a public resource – coastal waters – and the place of aquaculture in the development, use and protection of coastal resources;
- b. The result of reallocating the environmental aspects of provincial regulation of aquaculture to the Department of Environment would add to the already complex regulatory landscape that exists within the sector;
- c. Provincial regulation of aquaculture already suffers from a lack of regulatory capacity. We think that the capacity gap is more likely to be addressed cost-effectively if the increased capacity is concentrated as much as possible in one department rather than divided between departments;
- d. Dividing regulatory functions between departments might complicate Nova Scotia's collaboration on aquaculture with other governments in Atlantic Canada, all of which combine industry promotion and support with regulation in one government department that is also responsible for the fishery mandate;
- e. While separating the regulatory role from the industry development role might improve confidence in the independence and trustworthiness of the regulatory process, it may not result in improved regulatory effectiveness; and
- f. Even if we were otherwise inclined to assign the regulatory responsibility to the Department of Environment, the approval process and the environmental assessment process in Parts IV and V of the NS *Environment Act* would require significant enhancement to serve as useful regulatory tools for aquaculture.

Restructuring the Administration of the Regulatory Framework

One of the critical provisos to our conclusion that the regulation of aquaculture should stay in the DFA is that it should be more strongly separated from the departments' role in industry promotion. To facilitate this, responsibility for the administration of legislation should be assigned to a statutory official instead of to the Minister. This change will have other benefits, including greater independence for those who have regulatory functions and responsibilities and a less political and a more professionalized regulatory process.

Environmental Monitoring Process

An effective environmental monitoring process (EMP) is critical for effective regulatory oversight of regulated facilities. We recommend the following:

- a. The process should be established in legislation;
- b. The parameters of the process should be prescribed in regulations rather than in departmental policy;
- c. The legislation should make compliance with the process a term and condition of all licences. The mandatory nature of the process should not depend on whether or not it is written into the terms and conditions of specific licenses;
- d. The responsibility for monitoring compliance with the environmental monitoring process should be transferred to the Department of Environment to improve public confidence in the independence and objectivity of the oversight that government brings to bear on industry's compliance with the EMP;
- e. The regulatory monitoring of compliance of operators with the EMP has to be strengthened. There needs to be more auditing of compliance. The auditing process needs to include random unannounced audits. Directly or through contracted third parties who are independent of industry, regulators need to more frequently collect their own samples for analysis and again, this needs to be periodically done on an unannounced random basis subject only to the advance notice that is required to address biosecurity concerns; and
- f. The results from the EMP for each site need to be available to the public in a timely manner.

Statutory Standards

In an effort to replace discretion with clear rules where appropriate, we conclude that certain matters now addressed in the terms and conditions to specific licenses should be addressed in legislation. The legislation should in addition specify regulatory standards in certain key areas of operation that are currently not addressed in the regulatory framework. The following requirements should be set out in legislation:

- a. The conditionality on each licence on compliance with the Act and regulations and the terms and conditions of lease and licence;
- b. Compliance with the environmental monitoring process (EMP);
- c. Obligation to maintain oxic conditions;
- d. Anti-fouling technology (no chemical anti-fouling agents);
- e. Standard requirements regarding fallowing, age class, and separation between facilities;
- f. Standard reporting obligations for each type of aquaculture; and
- g. Standard requirements regarding accommodation of navigation.

Regulatory Transparency

Lack of transparency about the regulatory process and its operation in general and in relation to specific sites was a frequently voiced concern in our process.

Regulatory transparency will be critical to the effectiveness of the proposed regulatory system. In particular, it is a crucial enabling condition for our conclusion that responsibility for regulation should largely stay with the Department of Fisheries and Aquaculture.

As a starting point, comprehensive and easy-to-understand information on the regulatory framework should be readily accessible to anyone interested. This will address the real frustration and irritation we heard from many, including some in the industry, about the difficulty they have experienced in obtaining clear information about matters such as the steps in the regulatory process, the obligations of applicants for leases and licences and of operators once licensed, their opportunities to participate in the regulatory process and the actions the DFA can or will take to ensure compliance with the regulations.

Transparency and openness needs to extend beyond general information about the regulatory process. It needs to extend to the application of the regulatory framework to each application for a lease and a licence and to the DFA's ongoing oversight of each approved operation. As nearly as possible, the objective should be to make application of the entire regulatory framework an open book.

We therefore recommend that the basic principle should be that information that is relevant to understanding the operation and effectiveness of the regulatory process as it applies to each proposed and approved site should be information that is readily available to the public. This principle should be set out in legislation to ensure it is binding on the DFA and to ensure that public access to information covered by the principle does not require the making of an application under the *Freedom of Information and Protection of Privacy Act* (FOIPOP) process.

Information that is truly confidential business information should be excluded from this principle under a definition of confidential business information set out in the legislation. However, the assumption should be that information is public information unless a regulated business clearly establishes it is confidential business information within the scope of the statutory definition.

The objective of our transparency recommendations is a level of transparency and openness that would allow a member of the public to readily ascertain the status of an application for a lease and licence (or for a change or renewal of a lease and licence) or the standing of an approved operation relative to its regulatory responsibilities at any given time.

Provisions on Aquatic Animal Health and Well-being

We heard persuasive presentations that the key to aquaculture's future as a sustainable industry that enjoys social licence was a focus on the health and well-being of farmed animals. All of these presentations, which were made from a range of perspectives, recognized that the health of the animals being raised in aquaculture was the ultimate and fundamental barometer of whether aquaculture was or was not being conducted in harmony with its surrounding environment. Put simply, healthy fish is a strong indicator that the health of the surrounding environment is being maintained while sick fish suggest the opposite. Conversely, the nature and extent of aquaculture's dependence on practices that raise the most concern about aquaculture's impact on the environment are linked very much to the health of the animals raised in aquaculture.

Fish health is one of the objectives of various elements of the framework that have a range of objectives. These elements of the framework include:

- a. Biophysical site conditions that make a site suitable for a particular operation;
- b. Conditions on number of fish on site and on permitted stocking densities;
- c. Fallow period requirements;
- d. The mixing of species on sites;
- e. Limits on the number of and separation between permitted farms in particular bays;
- f. Coordination of production on sites within defined geographic areas; Vaccination requirements.

In addition, the regulatory framework should deal more explicitly and extensively with a number of matters specific to fish health, including:

- a. Reporting of notifiable diseases;
- b. The elements of the disease surveillance;
- c. The DFA's authority in relation to the management of disease outbreaks;
- d. Biosecurity procedures to be followed to prevent the spread of infectious disease;
- e. Regulation of the movement of fish to or from a site.

We have also concluded that the regulatory framework should more clearly define the animal welfare standards that are required in fin-fish aquaculture. It should do this at three levels:

1. By outlining the animal welfare standards that should generally be met and maintained in areas such as water quality, stocking levels, feeding rates, cage design, construction and maintenance and general husbandry;
2. By better defining distress (i.e. neglect) as it applies to fin-fish aquaculture; and

3. By better defining what practices if animal management, husbandry and slaughter will be regarded as “reasonably and generally accepted” in aquaculture in Nova Scotia for the purpose of determining the applicability of the statutory provision which creates the offence of causing distress.

Site Selection and Utilization for Fin-fish Aquaculture

We were told repeatedly that proper site selection and utilization is critical for an effective regulatory framework for marine-based fin-fish aquaculture. We agree. A suitable site is one that has appropriate biophysical conditions while being compatible with other economically, socially, and culturally important activities. Using language from EGSPA, it is a site that makes a net contribution to sustainable prosperity and that can be utilized in a manner that maximizes benefits while minimizing risk and negative impacts.

Under the current regulatory framework, the suitability of coastal areas for fin-fish aquaculture is determined largely if not exclusively through the licensing process. This approach may be inefficient and resource-intensive for both industry and regulators. It may also lead to avoidable conflict to the extent it results in applications for licenses and leases being made for sites that would be identifiable as being generally unsuitable if a more general process of characterization and categorization of the suitability of coastal areas for fin-fish aquaculture was carried out.

Following the approach that is central to Scotland’s relatively new regulatory framework, the basic approach we recommend is a process of proactive evaluation of the coastline for the purpose of determining whether coastal areas are suitable, marginally suitable or generally unsuitable for fin-fish aquaculture. The result of this process would be a designation of coastal areas as being either green, yellow or red areas for the purposes of fin-fish aquaculture. In general terms, these designations would have the following meaning:

- Green areas would be areas found to be generally suitable for fin-fish aquaculture;
- Yellow areas would be areas that have potential to be suitable but are not ideal and would require a more careful approach to site selection, a more rigorous assessment in the licensing and leasing process, stricter or more limiting terms and conditions for approval and additional regulatory oversight; and
- Red areas would be areas that were unlikely to be suitable for fin-fish aquaculture.

The criteria for classifying areas in the system would be biophysical suitability and presence or absence of conflicts with other important uses or values. A green area would be one in which there was biophysical suitability and no serious conflict issues. A red area would be one at which biophysical conditions show that it is highly unlikely that environmental standards could be met at the site and/or at which serious conflict issues are present.

Regulatory approval for fin-fish aquaculture would be unlikely in red areas and less likely in yellow areas than in green areas. Whether it would be given for a site in a yellow or red area at all would depend on whether the applicant for a licence and lease in a yellow or red area was proposing a fin-fish operation that was suitable for a site having yellow or red area characteristics. Although red

areas would be generally off-limits for fin-fish aquaculture, the regulatory framework should not preclude the possibility that fin-fish aquaculture could in exceptional circumstances be authorized in a red area. The onus of showing this was appropriate would however be a difficult one to meet.

Process for Applying the Classification System

An area (or site) could be classified in one of three ways:

- Through a proactive and general process of classification that operates in parallel to the licensing process;
- Through strategic assessments in the nature of strategic environmental assessments of particular coastal regions;
- In the licensing process where an application for a fin-fish licence is made in respect of a site located in a previously unclassified coastal area;

The relationship between each of these prongs of the process of classification is envisaged to be dynamic. Classification choices made in the general process or through strategic assessment will be taken into account as a fundamental input into the licensing process. Classification choices made through strategic assessment or in the licensing process would add to the overall progress toward comprehensive classification of the coastline, which will be the main concern of the general or overall classification process.

Effect of Classification as Green, Yellow or Red area

Designation of a part of Nova Scotia's coastline as red, yellow or green for a particular form of aquaculture will have implications for the regulatory process for proposed facilities in a designated area.

- First, a proposed facility in a designated area will not have to go through a classification process during the lease and licensing process. Facilities proposed in areas that have not been designated will require a determination from the regulator at the start of the licensing process as to whether the site is a green, yellow or red area site.
- Second, the designation of an area as green, yellow or red will have implications for the process of reviewing individual applications for a lease and license to operate an aquaculture facility in the area. The regulatory process in green areas will be more streamlined, whereas the process in red areas will be most onerous.
- Third, the likelihood of the success of an application will differ. In green areas, it would be reasonable to expect that licenses would be granted for well-designed operations that are sensitive to other users and are proposed in suitable locations. The likelihood of a successful application in a red area would be very low.
- Finally, the terms and conditions under which aquaculture facilities would be licensed to operate would vary. Because of the biophysical constraints and potential social and economic concerns in yellow and red areas, operations that do get approved will have to

meet additional terms and conditions, such as additional monitoring and reporting obligations.

Strategic Assessment of Coastal Areas

In addition to being available as a tool for classification of coastal areas as green, yellow or red for fin-fish aquaculture, strategic assessment would also be available for assessing the suitability of coastal areas for shell-fish aquaculture. The details of the process would vary from application to application but transparency and full engagement of all interested parties, including First Nations, potential operators, other users of the coastal area, other industries, local residents and all levels of government would be required. A key goal of the process would be to integrate biophysical, social and economic analysis for the purpose of evaluating suitability of the area for aquaculture development.

Where strategic assessment does identify areas suitable for aquaculture, government will have the option of proactively encouraging development in those areas. Licensing could happen on the basis of the strategic assessment where this is a known outcome at the beginning of the process and where the assessment determines that development enjoys significant community support. Otherwise, the licensing process would apply in a streamlined fashion due to the participation opportunities already provided in the strategic assessment process.

Licensing (Site Approval) Process

The licensing mode of regulation should continue to be the mode of regulation used in Nova Scotia. However, we think it should be strengthened in a number of important ways.

Consistent with our conclusion that the regulation of aquaculture should generally continue to be the responsibility of DFA, we have concluded that the provincial environmental assessment process should not be applied to the assessment of aquaculture projects. Instead, we think assessments of an application for a licence should be conducted on the understanding that the assessment must cover all of the ground that an environmental assessment would cover. It should in other words be conducted as a kind of specialized environmental assessment.

The legislation governing the licensing process should set out the principles that are expected to guide the process. Our process leads us to conclude that the principles should include principles on the following matters:

- a. Compatibility with public rights of navigation;
- b. Compatibility with fishery activities, including the lobster fishery;
- c. Compatibility of the nature and scale of proposed operation relative to the biophysical, oceanographic and community context;
- d. Compatibility with the activities of other users or beneficiaries of the public waters in question;

- e. Responsiveness to the cumulative effect of aquaculture in the area; and
- f. Contribution of the proposed project to net community socio-economic benefits.

We recommend a licensing process that consistently includes the following key elements.

The licensing process will start with the issuance of an “option to lease”. This limited authorization will provide the developer of an aquaculture project with the exclusive right to apply for a licence and lease for the site covered by the option to lease. This is intended to address the concern of industry that a requirement that developers seek input from the community before applying for a lease will give competitors the opportunity to apply for their preferred site ahead of them.

The public will be notified by DFA that an option to lease has been issued. This ensures the community is made aware of the proposed project from the very earliest stages of the licensing process. It is the beginning of the transparency that will be followed through the balance of the licensing process.

To apply for a licence, the holder of an option to lease will be required to participate in a pre-application scoping process that engages with and seeks input from the community.

For an application for a licence to be complete, it will have to include a Background Report that includes information on the scoping process such as overall levels of community support or opposition and community views on: proposed location, scale, species, operator and technology; compatibility with existing uses; impacts, benefits, risks and uncertainties; and what the operator should do to minimize adverse impact. The Background Report will also be required to include a detailed description of the proposed operation; a description and analysis of biophysical conditions at the site; the presence of any endangered species; and specific measures to be taken or required to address potential impacts. The Report will be a public document. It will serve the same purpose as an impact statement in environmental assessment.

The DFA will conduct an application screening process. Input from the public will be received in the form of comments on the application file, including the Background Report. Input will also be received from other regulators, such as DFO at this stage of the process. Decision options available at this stage would be to send the application forward for a hearing, to reject it as having no prospect of success at a hearing; or to send it back to the applicant for resubmission. For fin-fish applications in relation to sites previously classified as green, yellow or red, that classification would be taken into account at this stage of the process. For unclassified sites, the screening will assess whether the information needed for classification is part of the application.

A hearing will be conducted on all applications. The hearing will be either an administrative hearing where public participation is primarily through the provision of written comments and submissions or an adjudicative hearing which includes a more formal in-person hearing. The hearing will be adjudicative where the application is for a fin-fish licence in a yellow or red area. Depending on the circumstances it will be administrative or adjudicative for shell-fish applications and for fin-fish applications in green areas.

The DFA will be required to give reasons that explain how the decision addresses the licensing principles, the regulatory goals and the issues raised at the hearing.

At each stage of the process, DFA will have the ability to utilize independent third parties in the conduct of the process. A third party could be mandated to conduct the pre-application screening process; to conduct a later consultation; to do an independent study or analysis; to provide advice; or to conduct some or all of the hearing.

Licensing decisions will be subject to appeal to the Minister and from the Minister to the Supreme Court of Nova Scotia.

At the application screening stage, the DFA will be required to specify the maximum duration for the overall licensing process and for the completion of the hearing within the overall licensing process. Unless an application is withdrawn, DFA will be required to complete the hearing and give a decision within the specified time-frames.

Changes in the Leasing of Aquaculture Sites

We heard a number of specific concerns associated with leases issued for aquaculture operations. In light of what we heard, we recommend the following changes in the administration of leases for aquaculture:

- a. Clarity that holding a lease depends on holding and using a licence.
- b. Unused leases should revert to the Crown, at which point they would become available to other potential developers of aquaculture. It should be clear that where an aquaculture operation is discontinued, the lease of the operator reverts to the Crown.
- c. A system would have to be instituted to make information on the location and breadth of existing leases much more readily available to landowners and users of the coastal waters than is currently the case.
- d. Lease boundaries should be appropriately enforced even if they don't cause problems for navigation according to the Coast Guard.
- e. The exclusivity of the rights of leaseholders needs to be clarified and limited to what is necessary for the purpose of the function of an aquaculture lease. Waters that are leased for aquaculture continue to be public waters.
- f. Protection for rights of navigation should be built into leases.
- g. The transfer of leases should be subject to Crown approval.

Security of Tenure for Operators in Good Regulatory Standing

We were told by industry representatives that one of the major problems created for the industry by the current regulatory framework is the limited tenure it provides to licensed operators. In Nova Scotia, a first licence is currently issued for 10 years. Each subsequent licence is issued for 5 years. There are a great variety of approaches to the duration of licences, leases and approvals in other jurisdictions. We recommend that the tenure of approved aquaculture operations be structured as follows:

- a. The initial lease should be granted for 20 years, subject to holding a corresponding licence.
- b. The initial licence would be reviewed after one growing cycle in light of the success of the operator in establishing and conducting a site that generally meets regularly requirements, including environmental performance requirements.
- c. Renewals should be decided upon through an open, transparent and participatory licensing renewal process.
- d. The length of licence renewals should reflect environmental performance, and the compliance record of the operator.
- e. Any licence would always be subject to the authority of the Minister to cancel for regulatory infractions that would make revocation an appropriate, fair and just sanction.

Transfers, Expansions, Other Changes

It is important that the process for transfers in ownership or operator, and change in terms and conditions be clear, and that it be open and transparent.

There should be a requirement for public notification when an application for a transfer of a lease has been made. The public should have the opportunity to submit comments to the Minister on the proposed transfer.

A key factor in deciding whether to approve a transfer in ownership or operator is whether the proposed new owner or operator is likely to deal constructively with other coastal users and affected communities. Similar considerations should guide the process and decisions on expansions, changes in species, and other significant changes to the terms and conditions of an existing licence.

Protection for Wild Salmon

It is clear to us that the regulatory framework for aquaculture must pay particular attention to the potential interactions of salmon marine-based salmon aquaculture with wild salmon. It is clear that concern for wild salmon populations is an important part of the global work taking place in multiple forums to reduce the environmental impact and improve the sustainability of fin-fish aquaculture, including by improving the regulation of aquaculture.

The legitimate concerns about how the growth and conduct of the industry might impact wild salmon are among the concerns that have led us to make the recommendations we have made elsewhere in this document on a number of core elements of the regulatory framework including on site selection and utilization, fallowing and stocking densities, and fish health and well-being.

The regulatory framework should however also include a number of elements that are more specifically directed to the protection of wild salmon. To that end, protection for wild salmon would be listed in legislations one of the criteria to be considered in leasing and licensing decisions.

The regulatory framework should also be clear and explicit about the need for appropriate physical separation between marine-based aquaculture and salmon rivers and known salmon migration routes. While DFA should continue to rely on DFO advice and requirements under the federal *Species at Risk Act*, it should be a clear element of the regulatory framework that DFA will go beyond what is recommended by DFO where DFA determines that an additional level of protection for wild salmon is appropriate or called for.

Our second recommendation for specific attention to the protection of wild salmon is that the regulatory framework should deal more extensively with the prevention of escapes, generally along the lines of what has been implemented in Maine, through a requirement for adoption by salmon farms of a comprehensive and integrated containment system.

Monitoring Compliance and Enforcement Provisions

A new regulatory framework will not obtain the public trust and confidence it needs to be successful unless it includes a strong commitment to effective monitoring of compliance and to effective enforcement.

In this section of the report, we reiterate the recommendations made in other parts of the reports that will strengthen monitoring and/or enforcement while also addressing other issues. Examples include the recommendation to move responsibility for administration of environmental monitoring to the Department of Environment the regulatory process. We then outline additional enhancements to monitoring and enforcement, as follows:

- a. More inspectors fully trained for aquaculture;
- b. More inspections and more unannounced inspections;
- c. More capacity to investigate complaints about the compliance of a facility;
- d. More capacity to carry out aerial surveillance and access to vessels to carry out inspections;
- e. A broader range of compliance measures and a clear policy on how they are used to ensure compliance, including increased reliance on prosecutions;
- f. Complete transparency about violations regardless of what compliance action is taken;
- g. A clear link between compliance performance, and the licensing process, including terms of licences, issuance of new licences, monitoring and reporting obligations, and renewal of licences.

Ongoing Development and Review of the Regulatory Framework

Ongoing Regulatory Advisory Committee

We recommend that an ongoing Regulatory Advisory Committee (RAC) be struck to continue to meet at least once a year to advise DFA on the implementation of aquaculture regulations, on possible changes to the regulatory framework in the future, on significant policy issues relating to

regulation as they arise and on the overall effectiveness of the regulatory framework. The RAC could also be a forum for the discussion of emerging issues in the regulation of aquaculture or in the aquaculture industry that may call for a regulatory response. The RAC should be made up of approximately 10 members and include representation from First Nations and the following interests:

- Municipalities
- Aquaculture industry
- Fishing industry
- Coastal communities
- Environmental and conservation organizations
- Economic development and tourism interests.

Science Advisory Framework/Mechanism/Process

We recommend that the DFA establish an ongoing mechanism for consulting with experts on the science of aquaculture and its regulation. However constructed, the idea would be that a standing mechanism would link DFA with a community of experts in the science of aquaculture to facilitate DFA's access to the combined expertise. Invited experts should include those who hold relevant local and traditional knowledge. Those who agree to participate would have a channel through which to contribute to the effectiveness of regulation and to decision-making in the aquaculture sector more broadly. Our experience suggests many experts across Atlantic Canada are fully prepared to make this kind of contribution and would welcome an avenue to do so on a continuing basis. This mechanism could also help to identify and support the research needed to fill information gaps and reduce uncertainty in our understanding of the impacts of aquaculture.

Mandatory Independent Five-year Review

In legislation that has similarity with the *Coastal Resources Management Act*, a mandatory five-year review has proven to be useful in Nova Scotia in making legislation better. In our view, the same can be expected from a review of a broader regulatory framework which would include the amendments which would be made to the Act and regulations to implement the framework but which would also encompass the role of the DFA in making the framework operational through licensing and leasing, monitoring and enforcement, and working with the DFO and other federal regulators and scientific and regulatory advisory groups.

Other Issues

This report deals with a number of other issues. These are:

- The site closure and clean-up obligations of licensees;
- The relationship of the regulatory framework to industry codes of practice;
- The relationship of regulation to third party certification; and
- The access of the industry to working capital through the Fisheries and Aquaculture Loan Board or the provincial government; and
- Emerging issues that the regulatory framework will or may have to face in the near future.

Implementation and Transition

We have concluded that the regulatory framework we propose can be implemented through amendments to the *Fisheries and Coastal Resources Act* and regulations made under the Act. Applications for new fin-fish aquaculture licences should be processed under the proposed regulatory framework. The proposed regulatory framework should be applicable to the operation of already licensed aquaculture.

The interests and concerns of aboriginal peoples in Nova Scotia relative to aquaculture should be explored in direct discussions between the government and First Nations.

1 Introductory Matters

1.1 The Broader Policy Context: Regulation, Aquaculture and Nova Scotia's Long-Term Objectives

This document lays out our conclusions and recommendations on a new regulatory framework for aquaculture in Nova Scotia. From the length and detailed nature of the document, it is obvious that we have concluded that the regulatory framework that is needed is fundamentally different from the current one. In other words, we have concluded that the regulation of aquaculture in Nova Scotia needs to be completely overhauled. This is particularly true for fin-fish aquaculture but it is true in important respects for the industry as a whole, particularly in its role in the life of the communities in which it is located or nearby.

In its nature, regulation is about the prevention or reduction of harm. Accordingly, most of this document deals with how the aquaculture industry should be regulated to prevent or reduce the risk of harm that can occur if aquaculture is conducted without due regard for the environment, local communities and the protection and productive use of public coastal resources.

Our mandate was however, broader. In proposing “a state-of-the-art regulatory framework for the aquaculture industry in NS”, the Panel was asked to “strive to make its recommendations in light of the best long-term environmental, social and economic interests of the province, in accordance with priorities, principles, and interests as articulated in relevant Nova Scotia legislation, including the Environmental Goals and Sustainable Prosperity Act”. We approached this broader aspect of our mandate with the awareness, which is built into the *Environmental Goals and Sustainable Prosperity Act (EGSPA)*, that regulation is only one of the tools of governance that governments and societies use to advance long-term environmental, social and economic interests.

Not surprisingly, we heard more in our process about the adverse impact of aquaculture that people wanted the regulation of aquaculture to address than we did about the potential economic or social benefits of aquaculture or its future. Nevertheless, we did hear quite a bit about what the industry was contributing or could contribute to Nova Scotia's economy and about the determinants of the industry's economic success. For example, we heard about the importance of scale to the industry's competitiveness in national and global markets. At the same time, we heard about the importance of diversity, between and within sectors of the industry, to the resiliency and sustainability of the industry and to its ability to create opportunities for entrepreneurs and for rural communities to benefit from the efforts of entrepreneurs. As another example, we heard about innovation that has happened or is occurring in Nova Scotia's industry and about the difficulties the industry has faced in growing in Nova Scotia despite that innovation, including because of uneven, uncertain and inadequate support from government. We heard both about the need of the industry to be current with global trends in productivity and in reducing its environmental footprint and the importance of avoiding prescriptive regulations that can stymie the industry's evolution and development.

During our process, the One Nova Scotia Commission completed its work and issued its final report, *Now or Never: An Urgent Call to Action for Nova Scotia*. Several of the central messages to be taken from that work are relevant to the broader aspect of our mandate to make recommendations on regulation that address Nova Scotia's long-term environmental, social and economic interests of the province as articulated in the *Environmental Goals and Sustainable Prosperity Act*. One of these messages is that Nova Scotia's prosperity depends on businesses that produce value from the province's natural resources. Another is the crucial importance of innovation and entrepreneurship in and beyond the natural resources sectors. A third is the recognition that Nova Scotians expect economic prosperity to be combined with environmental stewardship. A fourth is that Nova Scotians must be prepared to say yes to the economic opportunities it has if it is to reverse the current trend to towards long-term economic and social decline.

Putting these core messages of *Now or Never* together, a larger conclusion is that Nova Scotia's prosperity requires Nova Scotians to excel at developing the natural resources of the province in ways that combine wealth creation with the continuing productivity of those resources and the well-being of the broader environment. This is similar to the philosophy that underlies the *Environmental Goals and Sustainable Prosperity Act*. The Act says that the long-term objective of Nova Scotia is to achieve sustainable prosperity, which the Act defines as "seizing today's opportunities without compromising tomorrow, while working together for a strong, competitive economy, a healthy environment and vibrant, thriving communities". Moreover, subsection 3(2) of the Act proclaims a number of foundational principles that, like *Now or Never*, call for integration between economic, environmental and social well-being through innovation, as follows:

3 (2) This Act is based on the following principles:

- (a) the health of the economy, the health of the environment and the health of the people of the Province are interconnected;
- (b) environmentally sustainable economic growth that recognizes the economic value of the Province's environmental assets is essential to the long-term prosperity of the Province;
- (c) the environment and the economy of the Province are a shared responsibility of all levels of government, the private sector and all people of the Province;
- (d) the environment and economy must be managed for the benefit of present and future generations, which is in keeping with the Mi'kmaq concept of Netukulimk, defined by the Mi'kmaq as the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the community by achieving adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity or productivity of our environment;
- (e) innovative solutions are necessary to mutually reinforce the environment and the economy;

(f) a long-term approach to planning and decision-making is necessary to harmonize the Province's goals of economic prosperity and environmental sustainability;

(g) the management of goals for sustainable prosperity, such as emission reduction and increasing the amount of legally protected land will preserve and improve the Province's environment and economy for future generations.

Applying these principles and the concepts underlying both the Act and Now or Never to our mandate leads us to conclude that the kind of aquaculture that fits with the Act and with Now or Never is low impact/high value aquaculture. In our view, this is aquaculture that combines two fundamental attributes:

- A low level of adverse environmental and social impact which decreases over time; and
- A positive economic and social value from the use of Nova Scotia's coastal resources, which is high and increases over time.

In addition to being consistent with the Act and Now or Never, our work suggests this may be the only kind of aquaculture that Nova Scotia can have if it is to have a successful and growing aquaculture industry. We say this for two reasons.

First, significant market forces are at play suggesting that the growth in demand for farmed fish and seafood, particularly for farmed salmon, will be for fish and seafood that have been produced with low and sustainable levels of environmental impact. These forces include new global certification programs agreed to by major producers of farmed salmon and leading international environmental organizations. They include the move towards higher and more demanding levels of regulation in many of the high producing jurisdictions, such as Norway, Scotland, Chile, New Brunswick and Maine.

Most fundamentally, the forces include growing consumer demand for sustainable fish and seafood products that either drives or is supported by the sourcing of sustainable fish and seafood products by major retailers. No doubt the impact of these forces in the short-term can be overstated. But the longer-term direction of change in the market in favour of products that can be credibly branded as sustainable seems self-evident. Although we do not doubt that there will continue to be a market for low-cost high volume production, we doubt Nova Scotia's competitive advantage in that market or that Nova Scotians would accept aquaculture conducted in a manner required to be competitive in that market.

This brings us to our second reason for suggesting low impact/high value aquaculture may be the only option for the industry's future in Nova Scotia. It is that it is unlikely that any other approach to aquaculture can enjoy or maintain the social licence, particularly in coastal communities, that aquaculture must enjoy in Nova Scotia if it is to grow and prosper. While this is true of all aquaculture, we think it is particularly true of marine-based salmon farming. We base this conclusion largely on what we heard from Nova Scotians who live close to aquaculture but also on our discussions with national and provincial regulators of aquaculture, on our understanding of the strengthening of regulations taking place in other jurisdictions, on the market forces listed above

and on the conversations we have had with a number of people in the aquaculture industry or who work closely with the aquaculture industry.

For these reasons, our conclusion is that a regulatory framework that is both “world class” and consistent with Nova Scotia’s long-term environmental, social and economic interests as articulated in the *Environmental Goals and Sustainable Prosperity Act* is one that is decidedly on the side of low impact/high value aquaculture. That is the kind of regulatory framework that is intended by the recommendations set out in the balance of this document. In consequence, the regulatory framework we propose is intended not only to control the impact of aquaculture but to also contribute to the value that aquaculture can yield.

1.2 What We Heard About Aquaculture in Nova Scotia in a Nutshell

Our regulatory review process included a number of opportunities to hear from stakeholders and members of the public. We do not intend to provide a detailed account of what we heard through these various forums, as this information is readily available on our website at www.aquaculturereview.ca. We do think, however, it is important to offer a summary of some of the high-level views we heard most consistently that are most important for setting the stage for the proposed regulatory framework. These views include:

- Generally positive views of shell-fish aquaculture;
- Many concerns about marine-based fin-fish aquaculture and potential growth of that kind of aquaculture;
- Many calls for end to marine-based aquaculture or at least to any further growth in marine-based aquaculture;
- Significant support for limiting fin-fish aquaculture to land-based facilities;
- Significant support for the view that government should not be subsidizing marine-based aquaculture by funding its development with taxpayer dollars, by compensating operators for destruction of diseased fish, or by permitting discharge of waste into the marine environment;
- Widespread concern about the capacity and will of the DFA to effectively regulate the industry and especially marine-based fin-fish aquaculture;
- Range of industry concerns that the current approach to regulation of the industry is stymying growth;
- Although there are very different views as to what a better regulatory framework would be, there was widespread support for a better regulatory framework.

1.3 Environmental Impacts

As part of our regulatory review process, we engaged with the Knowledge Roster we established on the key concerns we identified from the community sessions, stakeholder meetings and the Roundtable process about environmental impacts of aquaculture. The key concerns all involved

fin-fish operations in coastal waters. The following summarizes our conclusions on three key areas of concern, benthic impact, water pollution and impact on wild salmon.

1.3.1 Benthic Impacts of Fecal Matter and Waste Feed

With respect to benthic impacts from fin-fish operations in coastal waters, the accumulation of fecal matter and waste feed were raised most frequently by participants in our process. We consulted with members of the Knowledge Roster on these issues as part of a workshop on the impact of aquaculture on marine species other than salmon, which in turn was the subject of a separate Knowledge Workshop.

A key concern with waste feed is that it can contribute to anoxic conditions of the benthic environment below fin-fish cages. It does so because it contains nutrients for bacteria in the benthic environment that then use up oxygen, reducing the availability of oxygen in the benthic environment, which in turn creates less favourable conditions for a number of marine species.

We learned that waste feed can be reduced significantly through best practices in feeding methods, but it seems clear that some feed will still fall through the cages. The overall impact of waste feed on oxic conditions is largely a function of the size of the operation and feeding method in relationship to water depth and flushing, in combination with fallowing periods. The impact of waste feed on oxic conditions of the benthic environments is relatively smaller than the impact from fecal matter, but it interacts cumulatively with fecal matter.

The amount of fecal matter that reaches the benthic environment below a site is largely a function of the number of fish per site, the age class of the fish and the biophysical conditions of the site. Fecal matter deposit is greatest toward the end of the growing cycle. Of course, as was pointed out to us by a number of participants, the deposit of fecal matter from fish is a natural process. The main issue is the concentration of fecal matter in a given location as a result of an intensive fin-fish operation. The environmental impact from fecal matter is therefore largely a function of stocking and density levels in relation to water depth and flushing in combination with fallowing periods.

There is also concern about the accumulation of non-natural substances in the benthic environment, which can have adverse impacts on marine life. Possible pollutants include medication from waste feed (antibiotics, SLICE), zinc and copper from waste feed and from anti-fouling agents, and pesticides used to treat sea lice. As we discuss later in this report, we feel that risks and uncertainties around these impacts warrant a regulatory approach that seeks to minimize and where possible to prevent the release of these substances.

1.3.2 Water Pollution

Throughout our process, participants expressed concern to us about the impact of fin-fish aquaculture operations on water quality. In particular, we heard concerns about the release of chemicals, such as anti-fouling agents, the release of medication and pesticides into coastal waters.

Concerns were also raised by some about fuels and operational discharges, as well as debris and surface wastes from aquaculture operations.

Fin-fish operations in coastal waters contribute to raised levels of zinc and copper through waste feed and from antifouling agents used in aquaculture operations. There was general agreement among participants in the Knowledge Workshop on pollution that raised levels of zinc and copper are of concern in the marine environment. There were different opinions as to the extent of the harm posed from the releases of these substances from aquaculture. The contribution each of the two major sources makes to the levels of zinc and copper will very much depend on conditions at the site, and on operational details, such as the feeding method, and the manner in which anti-fouling agents are used. It seems, however, that anti-fouling agents are generally the more significant contributor to the release of zinc and copper into the marine environment, particularly in the water column. Our conclusion, based on the information we received from the Knowledge Roster, is that the release of these chemicals should be minimized and eliminated where possible. As elaborated later in this report, the chemical treatment of aquaculture equipment to prevent fouling should be prohibited. This, in combination with best practices in feeding methods, should minimize the release of zinc and copper from aquaculture operations.

Another concern we heard from a number of participants is the release of antibiotics from waste feed into coastal waters. Concerns associated with this release range from contamination of wild fish to the increase of antibiotic resistance of bacteria. We learned that 4 classes of antibiotics are approved for use feed in aquaculture by Health Canada: oxytetracycline, florfenicol, and two types of trimethoprim sulfas. We were told that oxytetracycline and florfenicol are used but that the trimethoprim sulfas are not. Provincially regulated veterinarians oversee the use of antibiotics. There was general agreement at the Knowledge Workshop on pollution that bacterial resistance can occur over time, and that the accumulation of antibiotics, particularly in the sediment, is a concern. Minimizing the release of antibiotics, through a combination of feeding practices that minimize feed waste, and minimizing or eliminating the need to use antibiotics, is therefore clearly desirable.

Many participants were similarly concerned about the release of pesticides, both in feed and in the form of “bath treatments”. When pesticides are used it is to treat sea lice infestations. The main concerns with pesticides are their acute toxicity, their persistence, and the compounds they break into. Participants in the Knowledge Workshop on pollution generally agreed that the pesticides approved for use in aquaculture are designed to break down quickly into less harmful substances. Only very few pesticides are approved for sea lice treatment in aquaculture operations in Canada, fewer than in other jurisdictions. Some pesticides approved in other jurisdictions are not approved in Canada due to concern about their persistence in the environment.

The overall conclusion appears to be that while Canada seems to be taking a more cautious approach to the approval of pesticides for use in aquaculture than some other jurisdictions, there is good reason to make every effort to minimize the use of pesticides. There has not been a confirmed application of pesticides to treat sea lice in Nova Scotia for at least a decade. In other jurisdictions, including New Brunswick, operators have had difficulties managing sea lice infestations at their operations. The use of SLICE in feed has become ineffective in New Brunswick, leaving operators to

push for the approval of “bath treatments” of pesticides. Furthermore, an unauthorized application in New Brunswick resulted in a significant kill of lobster. Our conclusion is that an effective regulatory system in Nova Scotia will seek to manage the sea lice problem through proper site selection, and responsible operation of sites, with the goal of avoiding the need for the use of “bath treatment” of pesticides.

Other pollution concerns raised include fuels and operational discharges from service vessels, and surface wastes and marine debris from operations. In our view, there is no reason why a well-run operation would result in any significant impact. There is every reason to think that a well-designed and implemented regulatory system will address these concerns.

1.3.3 Impact on Wild Salmon

Many of those who participated in our process were very concerned that the growth of marine-based fin-fish aquaculture in Nova Scotia is one more threat to the already threatened Atlantic salmon populations of Nova Scotia’s rivers. This concern was strongly and unequivocally articulated by organizations that are dedicated to the conservation and protection of the Atlantic salmon, including the Atlantic Salmon Federation and the Nova Scotia Salmon Association, and by many local salmon conservation associations across the province. It was also communicated to us by the Ecology Action Centre and by many anglers. These participants in our process were among the strongest advocates for a policy that limited salmon farming to closed-containment systems located on land.

In our Knowledge Workshop on the impact of aquaculture on wild salmon, it was emphasized that wild Atlantic salmon face a range of threats that pose greater danger to the survival and recovery of wild salmon populations than could be posed by marine-based aquaculture, particularly as it is currently practised. It was also emphasized that there is no research showing that the continuing decline in the numbers of wild Atlantic salmon at a population scale is significantly caused by salmon farming. Rather, the combined effect of more fundamental factors, such as loss of habitat, acid rain, the legacy of historic overfishing and low population numbers, were stressed.

On the other hand, our Knowledge Workshop indicated that particular sub-populations of wild Atlantic salmon have been negatively impacted by marine-based salmon farming. Research in New Brunswick’s Magaguadavic River has shown that wild salmon were entirely displaced from that river by the late 1990’s through the interbreeding of wild salmon with escaped salmon and their offspring. It was said that this happened when the industry had a much higher number of escapes than it now does. Some debated this on the basis of the number of escapes they believe have recently happened in Nova Scotia. Our view is that even accepting that prevention of escapes is greatly improved, the research shows that salmon farming can seriously harm wild salmon if escapes are not prevented. It is important in this connection that the adverse impact of interaction between escaped farm fish and wild fish is not only a function of the number of escapes but also of the number of fish in the wild population. With a smaller population of wild fish, a smaller number of escapes may be sufficient to cause an adverse impact on the genetic composition of the wild fish population. This is relevant because the number of salmon left in many of Nova Scotia’s rivers is

very small compared to the number of fish that would have been present in the Magaguadavic when salmon aquaculture started in southwestern New Brunswick.

In our Knowledge Workshop, the discussion of the concern that marine-based fin-fish aquaculture can harm wild salmon by increasing their exposure to sea lice infestation and to ISA was similarly nuanced. On sea lice, it was stated that sea lice levels in Nova Scotia are below the levels at which treatment for sea lice would be required. From this, it could be concluded that Atlantic salmon are not currently facing a greater risk of sea lice infestation in Nova Scotia due to aquaculture than they would otherwise be facing from the level of sea lice which exists independently of aquaculture. This allows aquaculture to be conducted in Nova Scotia, at least for the time being, without use of the treatments for sea lice that generate some of the concerns about aquaculture's broader impact on the environment and other species. It might also be concluded from our Workshop that ISA may be primarily a concern for the health and well-being of farmed fish.

On the other hand, the harm that sea lice is capable of causing to an Atlantic salmon was not questioned in our Workshop or, for the most part, in any other part of our process. And it is possible, as some suggested to us, that the current low prevalence of sea lice is, at least in part, due to the relatively limited scale and wider distribution of the industry in Nova Scotia. In any event, Nova Scotia's objective should be to ensure sea lice does not become a problem for farmed salmon or wild salmon in Nova Scotia.

On ISA, we were told that current research suggests that farmed salmon are more likely to contract pathogenic strains of ISA from wild salmon than the other way around and that wild salmon have greater resistance to ISA than do farmed salmon. We heard that ISA is not easily transmitted between farmed and wild fish. On the other hand, the Workshop discussion also made it clear that there is no definitive knowledge as to how the disease moves between farmed and wild populations or as to the severity of the risk it presents to wild salmon.

On both the sea lice and ISA risk, we attach importance to the statements made in our Workshop and elsewhere in our process that the risk to wild salmon (as well as to farmed salmon) may increase and become more difficult to control if salmon farming is allowed to develop in too concentrated a fashion. There was also broad agreement with the view that both of these risks, along with the risk of genetic disruption through interbreeding, warranted some level of physical separation between fish farming and wild salmon habitat and migration routes. While this point was made in the context of a discussion about protection of wild salmon from farmed salmon, it seems to us that it may also be important to the protection of farmed salmon from wild, at least where the number of wild salmon are large enough to increase sea lice or ISA risk to farmed salmon.

Another consideration is important to our conclusions on the emphasis that the regulatory framework should place on the protection of wild salmon. It is crucial to keep in mind the threatened status of the wild Atlantic salmon population. Some populations of Atlantic salmon have been declared an endangered species and other populations, including some in Nova Scotia, either are or are likely to be considered for the same designation. But whether individual populations are or are not formally declared to be endangered, all wild salmon populations in Nova Scotia are clearly in jeopardy. In our view, this calls for a precautionary protective approach to all human

activities that potentially add to the difficulty facing the wild salmon population, including aquaculture. The fact that other activities also need to be better controlled if salmon populations are to be protected and have a chance to recover is a good argument for better management or regulation of those activities but not a good argument for developing or conducting aquaculture on the basis that the risk it poses to wild salmon populations is small or unimportant. If the cumulative impact is significant, any human activity that contributes to the cumulative impact is of concern.

1.4 The Request for a Permanent Moratorium on Marine-Based Fin-fish Aquaculture

We were urged by many to recommend a permanent moratorium on licensing of additional fin-fish aquaculture sites in coastal waters.¹ Almost as often, we were urged to recommend the discontinuation of existing marine-based fin-fish operations. We were told these recommendations were warranted for multiple reasons, including: the adverse impact of fin-fish aquaculture on the marine environment and coastlines; the risk which fin-fish operations posed to wild salmon populations; the incompatibility of fin-fish aquaculture with the fishing industry, particularly the lobster fishery; the negative impact of fin-fish aquaculture on the lives of those who live on the coastline in proximity to fin-fish sites; and the inability of regulation, even of good regulations effectively enforced, to address the problems.

Usually, those who proposed a permanent moratorium argued that fin-fish aquaculture should be restricted to contained facilities located on land.² The primary rationale was to avoid the pollution of the marine environment associated with marine-based operations, and concern about risk to wild salmon populations.³ In effect, proponents of limiting fin-fish aquaculture to land argued that because of the adverse impacts of marine-based operations and the technical and economic viability of contained land-based systems, the latter should be the only kind of fin-fish aquaculture allowed.⁴ In opposition to these views, some people in the industry argued that a land-based industry was not technically or economically viable, at least not at the scale needed to replace the marine-based salmon-farming industry.

Our mandate assumes the continuing existence of an aquaculture industry to be regulated. Nova Scotia can however have an aquaculture industry with or without marine-based fin-fish aquaculture or with or without expanding this sector of the industry. We have carefully considered the views expressed to us, particularly those with residences close to marine-based fin-fish

¹ The Roundtable expressed partial support for the recommendation that, “The Province should not approve new open-pen finfish operations until the new regulatory regime is in place.” (Roundtable Final Report, page 22)

² This view was not adopted by the Roundtable, as a recommendation along these lines (“No new open-pen operations should be approved, and all existing open-pen operations should be removed from coastal waters within five years”) was not supported, with more ‘no’ votes than ‘yes’ and ‘maybe’ votes combined. (Roundtable Final Report, page 23)

³ This can be seen in the Roundtable recommendation (with partial support), that “The regulatory framework should encourage and facilitate the development of closed containment aquaculture operations to reduce waste, disease and parasite transfer to wild fish populations.” (Roundtable Final Report, page 22)

⁴ There was partial support for a recommendation that the province “commission a detailed comparison of the economic, social and environmental impacts of closed containment and open pen fish farming to include true cost evaluation” and additionally for the notion that, (Roundtable, page 22)

aquaculture sites, that Nova Scotia's new regulatory framework should regulate marine-based fin-fish aquaculture by prohibiting it or its expansion.

Our conclusion is that the regulatory framework should not be prohibitory. Our reasons are as follows:

- The risks associated with this kind of aquaculture, while serious, do not warrant a prohibitory approach provided they are otherwise addressed by responsible operation and by a robust regulatory framework;
- The risks and impacts associated can be significantly reduced through effective regulations;
- Through incremental development and continuous improvement to minimize negative environmental and social impact while maximizing benefits, marine-based fin-fish aquaculture has the potential to make an important contribution to sustainable prosperity in Nova Scotia;
- A diverse industry that includes marine-based operations and land based facilities is more likely to be resilient to future changes, including changes in market conditions and climate change;
- A prohibitory approach would apply a different standard to aquaculture than is applied to other industries that pose comparable levels of risk and that are regulated under regulatory frameworks that do not prohibit but regulate; and
- In the context of our mandate to develop a regulatory framework that integrates environmental, social and economic objectives and the conclusions of the Ivany Commission on the state of Nova Scotia's economy, the potential contribution of marine-based fin-fish aquaculture to Nova Scotia's economy calls for a policy approach that addresses the risks through responsible development and robust regulation rather than prohibition.

At the same time, we conclude that the regulatory framework for aquaculture needs to be greatly strengthened in preventing fin-fish aquaculture from taking place in coastal waters that are not suitable for that kind of aquaculture.

In reaching these conclusions, we have not accepted the argument made by some that land-based closed-containment systems are not a viable option in salmon aquaculture. Based on all we have heard, we think this sector holds considerable promise, and the viability of such systems is still in the process of being determined as market conditions evolve and innovative entrepreneurs work to respond to the growing market demand for sustainably-produced salmon. In that context, we think that Nova Scotia is fortunate that one of the organizations at the cutting edge of the innovation curve on land-based closed containment systems, Sustainable Blue, has established itself in Nova

Scotia. Assuming viable commercial-scale closed containment systems are going to be developed somewhere, it could be a tremendous benefit to Nova Scotia's future in aquaculture if that were to happen in Nova Scotia. For that reason, we think one of the objectives of Nova Scotia's efforts to develop its aquaculture industry should be to establish the Nova Scotia industry as a leader in the development and deployment of closed-containment systems for salmon aquaculture. In this regard, it is important to note that Nova Scotia's capacity extends beyond Sustainable Blue. Other operators have used or are using closed-containment systems to raise species other than salmon and some of the earliest work done anywhere in the world on application of closed-containment systems to salmon farming was done in Nova Scotia.

We do not however accept the argument that marine-based fin-fish aquaculture should be prohibited if and when closed-containment systems are shown to be technically and commercially viable. What we have heard leads us to conclude that even if the viability of closed-containment options is established, it will be a long-time if ever before they are capable of producing the volume of salmon currently demanded by the market and produced by the marine-based industry. Provided Nova Scotia's marine-based industry is conducted responsibly subject to robust regulation, we do not think Nova Scotia should limit itself to one kind of salmon aquaculture when and if the commercial viability of land-based systems is established. Instead, we agree with those who submitted to us that the relationship between marine-based and land-based systems could be economically synergistic if Nova Scotia aimed to be at the leading edge of developing closed-containment systems and low-impact marine-based salmon farming. This would build and reinforce Nova Scotia's brand as a leader in the sustainable farming of salmon, whether done at sea or on land. In that world, Nova Scotia's closed containment and marine-based farmers might both sell more product than they might otherwise.

It is critical that we stress the following point: our conclusion that we should not recommend a permanent moratorium assumes the adoption and effective implementation of the regulatory framework we have outlined in this report.

1.5 Fin-fish versus Shell-fish

Our mandate was to develop a regulatory framework for the whole of aquaculture, not just for fin-fish aquaculture. This means our mandate extends to the shell-fish industry, which includes the producers of oysters and mussels. It also extends to plant aquaculture, where Nova Scotia is a leader largely due to the success of Acadian Seaplants. However, although we heard lots about fin-fish aquaculture and a good deal about shell-fish aquaculture, we heard very little about plant aquaculture.

Currently, the legislative framework for the regulation of aquaculture found in the *Coastal Resources Act* subjects fin-fish and shell-fish aquaculture to the same regulatory framework. The differences between the two branches of the industry, particularly in the nature and level of risk each poses to the environment, is addressed in the administration of the regulatory framework through the licensing process. The differences between the two kinds of aquaculture are reflected in the different terms and conditions that get written into the licences for each.

Our process suggested that concerns about the environmental impact of aquaculture are largely focused on fin-fish aquaculture. More broadly, it suggested that opposition to growth in aquaculture is concentrated on fin-fish aquaculture and is much more intense in relation to fin-fish aquaculture than it is in relation to shell-fish aquaculture. In addition, we heard positive things about how shell-fish aquaculture is perceived much more frequently than we heard positive things about the perception of fin-fish aquaculture.

At the same time, we heard similar concerns about how shell-fish and fin-fish aquaculture are regulated in relation to the impact of aquaculture on communities. For example, although the concerns were more intensely and consistently expressed relative to fin-fish aquaculture, we heard concerns in communities close to both kinds of aquaculture about inadequate transparency about proposed aquaculture developments; inadequate opportunities for community participation in the regulatory process; and inadequate response to community concerns about the impact of aquaculture on boating and other recreational activities, fishing, and the beauty of coastal waters.

The regulatory framework for aquaculture needs to treat fin-fish and shell-fish aquaculture differently as regards their respective potential impacts on the environment. We also think, however, that improvements in the regulatory framework relative to the potential impact of aquaculture on communities, including the opportunities the framework provides to citizens to be informed about and to participate in the regulatory process should in general be applicable to both kinds of aquaculture. Even there however, some attention needs to be given to the differences between the two kinds of aquaculture, including the smaller scale of many shell-fish operations.

1.6 Regulation and Scale of Operation

A related but distinct issue is the interaction between regulation and the structure of the aquaculture industry. On the one hand, we heard that the salmon farming industry is increasingly dominated by industrial-scale operations. This scale of operation can increase the nature and scale of environmental risk associated with salmon and others kinds of fin-fish aquaculture. It therefore leads to calls for increases in regulatory oversight and for tighter and more demanding regulatory requirements.

On the other hand, we heard that heightened regulatory requirements tend to be much more burdensome for smaller than for larger operators. The result of across-the-board increases in regulatory requirements designed to address the risks associated with larger scale operations can be to increase the competitive advantage that large-scale operators already have over smaller-scale operators. It was pointed out to us that this could be somewhat ironic in a Nova Scotia context given the level of opposition that was expressed to us on the actions taken by the Nova Scotia to encourage large companies such as Cooke Aquaculture to expand their operations in Nova Scotia. The irony lies in the fact that although Cooke Aquaculture is now the dominant player in Nova Scotia's fin-fish industry, it is not the only player. The others tend to be the kind of smaller-scale indigenous companies that many people say are the kinds of companies that should be supported.

The dynamic relationship between operational scale and regulatory responses to operational scale are well-recognized in the literature on regulatory design and administration. Particular attention is paid to the problem that heightened regulatory requirements present to small and medium sized enterprises (SMEs). Any good regulatory framework needs to grapple with these dilemmas, recognizing that there are no simple or comprehensive solutions. Large-scale operators must be appropriately regulated. At the same time, regulation must be feasible not only for them but for smaller operators.

There is a range of options available to achieve and maintain the necessary balance between these objectives. One is to ensure that the requirements imposed by the regulatory framework on large and small operators are proportionate to the risks that the framework is intended to control. This minimizes the extent to which the additional burden the framework places on small operators is an unnecessary additional burden. A second option is to ensure the framework leaves regulated organizations with reasonable levels of flexibility as to how they implement or meet the regulatory requirements. This gives smaller operators the opportunity to adopt approaches to implementation that are more feasible for them than the approaches followed by larger organizations. A third option is for the regulatory agency, often in partnership with industry associations, to invest in programs that assist SMEs in meeting their regulatory obligations. This responds directly to the issues of capacity that often are the core barriers faced by smaller organizations when they are faced with higher regulatory requirements.

Each of these options has informed the development of our proposed regulatory framework for aquaculture on Nova Scotia, and needs to inform the more detailed design and implementation of the regulatory system for aquaculture.

2 Foundational elements of the Regulatory Framework

A regulatory framework includes but is much more than the rules of regulation. Regulation encompasses rules (and other kinds of regulatory standards) but it also encompasses the policy choices behind those rules and standards and the entire process by which the rules and standard are implemented and enforced.

The effectiveness of a regulatory framework therefore depends on many variables and factors in addition to the content of the rules and standards. Our process leads us to conclude that the current regulatory framework is not working optimally because of a number of factors that will not be addressed by changing the rules of aquaculture in Nova Scotia. Although we think changes in the rules are also required, these changes will not be effective in producing the improvement in regulation that we think is required unless these other factors are addressed.

2.1 Attitudes

The regulation of aquaculture in Nova Scotia reflects an attitude within the provincial government that needs to change if regulation is to become effective and trusted for being effective. The attitude in question is one that assumes that the concerns held by members of the public and local communities about the impact of the industry, especially about the environmental impact of marine-based fin-fish aquaculture, are over-stated, unsubstantiated and based on a not-in-my-backyard syndrome. It is an attitude which is too quick to blame opposition to the industry on those complaining, and which is not sufficiently critical of the industry's responsibilities for the opposition it faces. In the regulatory process, these attitudes manifest themselves as regulation which is insufficiently rigorous and transparent and which often ends up being understandably perceived as more concerned with defending the industry from its opponents than with keeping the industry accountable for its performance and impact.

Within the industry, we saw evidence of a similar set of attitudes at play. To be fair, we heard many people from the industry speak of the industry's accountability for the opposition it faces and also to the role that the industry must play in gaining and maintaining public and community support. But we also detected a tendency to portray opposition as illegitimate, in some cases because it came from those who summer in Nova Scotia but do not live here year-round or because it was perceived as being orchestrated or bank-rolled by national and international environmental groups that are dedicated to the destruction of the industry for ideological reasons. Sometimes, it was suggested to us that the difficulty the industry faces in getting new sites approved by regulators was the reason why the industry has lost social licence, overlooking the more likely possibility that the industry's loss of social licence accounts for the difficulties the industry increasingly faces in a regulatory process that seems to us to be geared to support the growth of the industry.

From the community perspective, we of course recognize the right of members of the public to hold whatever views they wish to hold about the industry or the role of the government in promoting it or regulating it. We are particularly aware that many who spoke to us live close to aquaculture operations while we do not, and that for many, frustration with the current regulatory process has

understandably shaped their current view of the industry. Those comments made, we are left with the view that the demonization of the industry we sometimes heard sometimes came close to overshadowing the very real problems that we heard about that the regulatory framework must clearly address.

Some of the calls for regulatory protection that were conveyed to us were disproportionate to the risks posed by aquaculture and to how comparable levels of risk created by other industries are addressed. We not only understand the inability of regulators to meet those expectations, we also question whether it would be sensible public policy for them to do so given the level of resources such an effort would require. We also must comment that although there are very real and legitimate concerns about the impact that certain kinds of aquaculture may have on other ways of making a living, we question the unwillingness we sometimes heard to acknowledge any value in the wealth and jobs created by aquaculture, an industry that has been in the province for at least 40 years and that currently is worth almost \$50 million dollars annually.

Sometimes, this unwillingness seemed to reflect the kinds of attitudes to economic development that the Ivany Commission concluded are working against Nova Scotia's very viability as a province. It seems clear to us that for the benefit of all Nova Scotians, it will be critical that a new regulatory approach to the industry will be accepted by those suspicious of the industry as a fresh start, an opportunity by government and industry to establish constructive relationships with local communities and other users of coastal waters. While changes in attitude within government and industry are a precondition for progress, an openness to change among those who have felt disenfranchised by the regulatory process in the past will be a critical ingredient to reaching the goal of ensuring aquaculture contributes to sustainable prosperity, particularly in rural Nova Scotia.

2.2 Social Licence

Social licence refers to the informal permission society or a segment of society, such as a local community, does or does not give to an industry, an activity or a project. The relationship between social licence and formal regulation is complex. On the one hand, effective regulation can help to create, reinforce and sustain social licence. On the other hand, the presence or absence of social licence can be one of the key determinants of the effectiveness of regulation.

There seems to be widespread agreement that marine-based fin-fish aquaculture does not currently enjoy high social licence in Nova Scotia or across Canada. Fair or unfair, this reflects a perception that the industry is a significant polluter of the marine environment using practices that are not sustainable for ecosystems or the health for the fish that are farmed or the wild fish or other aquatic life that comes into proximity with "open-net pens", frequently called "feed lots" by their detractors.

In our process we heard polarized views on the question of social licence. From an industry perspective, the message sometimes seemed to be that social licence depended on industry and regulators staring down the unreasonable opposition and working with those in society who are prepared to have an open mind and to accept the facts. From an oppositional perspective, we

sometimes were flatly told that no amount of regulation could solve the social licence problems of an inherently unsustainable industry. But from both perspectives, we also heard many more nuanced opinions that recognized the vital contribution that regulation could make in helping the industry's social licence problem by helping the industry avoid or fix the problems it has encountered in the past.

For fin-fish aquaculture to develop in Nova Scotia, the social licence problem will have to be addressed. If the development of fin-fish aquaculture continues in the absence of improved social licence there is a real possibility that the social licence of aquaculture in general may come into doubt. Already, we saw some evidence of that happening. Our process leads us to the conclusion that the social licence problem is deeper than the ineffectiveness and non-responsiveness of the current regulatory framework. But it also leads us to conclude that the social licence issue cannot be addressed unless the effectiveness of the regulatory framework is significantly improved and is seen to be improved in visible and tangible ways.

This does not mean additional levels and layers of regulation and oversight for the purpose of showing an increase in regulation. Even if that approach mitigated the social licence gap, which is unlikely, it would cause other kinds of barriers to the health of the industry. What it does mean, at a minimum, is regulation that deals directly and responsively with the real and legitimate issues that the industry must address if it is to enjoy better social licence.

We think however that Nova Scotia should aim higher than the minimum. Our mandate asked us to consider the regulation of aquaculture in light of the *Environmental Goals and Sustainable Prosperity Act* and the priority it places on development that is sustainable because it integrates economic, social and environmental aspirations. In that context, we propose below that one of the goals of the new regulatory framework should be to contribute to Nova Scotia's brand for sustainable aquaculture that produces the highest value products for the lowest possible environmental impact while maximizing social value.

2.3 Discretion

All regulatory frameworks give discretion to the regulator. In complex regulatory frameworks that govern the conduct of an industry, it is typical for the regulator to be given considerable discretion by the legislation that implements the framework. This is essential to the ability of regulators to deal with variation between the nature, scale and context of the activities that are regulated. It is also essential to the ability of the regulatory framework to evolve and change to reflect changing conditions driven by economics, technological innovation, new scientific knowledge or changing social values.

There is however a balance to be struck between the extent of the reliance on discretion and the laying out of the basic elements of the regulatory framework in legislation, whether it be in the statute which is enacted by the legislature or the regulations which get made as authorized by the statute. Too much reliance on discretion can mean that the regulatory framework is little more than the sum total of the specific decisions made by the regulator. This is a problem on multiple

levels. Regulators are provided with little guidance in how they are to carry out their work. Regulated businesses can be unsure of what is expected of them and uncertain of when and how those expectations will change. The protection provided to the people and the values the regulations are intended to protect can be uncertain and variable. Most broadly, there can be a concern that the framework is delegating not just administrative but law-making authority to regulators without making them subject to the kinds of transparency and accountability generally applied to law-making.

Our conclusion is that the regulatory framework currently in place under the *Fisheries and Coastal Act* and Regulations is too heavily dependent on regulatory discretion. We believe that a number of the concerns we heard from communities and from industry about the current framework are exacerbated by the extent to which the framework operates almost entirely through regulatory discretion. For example, community concerns about the content and adequacy of the rules under which aquaculture operators is understandable given that those rules are overwhelmingly found in the terms and conditions of each operators lease and licence. Similarly, industry concerns about the predictability and dependability of regulatory decision-making is partly a result of the open-ended nature of the discretion the legislation gives to the Minister of Fisheries and Aquaculture.

In the regulatory framework we have proposed, regulatory discretion would be limited in various respects. It would also be subject to clearer and more specific legislative guidance as to how it is to be exercised.

2.4 Capacity

Throughout our process, a recurring theme was inadequacy of the regulatory resources at the disposal of the Department of Fisheries and Aquaculture to carry out effective regulation. Frequently, it was pointed out that the Department only had a single boat at its disposal and that it often depended on operators for transportation to and from aquaculture sites.

Another aspect of the capacity issue was the dependency of the Department on the DFO for the science the Department needs to understand and address the issues that the regulators of aquaculture must address if they are to be “world class”.

Our discussions with regulators in other jurisdictions served to confirm the widespread concern about the Department’s regulatory capacity. These discussions confirmed that it is not just regulators in jurisdictions such as Norway that have significantly more resources at their disposal but also neighbouring jurisdictions like New Brunswick and Newfoundland and Labrador. We were particularly impressed by the level of commitment to building policy, science and regulatory capacity we heard about in the latter province, where there seemed to be a clear understanding that a strategy to support significant growth in the industry would fail if it was not accompanied with proportionate growth in the capacity of government to regulate a growing industry.

In discussions of regulatory effectiveness, there is tendency to emphasize issues such as the relative merits of different kinds of regulation. For example, a typical debate will be between a model of

regulation that requires performance or outcomes (usually supported by industry) and a model of regulation that prescribes the rules that industry must follow and stresses the punishments industry will face when the rules are broken (often supported by environmentalists). While these debates are very important, it is equally important to recognize that both kinds of regulation depend for their effectiveness on the level of resources put into their implementation. In fact, in the academic literature on regulatory design and practice, there is growing recognition that adequate regulatory capacity is a foundational and perhaps the foundational determinant of regulatory effectiveness.

It follows that a critical component of a new regulatory framework for aquaculture in Nova Scotia is a significant increase in the capacity of regulators to implement the framework. We are not in a position to quantify the scale of the increased capacity required. But we can with confidence say significant increased capacity is needed at least in the following areas: in the number of knowledgeable and experienced regulators in the field; in the equipment that is available to the officers in the field; in the capacity of the Department in the area of veterinary medicine and fish health and welfare more generally; and in the access of the Department to scientific research capacity.

Our last comment in this regard is that although the capacity building that is required will entail a cost, it will also represent an opportunity. Through our process, we were struck by the number and range of experts on aquaculture doing world-class work in Atlantic Canada. We were also struck by what we were told by these experts, that much of the available research on the impacts of aquaculture has been done on other parts of the world leaving many unanswered questions about its applicability to Atlantic Canada and to Nova Scotia in particular. If Nova Scotia is serious about building a world-class regulatory framework, it needs to fill these knowledge gaps. It can do so by developing deeper and longer-term collaborations with the scientific community that is already present in the region. If it did so, it would make a major contribution to building that base of expertise and to deriving another layer of economic and social benefit from the industry. Moreover, the results of the collaboration would undoubtedly be research that would not only be of value to regulators but to the industry and its capacity to make environmentally sustainable and socially valuable contributions to Nova Scotia's economy.

2.5 Emphasis on Compatibility with Other Uses

We heard from a broad range of participants in our process about the compatibility (or incompatibility) of various forms of aquaculture with other uses of public resources, particularly in coastal waters. We heard concerns from industry members who felt that private property owners treat coastal waters as their exclusive domain, refusing to share this public resource with the industry. We also heard from the aquaculture industry that there are many land-based threats to coastal waters that also threaten the aquaculture industry, such as nutrient run-off from agriculture operations, and inadequate sewage treatment.

We heard from some members of the fishing community that they depend on this public resource, and that they are concerned that aquaculture may pose an unacceptable risk to the inshore fishing

industry. We heard from tourism operators that they rely on pristine coastal waters to attract tourists to their operations, and that aquaculture is a threat to their industry.

Others see opportunities for collaboration and synergies. We heard from some members of the inshore fishing industry that they see opportunities to combine fishing and aquaculture as a way to diversify opportunities in rural communities. Similar comments were made by some tourism operators who saw mussel farms as tourist attractions.

In some cases, the divergent views on the compatibility between coastal aquaculture and other uses of coastal waters are a result of scientific uncertainty about the impacts of the various activities, how they interact with each other and how they cumulatively affect natural systems. In many cases, however, compatibility is a matter of mutual adjustment and accommodation in the best interest of all. This requires a willingness to engage with one another openly, and to look for mutually acceptable solutions that ensure compatibility and maximize synergies.

We were frequently reminded in our process that the waters on which aquaculture is conducted are public waters. We were told that aquaculture had the effect of privatizing the benefit of this public resource by depriving others of its use, particularly those who live in communities close to aquaculture operations. We were also told that the lease payments and licensing fees charged to aquaculture businesses were not proportionate to the value these businesses obtained from using and, in the view of many, damaging a public resource.

The regulatory framework we have proposed responds to this valid perspectives in multiple ways. It does so keeping in mind that coastal waters do not belong to those to whom they are leased for aquaculture or to those who live in proximity or are licensed to fish in them. They belong to everyone in Nova Scotia and it is the responsibility of the government to ensure they are used and managed for the benefit of the people of Nova Scotia as a whole.

2.6 Promoting, Enabling and Using Research

The effectiveness of regulation in aquaculture is greatly dependent on research that allows the environmental and socio-economic impacts to be understood, mitigated and ameliorated where they are negative and accentuated where they are positive. In our process, we heard quite different views as to whether the current regulatory framework was properly and defensibly grounded on what science and other bodies of knowledge⁵ say about the potential impacts of aquaculture, especially of marine-based fin-fish aquaculture. Questions were frequently asked about the capacity of the DFA to apply research evidence in the regulatory process. Often, the context for these questions was the perception that the DFO is doing less aquaculture research than it has

⁵ For one, the Roundtable expressed qualified support for the recommendation that, “Mi’kmaq traditional knowledge should be used throughout the regulatory process. Processes should be put in place to ensure that research issues are addressed through Mi’kmaq knowledge studies that include land and water use, cultural use and tools to identify indicators.” The Roundtable recognized that this is part of a larger process of rights and treaty obligations. (Roundtable Final Report, page 18)

historically, making the provincial role in research all the more important.⁶ A recurring theme in our conversations with researchers was that the research that is most needed is research on the interaction of aquaculture with the environment in Nova Scotia, which is different in important respects from the environments in which a lot of the research on aquaculture has been carried out. The result is that on a range of science questions on which there is a significant body of research, the research has not been done to confirm the applicability of that research to Nova Scotia.

We think the future effectiveness of the regulation of aquaculture in Nova Scotia will depend on an increase in the DFA's capacity to identify the questions on which it needs research to be done and in its capacity to make regulatory decisions on the basis of its own independent understanding of the research evidence. In particular, the DFA must take a more proactive role in funding or otherwise enabling research to fill the gaps in the peer-reviewed literature that are particularly relevant to improving the regulation of aquaculture in Nova Scotia's particular environmental context.⁷

One of the areas of research to be given priority should be on the interaction between fin-fish operations in coastal waters and lobster. This is one of the compatibility issues of particular relevance to Nova Scotia that is suffering from a lack of sufficient scientific information. Many members of the inshore fishing industry expressed concerns about the impact of fin-fish aquaculture on lobster. Concerns range from displacement of individual fisher from their traditional lobster fishing grounds, contamination of lobster through feed, medication, pest control products, and chemicals used in aquaculture operations, to the effect of benthic contamination on the abundance of lobster in a given area.

There are some peer reviewed papers that consider these issues from a social science perspective, assessing when and how the two industries have found ways to co-exist in harmony in New Brunswick, for example (Walters, 2007, Wiber, 2012). The only study we have been made aware of, however, that considers the biophysical impact of fin-fish aquaculture on lobster is a lobster-trap survey carried out by Louchs and Smith (2014). The study tracks lobster trap results from local fishermen in the Port Mouton area during various phases of a fin-fish operation in the bay. The study concludes that the number of lobster in the vicinity of the fin-fish operation decreased during the grow-out period, and increased during the fallowing period.

We have received many submissions on this study, both from scientists who have reviewed the study and from stakeholders who have views on what action should be taken as a result of this study. Some of the scientists who reviewed the study are supportive and view it as a credible study, while others ask serious questions about the reliability of the data, and how much weight can be given to a single study, the results of which have not been published in a peer reviewed journal. Some stakeholders have asked us to dismiss the study outright, while others view this as a smoking gun that warrants shutting down fin-fish aquaculture in coastal waters.

⁶ The representatives of the DFO we met with stated that this perception was a mistaken one.

⁷ The Roundtable gave partial support to a recommendation to "Develop a process to pose clear research questions to support sustainable management. Make questions available to guide research by students." (Roundtable Final Report, page 19)

In our view, the study raises questions about the interaction between fin-fish aquaculture and lobster populations that cannot be ignored. They are questions that are particularly important in Nova Scotia where the lobster fishery is vital to the economy of coastal communities and the province more broadly. The fact that considerable work is left to be done by the scientific community before we will have clear answers to these questions is not a reason for inaction but rather for action that will ensure this work is undertaken. The Friends of Port Mouton Bay have done tremendous work to try to fill information gaps that are of significant general interest and it is critical that their work lead to further research in this area. The DFA, with or without support from the DFO, should act to promote this research and to support those who are qualified to undertake it.

Of course, any regulatory system has to function in the face of uncertainty while research to reduce the uncertainty is underway. In the case of the potential impact of aquaculture on lobster and in similar cases of uncertainty,⁸ our recommended approach is that the DFA should:

- Identify opportunities to reduce or eliminate the source of the risk, where this can be reasonably be done through changes in the operation of fin-fish aquaculture (for example, as set out elsewhere in the report, by eliminating the use of chemical anti-fouling agents)
- Where risks cannot be readily eliminated, proceed with a clear understanding that there is an unknown risk associated with the operation, and make the quantification of the risk a priority through specific monitoring and research efforts.
- Ensure that the scale of development and regulatory oversight are in line with the risk involved, by ensuring incremental development and by retaining the ability to adjust to new information expected from the additional monitoring and research.

2.7 Regional Cooperation

We heard about regional cooperation from a number of the regulators we met with from New Brunswick, Prince Edward Island and Newfoundland. The existing Regional MOU is clearly a step in the right directions in this regard. It is important to note, however, that there are likely to be limits to regional cooperation. Prince Edward Island, for example, has a very different regulatory system and a differently structured industry that operates in different biophysical conditions. It is not surprising therefore that the industry and its regulation has developed differently in PEI. New Brunswick's industry is much more geographically concentrated than Nova Scotia's, is perhaps less diverse and is operating at a larger scale than in Nova Scotia. Newfoundland's industry is also quite concentrated geographically, is dealing with very different biophysical conditions and is far removed from Nova Scotia, making cooperation in certain areas more difficult.

⁸ The Roundtable expressed qualified support for a recommendation to "support evidence-based regulatory decision-making" with "continuing research supported both directly by the Province and industry, and through federal-provincial partnerships." Areas of research identified include the impacts of aquaculture on lobster, the impacts of escaped salmon and of ISA on wild stocks, and the impacts of sea lice. The Roundtable noted that research should not be limited to these areas and additionally targeted knowledge gaps identified by the Knowledge Roster. (Roundtable Final Report, page 19)

We heard about the imperative of improved regional cooperation from federal regulators. There is concern within CFIA, for example, that the capacity of any one jurisdiction in Atlantic Canada to properly respond to a disease outbreak is inadequate, and building that capacity in each province may be prohibitively expensive given the size of the industry. This issue is explored in more detail below, but regional cooperation in this area clearly seems warranted.

In our view, regional cooperation more generally is an important consideration to enhance the regulatory process in all Atlantic Provinces.⁹ However, it should not drive the design and implementation of the regulatory process in Nova Scotia. We have recommended a particular approach to the regulation of aquaculture for Nova Scotia that is based on our assessment of biophysical, social and economic conditions in Nova Scotia, provincial priorities as expressed through the *Environmental Goals and Sustainable Prosperity Act* and the One Nova Scotia report that may not have the same application or resonance in other provinces.

Nova Scotia should look for opportunities to harmonize where there are common interests, and pursue its own course where interests and priorities diverge. More broadly, it should look for cooperation opportunities as well as harmonization opportunities. Among the areas where regional cooperation would seem particularly critical would be disease control, production of feed, and processing. There are opportunities for regional cooperation in regulatory requirements, branding and marketing, but this would be contingent on other provinces embracing the approach we have recommended in this report.

2.8 Commitment

The mandating of a comprehensive review of the regulation of aquaculture and the establishment of this Panel to recommend a new regulatory framework represented a commitment on the part of the DFA and the provincial government more broadly to significantly improve the regulation of aquaculture in Nova Scotia. As a Panel, we were mandated to recommend a “world class” regulatory framework, drawing on the ideas in the *Environmental Goals and Sustainable Prosperity* and from the example of leading jurisdictions in the regulation of aquaculture. We were specifically mandated to conduct an open and transparent process.

Our impression was that in general, people who participated in our process appreciate the opportunity the DFA had created for an open, transparent, independent and fundamental review of the regulatory system. There was however, a good deal of scepticism expressed as to whether our work would be one more report left to gather dust once the focus on improving the regulation of aquaculture dissipated after our process had run its course. Some even suggested that the motivation of government in establishing the Panel was not really to improve the regulation of aquaculture but to diffuse the opposition to the expansion of the marine-based fin-fish industry.

⁹ There was qualified support from the Roundtable for the recommendation that, “The regulatory framework should define the roles and responsibilities for the Province, federal government, First Nations, the aquaculture industry, communities and other parties directly impacted.” (Roundtable Final Report, page 10)

It will be critical that the commitment to improving regulation of the aquaculture industry that was exhibited in the creation and mandating of the Panel be maintained as the issue becomes the implementation of the framework we have proposed. Good regulation obviously depends on the design or architecture of the regulatory framework but it depends equally on the diligence, commitment and effort with which it is implemented and operated on a continuing basis.

We have made a number of recommendations that will help to ensure that the commitment and the momentum for improvement is maintained through the process of implementation. For example, we have called for a new culture of regulatory openness and transparency that will, if adopted, help to keep the DFA accountable for acting on our recommendations or for explaining why our recommendations have not been adopted or effectively implemented. We have also recommended the creation of an ongoing Regulatory Advisory Committee both to monitor the implementation of the proposed framework and to contribute to its development and implementation on a continuing basis. We have also recommended the creation of a formalized mechanism through which the DFA would access the knowledge and research capacity of the broader knowledge community outside of government to ensure the development and implementation of the framework is evidence-based.

In the end however, the crucial question will be whether the DFA and its leadership remain committed to the crucial importance of improved regulation through the creation of a new regulatory framework. The broader and equally important question will be whether the DFA is supported in moving forward with the implementation of the framework by the broader government, including but not only with the resources that effective implementation will demand.

3 Coastal Planning

We were asked by some participants in our process to recommend an integrated coastal planning process as a necessary context for making siting decisions for aquaculture operations in coastal waters.¹⁰ Recommendations for integrated coastal planning and for integrated coastal management have been made before, including by the Joint Review Panel for the Whites Point Quarry project in Digby Neck. Other participants were strongly opposed to linking the regulatory system for aquaculture to coastal planning. The main concern was that comprehensive and integrated planning processes can take a long time. A number of participants in our process had previous experience with the Eastern Scotian Shelf Integrated Management (ESSIM) process, and expressed frustration about the effort and time involved, and the fact that in the end, the results were not implemented.

Clearly, an up to date integrated coastal plan for Nova Scotia that comprehensively considered biophysical, social and economic factors and included a plan for the most effective long term use and protection of the coastal zone would be a valuable tool for the regulation of aquaculture. It would be valuable for proper site selection, and for considering how aquaculture fits with current and potential future uses of the coastal area in question.

We have therefore concluded that an integrated coastal plan for Nova Scotia would be a very useful tool that could do much to improve the efficiency, effectiveness and fairness of the regulatory process. At the same time, we are not in a position to determine what time and resources would be needed to complete such a process successfully, particularly given that it would ideally have the support of all levels of government. While a coastal planning process would be very helpful to the regulatory process, we cannot predict whether or when such a process would yield results, or what the content of such a planning process would be. We have therefore decided to design the regulatory framework for aquaculture in the absence of a coastal plan. If such a plan is developed in the future,¹¹ certain aspects of the regulatory process could be significantly streamlined.

Because we are assuming that there will not be a coastal plan in place for the foreseeable future, we have identified other ways for regulators to determine how aquaculture fits with other current and

¹⁰ There was partial support from the Roundtable for a recommendation that, “The province together with federal partners should, within a reasonable period of time, develop an overall coastal planning process to address the location of aquaculture operations in the context of environmental suitability and other marine resource uses.” This recommendation was “vigorously discussed” and only received partial support by the “narrowest of margins”. A further recommendation was given qualified support in response that, “Improvements to the aquaculture regulatory system should proceed in a timely fashion, independent of progress made with developing a coastal planning framework.” (Roundtable Final Report, page 12)

¹¹ The Roundtable gave partial support to a recommendation that, “The Bras d’Or Lakes would be a suitable location for a pilot coastal planning project in consultation with First Nations. The existing Bras d’Or Lakes Collaborative Environmental Planning Initiative (CEPI) could provide valuable information and input into this process.” There may be other areas suitable for pilot coastal planning projects as well, such as the Bay of Fundy, and there may be other ways to move coastal planning forward. (Roundtable Final Report, page 13)

future uses of a given coastal area.¹² Among such processes are the strategic assessment process recommended for determining green, yellow and red areas for the siting of aquaculture operations. Other processes that can help fill the gap left by the absence of a coastal plan include the Regulatory Advisory Committee we propose and the potential revival of Regional Aquaculture Development Advisory Committees previously supported by the federal Department of Fisheries and Oceans.

¹² The Roundtable put forward a recommendation as an alternative to a more comprehensive coastal planning approach, lending partial support to a proposal that, “The Province should collate existing coastal planning information and make it publicly available to assist with decision-making regarding aquaculture siting.” Also of note, during Roundtable discussions, it was suggested that much of this information already exists, while concerns were raised about the feasibility of keeping publicly available inventories up to date. (Roundtable Final Report, page 13)

4 Goals

Regulation should have clear goals. This helps to ensure it is conducted with a shared understanding of its objectives. It helps to ensure that each element of the regulatory framework is designed and administered to contribute to the accomplishment of the framework's overall goals. It provides guidance to regulators as to how they should exercise their discretion. It gives business a better understanding of what the regulatory process is trying to accomplish and the opportunity to integrate those objectives into how business is conducted. It helps to ensure that members of the public have a clear understanding of what they can expect of regulators and business, which in turn enables them to better contribute to the regulatory process.

In all of these ways, clear goals can help to ensure that the resources for making, administering and complying with regulations are optimally used. In addition, clear goals facilitate the evaluation of the effectiveness of regulation. Evaluation in turn is critical to improvement of regulation over time.

The *Coastal Resources Act* currently contains a list of goals or objectives. This approach should be retained. The list of goals should however be explicitly connected to the regulation of aquaculture. In addition, the list of goals should be more comprehensive and include a number of goals that are more specific than the goals currently found in the Act. The goals of the regulation of aquaculture should be stated to include:

- 1 Ensuring aquaculture is conducted under conditions and in accordance with controls that will protect the environment by preventing significant harm to the environment or to the continuing availability in the short, medium and longer term of unimpaired environmental services to aquaculture and to other users of those environmental services;¹³
- 2 Ensuring equity, fairness and compatibility in access to and utilization of public water resources in the coastal zone by aquaculture and other users of the coastal zone;
- 3 Ensuring the regulation of aquaculture contributes to the productive development of Nova Scotia's coastal resources in the direction of low impact for high value;

¹³ This goal is closely related to two of the "Guiding Principles" suggested by the Roundtable for the regulatory framework, that it, "Ensure the maintenance of long term ecosystem health in the areas where aquaculture takes place" and that it, "Ensure that the net environmental impact of an aquaculture operation, from start-up to decommissioning, does not exceed the ecological carrying capacity of its location". Both received unanimous support from the Roundtable. We agree with both of these recommendations but think they are better understood as different ways of expressing a critical goal of the framework rather than as one of the principles to be followed in the pursuit of that and other goals. In practice, this goal might be achieved by following recommendations such as the following one from the Roundtable: "The regulatory framework should ensure that the use of antibiotics, therapeutants and anti-foulants are controlled to minimize ecosystem impacts and ensure that non-target species are not affected. The use of pesticides to treat sea lice should be prohibited." This recommendation received qualified (here, close to unanimous) support from the Roundtable. (Roundtable Final Report, pages 6 and 24 respectively)

- 4 Ensuring aquaculture is developed and conducted to ensure its compatibility with the well-being and prosperity of other sectors of the Nova Scotia economy, including the lobster fishery, the tourism industry and the fly-fishing industry;¹⁴
- 5 Ensuring the people of Nova Scotia, including the residents of communities in proximity to aquaculture sites, have opportunities to receive direct and indirect economic and social benefits from the development and operation of the aquaculture industry that are proportionate to the value of the public water resources and the environmental services that are utilized by the aquaculture industry;¹⁵
- 6 Ensuring aquaculture is developed and conducted with due regard to the health, well-being and recovery of the wild Atlantic salmon population in Nova Scotia rivers as well as any endangered species that may be affected by aquaculture operations;
- 7 Ensuring members of the public have meaningful opportunity to be informed about and to participate in the regulatory process, including early notification of proposed aquaculture operations, proposed expansions of existing sites and proposed transfer of ownership of existing sites;¹⁶
- 8 Ensuring the regulation of aquaculture is attentive to the developmental plans, objectives, needs and priorities of local communities;
- 9 Ensuring the regulation of aquaculture supports the efforts of the Nova Scotia aquaculture industry to develop and grow through innovation and through the adoption of aquaculture and business practices that combine business success with higher environmental performance;¹⁷
- 10 Ensuring that regulations are achievable, contain incentives for compliance and can be enforced.¹⁸

¹⁴ The Roundtable proposed a “Guiding Principle” with unanimous support that the regulatory framework should “Prevent or minimize negative impacts on other marine resource industries and users”. Again, we agree with the recommendation but think it works better as a goal of the framework rather than as one of its guiding principles. (Roundtable Final Report, page 7)

¹⁵ This proposed goal is roughly similar to the “Guiding Principle” suggested by the Roundtable that the regulatory framework “Deliver net benefits, which can include environmental, economic or social benefits, to Nova Scotia”. (Roundtable Final Report, page 7)

¹⁶ The Roundtable gave qualified support to a similar “Guiding Principle”, which stated: “Include public input and local knowledge throughout the regulatory process”. (Roundtable Final Report, page 7)

¹⁷ A “Guiding Principle” with some shared elements received partial support from the Roundtable. (Roundtable Final Report, page 8)

¹⁸ This was proposed by the Roundtable as a “Guiding Principle” with unanimous support. We think it fits better here as one of the goals of the regulatory framework. (Roundtable Final Report, page 7)

11 Ensuring the regulation of aquaculture in Nova Scotia is efficient, timely, dependable, predictable and affordable for both taxpayers and businesses.

More generally, the underlying concept of the regulatory framework should be that strong regulations make for a stronger industry (Ambec, 2011: Porter Hypothesis at 20). Here, it is relevant to reiterate our view that what the *Environmental Goals and Sustainable Prosperity Act* should be interpreted and applied to mean for aquaculture is that the industry should be regulated on the basis that Nova Scotia's objective is to host an industry which creates the highest value products with the lowest possible environmental impact, while maximizing social value. Put somewhat differently in the context of our mandate to recommend a world class regulatory framework, the ultimate regulatory goal is for the aquaculture industry in NS to become world leaders in low impact aquaculture, and to market this success so that NS exports can achieve the highest possible value in the market place.

These objectives should apply to all forms of aquaculture, and they should guide the development, application and evolution of the regulatory system developed for the industry.

5 Guiding Principles

In addition to clarity on goals, a regulatory framework should be clear on the principles that have guided the development of the framework and that will guide its continuing evolution and its administration. Such principles do not supersede the specific content of the regulations. They do not give regulators the authority to ignore specific regulatory requirements. Rather, they form the backdrop to the operation of the regulatory framework and inform how it is interpreted and applied to specific situations where there is room for legitimate questions as to how it should be interpreted and applied.

The relationship between guiding principles and goals can be a source of confusion. One of the goals of a regulatory framework can be that it operate in accordance with its guiding principles. Conversely, the guiding principles can be stated to include attributes that can also be stated as goals. Our approach is to think of the goals of the framework as the high-level outcomes that the framework is designed and administered to achieve. The guiding principles are the attributes the regulatory process should live up to while those high-level outcomes are being pursued.

The literature differentiates between overarching principles that would be relevant to regulation in general (including aquaculture) and principles that are specific to regulation in a particular sector (like aquaculture). The list that follows is a combination of these two kinds of principles. In general terms, generic principles relate to issues of regulatory design and administration that arise in all or most regulatory contexts whereas principles specific to a sector relate more closely to the objectives of regulation in that sector.

There are many lists of “good regulation principles” available from other settings or jurisdictions. Although there is considerable overlap between them, there is no list that is universally accepted as the right or best list. The list that follows includes the principles that appear on most or at least a number of the lists plus a number of the guiding principles proposed to us by the Roundtable.

Reflecting on the literature on regulatory principles, the experience of other jurisdictions (including Nova Scotia) the advice we have received from the Roundtable and our reflections on all that we have heard in our consultations with Nova Scotians, we have concluded that the regulatory framework for aquaculture in Nova Scotia should be based on the following principles:

- a. **Effectiveness** – The foundational regulatory principle is effectiveness. Effectiveness in serving regulatory objectives must be the core consideration in the design, implementation and enforcement of a regulatory framework. Clarity on the broad objectives of the framework as a whole and the more specific objectives of specific elements of the regulatory framework is therefore critical.¹⁹

¹⁹ The Roundtable gave unanimous support to several related “Guiding Principles”, including “Numerical Requirements included in indicators, standards and thresholds should have clear justification” and “Ensure that regulations are achievable, contain incentives for compliance and can be enforced.” There was also qualified support to “Improve regulatory certainty.” (Roundtable Final Report, page 7)

- b. **Openness** – This principle is often included with transparency. We think it should be separately identified because it emphasizes that the regulatory process should not just be transparent to those outside of it but participatory and inclusive of those who have interests that the regulatory process could affect. At the Roundtable, there was “qualified” support for a “Guiding Principle” to “Include public input and local knowledge throughout the regulatory process”.²⁰
- c. **Transparency** – Transparency is one of the principles that appears on most lists of “regulatory principles”. The Roundtable concluded that one of the “Guiding Principles” of the regulatory framework should be to “Provide for transparency throughout the regulatory cycle”.²¹ The perceived lack of transparency in how aquaculture has been regulated to date was one of the concerns raised most consistently during our consultations.
- d. **Accountability** – Generally, this principle calls for accountability from regulators, both to those directly affected by their decisions and to the broader public that pays for regulation and either does or does benefit from it depending on how it is implemented. One aspect of this principle is there be clarity (transparency) on who makes what decisions and on what basis. Another aspects calls for accountability on the overall success of the regulatory process in achieving progress towards its goals and the costs to government and business for that success. So understood, this principles overlaps with one of the “Guiding Principles” suggested by the Roundtable, that there be “clear roles, responsibilities and accountability”.²²
- e. **Proportionality** – Regulation should be proportionate to the risks it seeks to control. Higher risks should be more heavily and aggressively regulated whereas lower risks should attract less attention and effort, even though they may be serious to those who may be affected by them.²³ The idea is to calibrate regulatory effort to the relative seriousness of risk to prevent over-regulation of smaller (less serious) risks and under-regulation of higher (more serious) risks. Proportionality is also concerned with ensuring that the costs imposed by regulation on business are proportionate to the seriousness of the risks that regulation is controlling.²⁴
- f. **Integration** – The Roundtable proposed the regulatory framework should recognize that “the health of the economy, the environment and the people are

²⁰ See Roundtable Final Report, page 7.

²¹ This “Guiding Principle” received unanimous support from the Roundtable. (Roundtable Final Report, page 7)

²² This “Guiding Principle” received unanimous support from the Roundtable. (Roundtable Final Report, page 7)

²³ The level or severity of a risk (harm) is a function of the probability of it occurring times the potential impact of the risk in the event it occurs.

²⁴ Two of the “Guiding Principles” which received qualified support at the Roundtable are related to proportionality. The first is a principle to “Avoid undue regulatory burden on smaller operations while staying within the limits of environmental carrying capacity”. The second is the principle to “Address issues of regulatory equity between aquaculture and other industries”. (Roundtable Final Report, page 7)

interconnected” as one of its “Guiding Principles”. We agree. Building such a principle into the regulatory framework for aquaculture is consistent with our mandate, which was to make recommendations, “in light of the best long-term environmental, social and economic interests of the province, in accordance with priorities, principles, and interests as articulated in relevant Nova Scotia legislation, including the Environmental Goals and Sustainable Prosperity Act”. The objective of this legislation is to guide public policy and environmental policy more specifically to make it more supportive of development that is sustainable because it serves economic, environmental and social objectives. In this legislative context, it is appropriate to include a guiding principle which recognizes the interconnectedness of the economy, the environment and society in the regulatory framework for Nova Scotia’s aquaculture industry.

- g. **Precaution** – The Roundtable proposed that the regulatory framework should “Embody the precautionary principle as defined in the Rio Declaration on Environment and Development, 1992: “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”²⁵ This is the definition of the principle already in the *Environment Act* and we agree that precaution should be an explicit part of the regulatory framework for aquaculture. We think however it should be thought to have a broader application in that context than the precautionary principle is often interpreted to have. Often in discussions of the principle, it is assumed that its only application is to the decision of whether to allow an activity to happen or to continue. Given the nature of the aquaculture industry, its current state of development, and the degree of uncertainty about its impacts on the receiving environment, we feel that a more general application of a precautionary approach is warranted.²⁶ We use the term precautionary approach deliberately, because it signals an application of precaution that goes beyond the limited wording of the precautionary principle. Most specifically, we don’t feel that the precautionary approach should be tied to some threshold of scientific knowledge or level of risk. Rather, a more general precautionary approach is warranted, with the specific action linked to the degree of risk and uncertainty. Most importantly, where there is risk and uncertainty, incremental development in combination with monitoring and research to gain a better understanding of impacts and risks, should be the preferred approach. This does not mean, of course, that there will not be circumstances where a precautionary approach suggests no development, such as in case of clear conflict with the recover of endangered species. We note that the precautionary approach should not be thought of as relevant only or even primarily as a free-floating guiding principle that applies only

²⁵ This “Guiding Principle” received unanimous support from the Roundtable. (Roundtable Final Report, page 6)

²⁶ The Roundtable indicated partial support for the recommendation that, “The precautionary approach should be employed when data is limited or absent.” The Roundtable was unable to properly discuss the difference between the precautionary principle and the precautionary approach. (Roundtable Final Report, page 19)

where the regulatory framework does not deal specifically with an issue or question. As with each of the other guiding principles we have proposed, we have been guided by the precautionary approach in developing each element of this regulatory framework. It is only in this way can the regulatory framework be said to “embody” the precautionary approach.

This proposed list of guiding principles does not include all of the guiding principles proposed by the Roundtable. It also does not include a number of regulatory principles that have been proposed in the academic and policy literature or that have been incorporated into the regulatory principles adopted in various jurisdictions. We think however that to be useful, a list of guiding principles needs to be relatively manageable and that a list with more than seven guiding principles is likely to become unwieldy and unhelpful. In addition, our list of seven principles include most of those found on most proposed lists of regulatory principles. They are also, in our opinion, the seven principles which are most important and responsive to the improvements that are needed in the regulation of aquaculture in Nova Scotia.

Further, it is to be noted that many of the guiding principles suggested by the Roundtable which we have not included in our list of guiding principles are addressed in our proposed list of goals for the regulatory framework. The same can be said for a number of the regulatory principles found in the literature that we have not included in our list of guiding principles. A number of these are encompassed by two of the proposed goals: “Ensuring that regulations are achievable, contain incentives for compliance and can be enforced”²⁷; and “Ensuring the regulation of aquaculture in Nova Scotia is efficient, timely, dependable, predictable and affordable for both taxpayers and businesses”.

²⁷ This “Guiding Principle” received unanimous support from the Roundtable. (Roundtable Final Report, Page 7)

6 Role of and cooperation with Federal Regulators

6.1 Background

The DFO plays a range of roles in the regulation of aquaculture across the country. In British Columbia, it is the primary regulator of aquaculture pursuant to a court ruling that aquaculture in that province fell under federal fishery jurisdiction. The DFO regulates aquaculture in BC under regulations made under the *Fisheries Act*. Under these regulations, the federal Minister of Fisheries plays the same role in licensing as provincial ministers for fisheries and aquaculture play in most other provinces.

Another model is found in Prince Edward Island where the federal Minister of Fisheries is the licensing authority. Unlike in BC however, the federal Minister carries out that responsibility in accordance with an MOU with the province under which a committee of federal and provincial officials reviews the applications and advises the Minister on whether they should be granted or refused and on all associated matters, such as the terms and conditions to be included in licences. The Minister consistently follows the advice of this committee. The regulatory process in PEI can therefore be described as one of federal-provincial co-regulation.

In Nova Scotia, New Brunswick and Newfoundland and Labrador, the aquaculture industry is comprehensively regulated by the provincial minister responsible for aquaculture, who in each province is the minister responsible for fisheries as well as aquaculture. Under this model, the federal government participates in the regulatory process largely by providing input into the provincial licensing process. This input can consist of advice or guidance that the province takes into account in its licensing decisions. It can however also consist of requirements that the federal regulator must have addressed to conclude the project is going forward in compliance with the requirements of federal law. In this way, federal-provincial MOUs in these provinces can result in a delegation of federal regulatory authority to the provincial level.

Typically, the federal input into the provincial licensing process comes from the DFO and relates to the compatibility of the proposed project with fisheries or fish habitat protected under the *Fisheries Act*. Where it is applicable, the DFO will also take the *Species at Risk Act* into account in providing input to the provincial licensing process. The other kind of input received from the federal government comes from the Coast Guard, which is part of the Department of Transport, under the *Navigation Protection Act*, which recently replaced the *Navigable Waters Protection Act*.

Federal regulation also applies to the aquaculture industry in Nova Scotia in more direct ways. For example, the Coast Guard can intervene to address obstacles to navigation or compliance with the terms of a lease that reflect the Coast Guard's requirements relative to navigation. We frequently heard about the applicability of regulations under the *Fisheries Act*, which control the transfer and movement of fish stock between bodies of water or from bodies of water to market. The purpose of these regulations is to prevent the transfer of disease or parasites and to prevent harvesting activities that threaten wild stocks.

We heard that federal regulations are sometimes applied to aquaculture in ways that do not reflect the differences between wild and farmed stocks. The example we were given was the application to growers of cocktail oysters which are grown to be less than x centimeters in diameter of *Fishery Act* regulations which prohibit the harvesting of oysters of less than x centimeters as a means of protecting wild stocks of oysters.

These examples of direct regulation of the industry by federal regulators notwithstanding, the core feature of the relationship between the federal and provincial governments under their MOU's is that federal regulators seek to achieve their regulatory objectives primarily through their contributions to the provincial licensing process. From an industry perspective, the advantage of this is that the regulatory process is more coordinated and streamlined than it otherwise might be. Comparable coordination and streamlining could presumably be achievable by adoption of the BC model under which the DFO is the comprehensive regulator of aquaculture but this might reduce the responsiveness of the regulatory framework to Nova Scotia's specific conditions. In addition, different arguments on the jurisdictional limits of the two levels of government than those considered in BC would arise in the Nova Scotia context. Finally, representatives of the DFO were very clear in our meeting with them that the DFO is not interested in becoming the comprehensive regulator of aquaculture in Nova Scotia.

The Canadian Food Inspection Agency (CFIA) and Health Canada also play important roles in the regulation of aquaculture. The CFIA is responsible for developing and implementing the National Aquatic Animals Health Program (NAAHP). This program is Canada's response to its obligations as a member of the World Trade Organization (WTO) to implement a program of aquatic animal health that is compliant with standards issued by the World Organization for Animal Health (WOAH). Under the NAAHP, the mandate of the CFIA is to ensure that wild and farmed aquatic animals are protected against serious infectious diseases. The pathogens regulated under the NAAHP are regulated because "they can be potentially devastating both economically and ecologically to wild fisheries and aquaculture operations". The NAAHP enables Canada to certify fish and seafood exports as being free of pathogens that have been determined to be of international concern. This gives Canadian fish and seafood products access to the markets of other countries. Canada is in turn entitled to require the same certification from other countries or to block importation from a country that is not able to provide certification. The overall objective of the system is prevent the transfer of pathogens from Canada to other countries and from other countries to Canada.

The implementation of the NAAHP depends on surveillance that happens in the industry and at the provincial level under systems of surveillance that must satisfy CFIA. Surveillance is for pathogens that are included on the list of reportable and notifiable diseases that has been established by CFIA. In the Nova Scotia aquaculture industry, a central part of the system of surveillance is the role the provincial veterinarian plays as both the provider of veterinary services to the industry and the regulator of the industry on matters relating directly to the health of farmed fish.

Two branches of Health Canada also play a regulatory role in aquaculture. The Pest Management Regulatory Agency (PMRA) decides which pesticides may be used in Canada. Like other industries, aquaculture is prohibited from using pesticides not approved for use in Canada by the PMRA. The

Veterinarian Drugs Directorate, which is part of the Health Products and Food Branch of Health Canada, decides which drugs may be used in treating or preventing illness and disease in food-producing animals. Like farming, aquaculture cannot use drugs that are not approved for use in Canada by the VDD.

The provinces also have jurisdiction over aspects of the regulation of the use of pesticides and veterinarian drugs. Approved pesticides must be used in Nova Scotia in accordance with any regulations that the province adopts or authorizes relating to issues such as permitted methods and frequencies of application, the training that must be provided to applicators, the notifications that must be given before application, and the distances that must be maintained between the area of application and residences or bodies of water. Similarly, approved drugs must be used as prescribed by a veterinarian who is licensed to practice veterinarian medicine under provincial legislation.

There are two other aspects of the involvement of the federal government in aquaculture that require mention. The first is that until recently, aquaculture requiring a permit or approval under federal legislation would require or “trigger” an environmental assessment under the *Canadian Environmental Assessment Act*. In all cases, this assessment was conducted as a screening level review by the federal regulator called upon to decide the application for a permit or approval in which the public could participate. Typically, these reviews were triggered under the *Navigational Waters Protection Act*. Under a new version of the *Canadian Environmental Assessment Act* adopted in 2012, federal consideration of aquaculture projects will no longer involve an environmental assessment. Indeed, for practical purposes, this would have occurred even if the *Canadian Environmental Assessment Act* had not been changed given the replacement of the *Navigable Waterways Protection Act* with the *Navigation Protection Act*. Under the latter Act, aquaculture projects would in most cases not have triggered an environmental assessment under the version of the *Canadian Environmental Assessment Act* in force until 2012.

The second additional element of the federal role relates to the reliance of provincial regulators on the expertise of DFO scientists and on scientific studies produced by scientists funded or employed by the federal government and in particular by the DFO. Through our process, we heard frequent concern about the extent to which the federal government and the DFO in particular is perceived to be reducing its investment in the science that policy-makers need to better understand the impact of aquaculture (and the impact of the environment on aquaculture) and that regulators need to improve their regulation of aquaculture. In our meeting with DFO regulators, we were strongly assured that these concerns were unfounded and told that the DFO has actually received increased funding to work on the science needed for effective regulation of aquaculture.

6.2 The Vital Importance of Intergovernmental Regulatory Collaboration

It was not within our mandate to consider if jurisdiction over the regulation of aquaculture in Nova Scotia should or can be reallocated. Despite this, it is obvious that one of the difficulties to be addressed in developing an effective regulatory framework is the division of regulatory authority between federal and provincial regulators.

Conceptually, there are two kinds of solutions to this problem. One is for either the province or the federal government to become the exclusive regulator. The other is for the two levels of government to effectively collaborate in carrying out their respective functions so ensure that the regulation of aquaculture is as coordinated and seamless as it can be when part of it is provincial and part of it is federal.

The first option may not be available for legal or practical reasons. Given the nature of the relevant competing jurisdictions, it could only be achieved by having the DFO become the lead and comprehensive regulator of aquaculture, as it has in British Columbia. It is not clear however whether or not it would have the same jurisdictional authority to do so in Nova Scotia. Moreover, it does not appear to us that the DFO wants to take on the same role in Nova Scotia as it has British Columbia.

Moreover, a wholesale federalization of the regulatory framework may not be desirable from Nova Scotia's perspective. The responsiveness of the regulatory framework to Nova Scotia's specific conditions might be reduced. In addition, Nova Scotia would lose the opportunity it currently has to make effective regulation of the industry part of a broader strategy to develop the industry in accordance with Nova Scotia's own economic, environmental and social objectives. Third, the opportunity to integrate regulation of aquaculture with other processes of coastal resource planning and management that are fully within Nova Scotia's jurisdiction may be lost or impaired.

The second option – regulatory collaboration - only addresses the complications that arise from the division of regulatory responsibility between the two levels of government if regulatory collaboration between provincial and federal regulators is a central element of the regulatory framework for both levels of government. The vehicle Nova Scotia and Canada currently use to coordinate their regulatory activities is an MOU. We heard many positive things about the working relationships that exist under this MOU. Nevertheless, our conclusion is that it may not be achieving the level of coordination and collaboration that can be achieved or that is needed for optimal regulatory effectiveness.

From an industry perspective, we heard concerns about the number of regulators, regulatory processes and regulatory requirements it must deal with. We also heard concerns about the application to the industry of federal regulatory requirements that are designed to conserve and protect wild fish stocks but that are nevertheless applied to aquaculture. The example was the application to the growers of cocktail oysters of federal regulations that prohibit the movement of small oysters as a way of discouraging the harvest of immature wild oysters.

From a broader regulatory effectiveness perspective, we heard concerns that the regulatory process is not sufficiently informed by or grounded in science. For some, this is because it is largely in the hands of the province rather than in the hands of the DFO. Concerns were also raised about whether the DFO is as committed as it once was to providing the provinces and the industry with the science they need to make good decisions on the interaction between aquaculture and the environment. We also heard concerns expressed about the lack of rigour in the regulatory process that could be interpreted as concerns that regulation lacks rigour because it is in the hands of the provinces rather than the federal government. This interpretation flows from the grounds for the concerns, which is that the province is not equipped or resourced to regulate rigorously and may be

too close to the industry to be willing to do so in any event. The representatives of the DFO we met with did not question the will or regulatory capacity of the province but they did state very unequivocally that the growth of the industry depended on public confidence that the industry was being properly regulated.

Our own analysis leads us to conclude that a related but distinct concern is that issues that may require regulatory attention may not receive that attention because they are being allowed to fall through the cracks between federal and provincial regulatory responsibility. This may be happening by the tendency of the province to regard certain regulatory issues as more exclusively federal than they actually are.

For example, one of the frequently expressed concerns about aquaculture activities is the impact they can have on commercial and residential boating. The federal government has jurisdiction over navigation and the province is bound by any limitations the federal government places on aquaculture to address navigational concerns. But there is no constitutional impediment to the province imposing additional limitations to address concerns about navigation that are not within the statutory mandate of the Coast Guard. The same can be said about the role of the limitations the DFO places on aquaculture to protect wild fish stocks – depending on how these are expressed by the DFO, they may be binding not only on operators but also the province but this does not mean the province cannot impose additional limitations it decides are appropriate to protect wild fish stocks.

In examples such as these, the province may be failing to fully consider its regulatory authority and responsibilities by taking the view that there are only navigational issues or wild fish issues to be addressed if the relevant federal regulators say there are navigational or wild fish issues to be addressed. Assuming the province has the jurisdiction over aquaculture it claims to have, this ignores the ancillary jurisdiction it has to deal incidentally with matters in federal jurisdiction when it does so as part of its regulation of aquaculture. Moreover, we believe that Nova Scotia's role as the primary and comprehensive regulator of aquaculture means that Nova Scotia is responsible for using this ancillary jurisdiction (in ways that are compatible with federal law) to ensure that the regulatory framework is fully responsive to the issues that the regulatory framework needs to address. On the navigational issues, Prince Edward Island illustrates how this can be done: it has adopted legislation requiring all operators to provide a standardized navigational channel or space to boaters. This is in addition to any limitations respecting navigation that may be imposed on specific operators by the Coast Guard.

Our conclusions based on this discussion for the regulatory framework in Nova Scotia are as follows:

- a. Nova Scotia should continue to work with the DFO and other federal regulators through the mechanism of an MOU to ensure the entire regulatory framework for aquaculture in Nova Scotia is as effective, cohesive, coordinated and streamlined as it can be despite the division of regulatory authority between the two levels of government. The objective should be to make this division of regulatory authority as irrelevant to the regulation of the industry as it can possibly be. Specifically, Nova Scotia's goal should be to ensure that shared jurisdiction over aquaculture

does not make compliance with regulation more difficult or costly than it otherwise would be. It should also be to ensure that shared jurisdiction does not minimize or reduce the overall effectiveness of regulation in achieving environmental protection and other regulatory objectives.

- b. In order to achieve the desired level of cohesion between federal and provincial regulation, Nova Scotia should work to ensure federal-provincial regulatory collaboration is based on a strong and clear delineation of roles and responsibilities and a clear articulation of the regulatory objectives of each level of government.²⁸ Nova Scotia should work to ensure that collaboration strengthened by the development of common or shared regulatory objectives that stress regulatory rigour and the avoidance and elimination of unnecessary regulation and of regulatory cost, process or administrative burden. Nova Scotia should encourage the DFO and the federal government more broadly to take the differences between aquaculture and fishing fully into account in the making or interpretation of federal fisheries laws.

Nova Scotia should work with the DFO and the federal government more broadly to develop a common list of priorities for the scientific research needed to support and improve the effectiveness of regulation in Nova Scotia's aquaculture industry. Nova Scotia should offer collaboration to the DFO in developing and implementing a plan for research on these priorities by government or by scientists in the broader research community. In both regards, Nova Scotia should be a leader in proposing a regional rather than a provincial approach that emphasizes:

- (i) The importance of aquaculture to all of Atlantic Canada;
 - (ii) The need for research that reflects the particular biophysical, geographic and socio-economic conditions of Atlantic Canada; and
 - (iii) The research capacity in Atlantic Canada.
- c. To the full extent allowed by constitutional law, Nova Scotia should be willing and prepared to exercise its authority as the primary comprehensive regulator of aquaculture in Nova Scotia to regulate incidentally on matters primarily within

²⁸ At the Roundtable, there was qualified approval for the recommendation that, "The Province should continue discussions with the Government of Canada to clearly delineate areas of responsibility for the planning, regulation and management of aquaculture". The expressed reason given by some who qualified their support for this recommendation focussed on the types of discussions presently ongoing and therefore the precise meaning of "continue discussions". There was also qualified support for a recommendation that, "The regulatory framework should define the roles and responsibilities for the province, federal government, First Nations, the aquaculture industry, communities and other parties directly impacted.

federal jurisdiction where it is necessary to ensure the completeness and effectiveness of the regulatory framework.

7 Departmental Responsibilities for Regulating Aquaculture

The activities of the Nova Scotia government in relation to aquaculture are comprehensively housed within the Department of Fisheries and Aquaculture. This means the same Minister, Deputy Minister and department have responsibility for promoting and supporting the industry and for regulating the industry. Both lines of activity take place under the same statute, the *Fisheries and Coastal Resources Act*. The content and tone of this legislation is heavily weighted in the direction of the Minister's role in promoting the economic development of the fishery and aquaculture industries. Putting the combined mandate of the Minister together with the legislation, one could conclude that the Minister is the Minister for the industry and likewise that the Department is the industry's department.

The regulation that is applied to aquaculture is overwhelmingly concerned with minimizing or mitigating the industry's impact on the environment. It would therefore not be inaccurate to say the regulatory framework for aquaculture is a kind of specialized environmental regulation. In other words, whereas other industries are subject to environmental regulation under the *Environment Act*, the environmental consequences of aquaculture are addressed in aquaculture regulations.

This legislative, regulatory and organizational model is used across Canada. Due to the fact that the DFO is both regulator and promoter, it can be said to be the model used in British Columbia, where the regulation of aquaculture is largely federal, and throughout Atlantic Canada, where regulation is either provincial or, in the case of Prince Edward Island, federal with significant provincial involvement.

This is also how the regulation of aquaculture is addressed in jurisdictions outside of Canada. In Norway, Scotland, Chile and Maine, the regulation of aquaculture is largely the responsibility of the same government entity that promotes and supports the growth of the industry.

Moreover, this model is a very common approach to regulation across the natural resources sectors of farming, fishing, and forestry. Historically, it was also the approach taken to the regulation of mining but for many decades, the environmental regulation of mining has been by environmental regulators acting under "generic" environmental legislation.

Concerns about the dual mandate of the Minister and Department of Fisheries and Aquaculture were frequently raised in our process.²⁹ Many expressed concern about what they perceived to be an unavoidable conflict between the two roles that undermined confidence in the independence, objectivity and rigour of the regulatory process. To put it very bluntly, many told us flatly and unequivocally that they could not trust a regulator of the industry who was also responsible for promoting and supporting the development and growth of the industry. Frequently, we were told

²⁹ The Roundtable indicated partial support for a recommendation that, "The regulatory framework should ensure that responsibility and accountability for the regulation of aquaculture is clearly separated from the function of industry promotion and marketing to prevent actual or perceived conflict of interest. This may be accomplished by moving regulatory responsibility to a different department or by other means to be determined by the Panel."

that the distrust was accentuated where government provided significant economic development funding to a specific aquaculture business.

We were urged by many to recommend a regulatory framework under which responsibility for regulating aquaculture would be moved to the Minister of Environment. We have thought very seriously about the matter, as in many ways, it goes to the heart of the lack of trust that is at the centre of much of the dissatisfaction with the current regulatory framework. In the end however, subject to what we say below on the issues of environmental monitoring and environmental assessment, we have concluded that responsibility for regulation of aquaculture should otherwise remain with the Minister of Fisheries and Aquaculture. There is however, an important proviso to this conclusion: it depends on acceptance and implementation of the other elements of our proposed regulatory framework, many aspects of which are designed to address by other means the palpable distrust which exists with the current regulatory framework.

We have reached this conclusion for the following reasons:

- a. First, it is important to note that although the regulation of aquaculture is largely concerned with environmental protection, it is not exclusively concerned with environmental protection. It also concerns the use of a public resource – coastal waters – and the place of aquaculture in the development, use and protection of coastal resources. It may not make sense to reallocate these aspects of the regulatory framework to the Department of the Environment. It would give that department a different relationship to aquaculture than it has to other industries.
- b. The result of reallocating the environmental aspects of provincial regulation of aquaculture to the Department of Environment would add to the already complex regulatory landscape that exists within the sector. It would mean that regulatory authority was not only divided between the federal and provincial governments, but then sub-divided between two provincial departments. This might deal with the institutional trust issue by making regulation less cohesive and organized.
- c. As discussed earlier, provincial regulation of aquaculture already suffers from a lack of regulatory capacity. We have concluded that the province's regulatory capacity must be increased if Nova Scotia is to have a viable and trustworthy regulatory framework. We think that the capacity-gap is more likely to be addressed cost-effectively if the increased capacity is concentrated in one department rather than divided between two departments. It is important to recognize that the Department of Environment may currently have very little of the capacity and expertise it might need to become an effective regulator of aquaculture. If it were given a broad regulatory responsibility for aquaculture without this lack of capacity and expertise being addressed, it might have little choice but to rely extensively on the Department of Fisheries and Aquaculture for advice. To avoid this, the Department of Environment might require such a large percentage of the province's increased regulatory capacity as to leave the Department of Fisheries and Aquaculture unequipped to deal with its continuing responsibilities.

- d. Dividing regulatory functions between two departments might complicate Nova Scotia's ability to collaborate on aquaculture with other governments in Atlantic Canada, all of which combine industry promotion and support with regulation in one government department that is also responsible for the fishery mandate.
- e. While separating the regulatory role from the industry development role might improve confidence in the independence and trustworthiness of the regulatory process, it may or may not result in improved regulatory effectiveness. Meanwhile, we are confident that regulatory effectiveness can be improved by the adoption and implementation of the regulatory framework we have proposed.
- f. Even if we were otherwise inclined to assign the regulatory responsibility to the department of environment, the approval process and the environmental assessment process in Parts IV and V of the NS *Environment Act* would require significant enhancement to serve as useful regulatory tools for aquaculture. Public engagement and transparency in particular, would have to be enhanced significantly in both processes.

8 Restructuring of the Administration of the Regulatory Framework

While we conclude that the regulatory framework should continue to be administered by and on behalf of the Minister of Fisheries and Aquaculture, we also conclude that important changes need to be made to how the regulatory framework is administered to address legitimate concerns about its independence, objectivity, dependability and effectiveness. Among the changes are much greater levels of openness, transparency and clarity, a transfer of responsibility for the Environmental Monitoring Process to the Department of Environment and legislative changes that reduce the regulatory process's dependency on ministerial discretion.

Each of those aspects of the proposed regulatory framework is discussed elsewhere in this document. Here, we focus on another set of changes we think will be important to restoring and maintaining confidence in a regulatory framework that is primarily administered by the Minister of Fisheries and Aquaculture and his staff. The changes are to create greater and clearer operational separation between the Departments' regulatory and industry promotion functions within the Department of Fisheries and to formalize the role of departmental officials in the regulatory process.

On the separation of functions, there should be a clear organizational demarcation within the Department of Fisheries and Aquaculture between those who have decision-making responsibilities in the regulatory process and those who are involved in working to grow and develop the industry. To implement and reinforce this, the regulatory function should be led by an official or officials who report directly to the Deputy Minister or to an Associate Deputy Minister as the Deputy Minister's designate.

On the formalization of the role of departmental officials in the regulatory process, we believe the legislation should assign responsibility for leading and managing the regulatory program to a statutory officer who would by statute belong to the public service. The position would report directly to the Deputy Minister or to the Associate Deputy Minister as the designate of the Deputy Minister. The Act should set out the mandate of this official with sufficient detail to accomplish three objectives: to make it clear that the mandate is a statutory one; to make it clear the mandate is limited to regulation; and to ensure the mandate encompasses the whole of the regulatory function, subject of course to the general authority of the Minister over the work of the Department as a whole.

We believe the mandate of the statutory official responsible for regulation should include responsibility for decision-making on aquaculture licences. This is the model used in New Brunswick. Legislation would continue to confer broad powers, ultimate authority and accountability for oversight and policy-making on the Minister. It would however assign administrative responsibilities for the regulation of that industry to an "Administrator". The statutory mandate of the Administrator would include decision-making on applications for licences. In addition, a legislative model in which licensing is a public service function subject to Ministerial oversight and policy-making would bring the regulation of aquaculture into line with modern approaches to environmental regulation. Under the *Environment Act* (and environmental

legislation throughout Canada), decision-making on industrial permits is handled by bureaucratic officials whereas in the 1970's and 1980's, it would more typically have been done by Ministers of Environment.

We understand that this will be less of a separation than can be created by placing responsibility for regulation in another department. We also understand that some will say that an organizational separation within a government department will be artificial and therefore ineffective. We do not reject these concerns out-of-hand but instead say that they understate the benefits that can come from greater legislative differentiation between the regulatory and promotional functions of the department of Fisheries and Aquaculture and legislative allocation of regulatory responsibility to the bureaucratic level. Specifically, we think these benefits can include:

- a. Greater clarity for officials in both branches of the Department's mandate, as well as for those they work with, as to which "hat" they are supposed to be wearing;
- b. Meaningful protection against regulatory responsibilities being subordinated to industry development objectives and priorities;
- c. Increased independence of decision-making by those who have regulatory functions and responsibilities; and
- d. A less political and more professionalized regulatory process.

9 Environmental Monitoring Process

In 2003, the NSDFA implemented an environmental monitoring process for fin-fish aquaculture. In our process, no one questioned the need for such a process and in our view, it should be continued. We believe however it should be strengthened in six important respects.

- a. First, the process should be established in legislation. In other words, existence of the process should not depend on a decision to be made by the Minister.
- b. Second, the parameters of the process should be prescribed in regulations rather than in departmental policy.
- c. Third, legislation should make compliance with the process a term and condition of all licences. The mandatory nature of the process should not depend on whether or not it is written into the terms and conditions of specific licences. By “compliance with the process” we refer to the steps a licensee has to take to implement and conduct the environmental monitoring that is required by the legislation and the regulations. The regulatory action to be taken in light of whatever environmental monitoring reveals about the environmental performance of the site would go to the compliance of the site with its environmental performance obligations rather than to its compliance with the requirement to conduct environmental monitoring.
- d. Fourth, the responsibility for monitoring compliance with the environmental monitoring process should be transferred to the Department of Environment to improve public confidence in the independence and objectivity of the oversight that government brings to bear on industry’s compliance with the EMP. This is New Brunswick’s approach and we think it is one that should be adopted in Nova Scotia. This will mean that capacity and expertise will have to be built up in the Department of Environment. To some degree, this could cause some of the problems of multiple regulators and of dividing resources between two departments that lead us to conclude that general regulatory responsibility should not be transferred from Fisheries and Aquaculture. We think these issues will be manageable however if the transfer of responsibility is limited to the EMP. In addition, the avoidance of these issues is not important enough to outweigh the importance to the whole regulatory process of the credibility and trustworthiness of the EMP.
- e. Fifth, the regulatory monitoring of compliance of operators with the EMP has to be strengthened. There needs to be more auditing of compliance. The auditing process needs to include random unannounced audits. Directly or through contracted third parties who are independent of industry, regulators need to more frequently collect their own samples for analysis and again, this needs to be periodically done on an unannounced random basis subject only to the advance notice that is required to address biosecurity concerns.

- f. Sixth, results from the EMP for each site need to be available to the public in a timely manner. Ideally, this would be done by posting results to a common government-controlled web site.

We were urged to also recommend an expansion of the scope of the EMP. Specifically, it was suggested that the EMP should monitor heavy metal levels in addition to sulphide levels. We have concluded we are not able to make such a recommendation primarily because of the different views we heard about its cost and feasibility as well as its usefulness. We do however think that expansion of the environmental monitoring process warrants further consideration. In the meantime, we have made recommendations elsewhere in this document that will require the discharge of heavy metals into the environment to be reduced significantly.

10 Statutory Standards

Our understanding of the current regulatory framework is that there are a number of licensing terms and conditions which go into every or most licences and a number of leasing terms and conditions that go into every or most leases. There are, in other words, a number of standard terms and conditions for licences and leases. We think that these standard terms and conditions should be set out in law to improve the transparency of the regulatory framework and general knowledge and understanding of the nature and range of controls that it places on the industry. Two of the most obvious ones would be:

- a. The conditionality of each licence on compliance with the Act and regulations and the terms and conditions of licence and lease; and
- b. Compliance with the environmental monitoring process.

In addition, we think the following issues should be addressed in legislation (either in the Act or the regulations made under the Act):

c. **Obligation to Maintain Oxic Conditions**

It should be a basic and fundamental condition for the licensing of fin-fish aquaculture in a marine setting that oxic conditions can be and have been maintained.³⁰ This would not mean that isolated temporary failures to meet oxic conditions would warrant revocation of a licence. It would however warrant action to be taken to bring conditions back to the oxic level and to be maintained there on a consistent basis.

To ensure oxic conditions are maintained and that licence conditions are properly calibrated to achieve and maintain that objective, there should be a legislative requirement that terms of the licence will be reviewed following the conclusion of each growing cycle to ensure the site conditions are suitable for another growing cycle, and to ensure appropriate adjustments are made to following periods, stocking density, and other terms and conditions of the licence.

Where experience suggests that the difficulty in maintaining oxic conditions does not lie with the operation of the licensed operation or with its compliance with regulatory requirements but rather with the biophysical conditions of the site, it should be clear that the appropriate regulatory response is to require removal of the operation from the site or its conversion to a kind or level of aquaculture that is appropriate to the site. For operators who lose their sites in such circumstances, the regulatory framework should be committed to make an alternative and appropriate site available to the operator. This could be facilitated by the proactive identification by the DFA of “Green Areas” for

³⁰ It was suggested at the Roundtable that another or different approach would be needed for bodies of water that were not oxic in their natural state. The Bras D’Or Lakes were given as the example.

fin-fish aquaculture, using the process for the strategic assessment of coastal areas which we recommend below.

d. Anti-fouling Technology

In marine-based fin-fish aquaculture, nets and other equipment must be regularly cleaned to prevent the build-up or persistence of materials such as fish waste or uneaten food that can cause disease to both farmed and wild fish. One of the methods of anti-fouling currently used is to spray nets and other equipment with anti-fouling substances that contain copper and other heavy metals. We heard however that the industry is in the process of transitioning to mechanical cleaning technology.

Copper is a toxic substance and its release into the marine environment should be minimized and ideally avoided. To accelerate the transition already taking place in the industry towards anti-fouling methods that avoid the release of copper and other toxins into the environment and to ensure the industry in Nova Scotia operates at the leading edge of environmental protection practices, we recommend that Nova Scotia's regulatory framework should prohibit the use of any substance or method of anti-fouling that results in the dispersal of copper, other heavy metals or chemicals into the environment.

e. Bay Management

We heard a variety of perspectives on bay management. It seems that bay management has been an effective tool in some jurisdictions, such as New Brunswick, to manage disease and pest outbreaks. At the same time, we have heard that bay management approaches have created challenges for smaller operators, contributing to the consolidation of the industry in some jurisdictions. Furthermore, a number of participants in our process have expressed the view that the industry in Nova Scotia is currently not sufficiently concentrated to warrant a large-scale application of bay management.

In light of these views and considerations, we have come to the conclusion that a wide scale application of bay management in Nova Scotia is not warranted at this stage of the industry. However, it would seem prudent to experiment with bay management in areas that are particularly suitable for pilots, such as bays with multiple operators and multiple grow out sites.

It is important to note that bay management is a tool to achieve alignment between the assimilative or carrying capacity of a bay and the aquaculture operations that are licensed to take place in that bay. Whether or not it is feasible or appropriate to seek this alignment through a comprehensive bay management approach in Nova Scotia, what is critical to the regulatory framework is that it insist upon the alignment. Where bay management cannot be used to achieve this core objective, other means and methods must be used.

It is also important to note that from everything we heard, we understand that fallowing is critical whether or not it is combined with or done through comprehensive bay management.

f. Standard Reporting Obligations for Each Kind of Aquaculture, Including on the Following Matters for Fin-fish Aquaculture:

- Escapes
- Fish mortality events and levels;
- Damage to equipment;
- Non-compliant monitoring results;
- Disease outbreaks;
- Use of permitted treatments to address disease or sea lice;

g. Standard Requirement Regarding Accommodation of Navigation

We recommend that the legislation require every lease to include a “navigational channel” for boaters, which would be in addition to a more general “licensing principle” that navigation be accommodated. As discussed later in this document, this is the approach followed in Prince Edward Island to avoid conflict between aquaculture and other users of coastal waters.

h. Other Standard Terms

The legislation should clearly specify the matters that have to be addressed in the terms and conditions of each licence and lease. These mandatory items would include but not be limited to terms and conditions on the following matters:

- i. Species to be grown;
- ii. Stocking density;
- iii. Duration of lease and licence;
- iv. Any specific operational procedures and technologies that have been identified during the regulatory review process as reducing the environmental impact of the operation; and
- v. Clear rules for use of medication and pest control products.

11 Regulatory Transparency

Lack of transparency about the regulatory process and its operation in general and in relation to specific sites was a frequently voiced concern in our process. At the Roundtable, there was qualified approval for the following recommendation: “All licence application information pertaining to environmental impact and impacts on other marine resource use and users should be made publicly available”.³¹ For members of the Roundtable who qualified their support for this recommendation, the concern was protection of confidential business information.

In addition to concerns about the current lack of transparency and openness, we heard quite a bit about the positive value of transparency and openness in contributing to the effectiveness of regulation. We heard that it is critical to maintaining the regulators independence of the regulated sector. In other words, it reduces the danger of regulatory capture. We heard that transparency helps to ensure the answerability of regulators for their choices and actions, to regulated businesses as well as to the public, including those who benefit most directly from regulation. We heard that transparency improves understanding of the regulatory process by the public as well as the regulated sector, helping each to contribute positively to regulatory success. In this regard, a number of people expressed the view that greater transparency is a good thing for regulators who regulate effectively and for businesses that comply as it demonstrates that regulation works and makes it difficult for critics to unfairly portray the regulatory process in an inaccurate negative light. Most of these suggested benefits of transparency in regulation find support in the regulatory or public administration literature.

In addition, it is important that current distrust and lack of confidence in the regulation of aquaculture in Nova Scotia stems from the perception that the current process is not transparent and open. For a new regulatory framework to enjoy a positive level of trust and confidence, it must be defined by transparency and openness.

Transparency should start by ensuring that comprehensive and easy-to-understand information on the regulatory framework is readily accessible to anyone who wants it. This will address the real frustration and irritation we heard from many, including some in the industry, about the difficulty they had experienced in obtaining clear information about matters such as the steps in the regulatory process, the obligations of applicants for leases and licences and of operators once licensed, their opportunities to participate in the regulatory process and the actions the DFA can or will take to ensure compliance with the regulations.

The difficulty people experience getting basic information on these and on other aspects of regulation is one more factor undermining confidence in the current regulatory process. It contributes to the impression people have that information is withheld and only provided when the right questions are asked. It appears to result in different people being given different information depending on who they ask.

³¹ See page 14 of the Final Roundtable Report. Also, the Roundtable gave qualified support to a similar recommendation that, “All Environmental Monitoring Program data should be made publicly available on a website in a timely manner.” (Roundtable Final Report, page 29)

It should be recognized that some of the difficulties being experienced in this regard may reflect the number of regulatory agencies involved in the regulation of aquaculture and the appropriately variable nature of the regulatory process. Some of the frustration may also be caused by the probability that not everyone who works for the DFA or in the industry have all of the same information on the regulatory process.

Nevertheless, we think that much more can be done to make information on the regulatory process and how it works readily available to the public, including through the DFA's website. For example, the DFA should work with other provincial and federal regulators to produce a single shared document that comprehensively describes and explains the entire regulatory process as it works in Nova Scotia. It could work with the Regulatory Advisory Committee which we recommend, on improving and better disseminating information about the regulatory process. It should work with the network of coastal community organizations that now exist with an interest in aquaculture to ensure that good and comprehensive information on the regulatory framework and its operation is regularly shared through that network.

We also think that the DFA needs to ensure that DFA employees have a consistent level of knowledge as to how the regulatory process is structured and operates. The DFA also needs to ensure that DFA staff are mandated to share that knowledge in their dealings with those they interact with in the course of their jobs. Instead, or in addition, the DFA could ensure that questions about the regulatory process are consistently fielded by the same members of staff, an approach that has been taken by other regulatory agencies.

Transparency and openness needs to extend beyond general information about the regulatory process. It needs to also be the rule in the application of the regulatory framework to each application for a lease and a licence and to the DFA's ongoing oversight of each approved operation. As nearly as possible, the objective should be to make application of the regulatory framework an open book.

In keeping with the spirit of the recommendation that received qualified support at the Roundtable, we therefore recommend that the basic principle should be that information that is relevant to understanding the operation and effectiveness of the regulatory process as it applies to each proposed and approved site should be information that is readily available to the public. This principle should be set out in legislation to ensure it is binding on the DFA and to ensure that public access to information covered by the principle does not require the making of an application under the Freedom of Information and Protection of Privacy (FOIPOP) process.

Information that is truly confidential business information should be excluded from this principle under a definition of confidential business information set out in the legislation. But the assumption should be that information is public information unless a regulated business clearly establishes it is confidential business information within the scope of the statutory definition. In other words, the onus to show that information should be kept confidential in the hands of the DFA because of its confidential business nature should lie with the business that claims it is confidential business information.

We do not have the information we would need to give precise advice on how confidential business information should be defined. The definition should however be a narrow and precise one, as otherwise the exception might become the rule. In that scenario, legislative provisions intended to require and enable transparency and openness might then end up being a legal barrier to transparency and openness. The concept that should guide the drafting of the definition of confidential information is that information is confidential to a business where on a realistic view, its release could expose the business or associated businesses economic harm.

We anticipate that discussion of this approach to limiting the information that can be withheld because of business confidentiality will raise the question of whether companies will be able to withhold information of the kind and quantity of antibiotics that are used in fish feed. The use of antibiotics is one of the significant issues of controversy in relation to marine-based fin-fish aquaculture. We were told by people in the industry and by knowledge experts on the industry that the use of antibiotics is limited and declining. We were also told that releasing information on antibiotics would allow competitors to figure out the feed formula being used, which is regarded as proprietary information in the industry.

We also anticipate that another issue will be the concern of industry that open transparency on information pertaining to fish health will adversely affect competitiveness and marketing by creating the false impression that fish farmed in Nova Scotia are susceptible to illness while those farmed elsewhere are not.

We are not dismissive of these concerns. However, we are strongly of the view that the current approach undermines trust and confidence in the industry, the DFA and the regulatory process. The industry's social licence and its ability to respond to and address concerns suffers in consequence.

However confidential business information is defined and protected, we think the principle of transparency and openness should generally apply to the process of applying for a lease and licence or for a variation or renewal of a lease or licence. As a general principle and subject only to the protection of information that is clearly demonstrated to be confidential business information, the DFA's file on each application should be one that is open and accessible to members of the public. The intent would be to make the information provided by the applicant and all of the information provided in respect of the application by third parties open to public scrutiny. It would also be to make all of the documentation generated in the DFA as part of its assessment of an application part of the public record of the application. The conclusions reached on the application, and the reasons for those conclusions, should also be "on the record". The same would apply to the consideration and decision of any appeal to the Minister that follows from a decision on a licence or lease.

Similarly, once a lease and licence are issued, the ongoing application of the regulatory framework to the approved operation should, as nearly as possible, be an open book. Subject to the protection of information that is established to be confidential, all of the data, information and reports that the operator is required by the legislation, by the terms and conditions of its licence or by order of an

inspector to submit to the DFA or to the Department of Environment³² should be accessible to the public. Likewise, all documentation relating to the monitoring by the DFA of compliance with the regulatory framework or to actions taken by the DFA to ensure compliance or to enforce the regulations would become part of the file of material available to the public. This would include a copy of all inspection reports and any warning letters or orders written to address instances of non-compliance. The publicly available information should also include all documentation pertaining to complaints received about an approved operation and the action taken by the DFA in response to the complaint.

The objective of our recommendations is a level of transparency and openness that would allow a member of the public to readily ascertain the status of an application for a lease and licence (or for a change or renewal of a lease and licence) or the standing of an approved operation relative to its regulatory responsibilities at any given time. We recognize that implementation of such a high level of transparency and openness could divert resources away from regulation and into providing information about regulation. We also recognize that this level of openness and transparency can inhibit the open flow of information between regulators and regulated and among regulators in ways that can be harmful to regulatory effectiveness. Nevertheless, we think the level of transparency and openness we have proposed is what is called for.

First, what we have heard from Nova Scotians leads us to conclude that it will be essential to the trust and confidence they place in any new regulatory framework that it operate under conditions of high transparency and openness. We would go so far to say that of all that must be fixed with the current regulatory framework from a community perspective, this one is a pre-condition for the other improvements to be accepted, effective and worthwhile. In fact, the level of transparency and openness we are proposing is an essential compliment to other parts of the framework we have proposed. For example, our recommendation that regulatory responsibility remain primarily with the DFA assumes that the DFA will operate under the very high level of transparency and openness that we have recommended here. We would reconsider this and other recommendations if this assumption was mistaken.

Second, our analysis of the regulatory framework in other jurisdictions leads us to conclude that a high level of regulatory transparency and openness has been a core feature to the reforms adopted in recent years in other jurisdictions, including Scotland and Maine. These were the two jurisdictions most frequently cited to us as models by those who were generally in favour of significant change in how aquaculture is now regulated in Nova Scotia. More broadly, most of the regulators we spoke to in order to learn about their role in the regulation of aquaculture emphasized the importance of transparency and openness, even if they did not work in regulatory systems that have gone as far as Scotland and Maine have gone to make transparency and openness into operational reality.

Third, although we are not dismissive of the administrative concerns about diversion of resources and barriers to the flow of information, we think these issues can be managed. If resources are put into the creation of good systems that make transparency and openness standard operating

³² This assumes acceptance of our recommendation that the administration of the Environmental Monitoring Program should be moved to the Department of Environment.

procedure, including information systems that make good use of technology, the ongoing diversion of resources can be mitigated. As to concerns that high levels of transparency and openness will inhibit the flow of information, our experience suggests that this is often less of a problem for administrative systems than people responsible for those systems assume it will be. Participants in the regulatory process will adjust their behaviour and interactions to reflect the awareness that they are participating in a process of public administration to which high standards of transparency and openness are applicable. When this happens, the benefits that can flow from transparency and openness will outweigh any challenges it creates.

Finally, because the regulation of aquaculture is a process of public administration relating to the use of public resources by private businesses, it should be conducted under high standards of transparency and openness so that it can be held accountable by Nova Scotians.

12 Provisions on Aquatic Animal Health and Wellbeing

The conditions under which fin-fish facilities operate, from site selection to stocking density to specific design and maintenance requirements, should be designed with fish health as a priority objective. It was suggested to us on a number of occasions that ensuring the health of farmed fish is the very best way to eliminate or greatly reduce the environmental impacts of fin-fish aquaculture that give rise to the greatest concern. It was also suggested that fish health is crucial to the productivity of the Nova Scotia industry as well as to its reputation in the market and thus to its competitiveness compared to the aquaculture industry in other jurisdictions.

At the Roundtable, there was only partial support for the recommendation that,

“The Province should develop an appropriate protocol to address all aspects of fish health and should ensure appropriate expertise is involved. Fish with reportable diseases should be removed from ocean pens as soon as possible. No grow-out should be permitted. Harvesting controls should be instituted until the site has been declared free from the specific pathogen.”

However, the reservation expressed by some Roundtable members was not with the idea of a comprehensive approach to fish health. Rather it was with the prescriptiveness of the recommendation on how that should be done in all cases. In particular, reservation was expressed with an absolute obligation to remove all fish with a reportable disease from the water. There was also concern to ensure that this recommendation was made in the context of marine-based farming and would not be applicable to shell-fish operations.

In our view, the focus of the regulatory framework on fish health and well-being should definitely be on the outcomes rather than on the specific mechanisms to be used to achieve those outcomes. The goal should be to design and operate fish growing operations that grow healthy fish, fish that never or very rarely require medication or pest control treatment, and that have the lowest mortalities in the industry. We understand that it may take some time to reach this ideal. It is important, however, that every pest or disease outbreak be treated as a learning opportunity to reflect on the conditions under which fish are grown in these facilities to improve those conditions to improve fish health. This will include learning about appropriate versus inappropriate sites, learning about appropriate stocking densities and species at given sites, learning about barriers to minimize disease transfers from wild to farmed fish, etc.

12.1 Fish Health

Currently the MOU between the DFA and the DFO says that Nova Scotia will have “... the lead role in fish health management and extension work and in intra-provincial surveillance, detection, prevention, control, and regulation of fish diseases in cultured stock”.

The legislative foundation for the DFA's work in aquatic animal health is limited. It includes of section 5 of the Aquaculture Licensing Regulation, which requires licencees to maintain accurate records on "the presence of diseases", "the type and amount of food used in relation to aquacultural produce" and "the type of medication, dosage, treatment date, and duration of veterinarian treatments". It also includes section 9 which says, "The Provincial Fish Health Veterinarian may isolate, quarantine, order treatment for, restrict the movement of, or destroy cultured fish infected or thought to be infected with a disease that the Provincial Fish Health Veterinarian considers a significant risk to wild or cultured fish stocks".

The DFA's current program in fish health has four components: disease surveillance; the provision of veterinary services; emergency services (where there is unexpected or elevated mortality or abnormal behaviour); and laboratory services to the industry. The DFA acts primarily as an advisor to operators. It provides advice on operational improvements to improve fish health, on treatment of disease and on prevention. These advisory services are undoubtedly an important benefit to the industry. They also foster a relationship of cooperation between the Provincial Fish Veterinarian and operators, which the Veterinarian uses to enhance the industry's understanding of and response to health problems affecting the sector.

The DFA's approach also has a regulatory component under sections 5 and 9 of the regulations. A key question is whether the DFA needs to increase its regulatory activity in relation to animal health in aquaculture. An associated question is whether this could or should be done while maintaining the advisory approach that is currently the focus for the Provincial Fish Veterinarian. These questions arises out of concern that the rigour of an expanded regulatory role might be compromised if provincial veterinarians are the providers of veterinarian services to those they are supposed to also regulate. Conversely, there is a concern that the effectiveness of the advisory service in gaining the cooperation of the industry in addressing fish health will be compromised if the advisory service is provided by veterinarians who also wear a regulatory hat.

In our view, there is really no doubt that the regulatory framework needs to deal much more expansively and in much greater detail with the health of animals raised in aquaculture. Some of the most persuasive presentations we received argued that the key to aquaculture's future as a sustainable industry which enjoys social licence was a focus on the health and well-being of farmed animals. All of these presentations, which were made from a range of perspectives, recognized that the health of the animals being raised in aquaculture was the ultimate and fundamental barometer of whether aquaculture was or was not being conducted in harmony with its surrounding environment. Put simply, healthy fish mean the health of the surrounding environment is being maintained while sick fish suggest the opposite. Conversely, the nature and extent of aquaculture's use of some of the practices that raise the most concern about aquaculture's impact on the environment depends very much on the health of the animals raised in aquaculture. When animals are healthy, utilization of these practices can be reduced or eliminated. When fish are sick or in danger of becoming sick, utilization of these practices increases.

Here we cannot describe the regulatory provisions we think are needed in detail. We limit ourselves to outlining the matters that we believe should be addressed in these provisions.

First, it has to be understood that the maintenance of health and the prevention of disease are the foundations of the proposed regulatory framework. Although the provisions we are proposing to deal specifically with fish health would deal with fish health more extensively and explicitly than the current regulatory framework does, these elements of the framework are secondary to those which are intended to keep farmed fish healthy in the first place. Among the elements of the proposed framework that have fish health as one of their fundamental objectives are those dealing with the following issues:

- Biophysical site conditions that make a site suitable for a particular operation;
- Conditions on number of fish on site and on permitted stocking densities;
- Fallow period requirements;
- The mixing of species on sites;
- Limits on the number of and separation between permitted farms in particular bays;
- Coordination of production on sites within defined geographic areas; and
- Vaccination requirements.

In addition to all of the preventive measures, the regulations should deal more comprehensively and explicitly than the current legislation does with the mandatory reporting of notifiable diseases. They should set out the diseases of concern to the province that must be reported to the DFA if identified by labs, farmers, veterinarians and anyone in the care and control of the animals suspected to have the disease. The regulations should clearly state the time-frame within which notification has to be given once the evidence of a notifiable disease is detected. There should be clear penalties stated for breach of reporting obligations and vigilant enforcement of the obligations, including through prosecution.

The regulations should explicitly address the elements of the disease surveillance system. They should outline the type, frequency, lots and numbers of animals to be sampled and define the tests to be used for detecting the diseases of concern.

The regulations should also deal more comprehensively with management of disease outbreaks. We discuss the industry's capacity to manage disease outbreaks in greater detail below. Here, our focus is on the responsibilities and associated authority of the regulator. In our view, the regulatory framework should define what constitutes a confirmed positive. They should give broad powers to regulators to: access records; seize and test animals from at-risk populations; trace pathogen movements from and to farms; and to isolate, quarantine, treat or destroy diseased fish or fish suspected to be diseased or in danger of becoming diseased. They should impose or authorize regulators to impose requirements for biosecure disposal of infected fish and materials and for cleaning and disinfecting infected things and places. There should also be provisions dealing with fallowing, restocking and retesting of sites after an outbreak of disease leads to destruction of diseased fish. The regulations should define breaches of obligations in this area as punishable offenses.

The regulations should contain provisions on the biosecurity procedures to be followed to prevent the spread of infectious disease. These should include provisions on biosecurity procedures to be followed on aquaculture sites, during harvesting, during transport of animals and in fish processing.

These procedures should cover personnel and equipment, including equipment such as well boats, trucks, grading gear and wharves used in moving fish. The regulations should provide for biosecurity compliance auditing procedures. Non-compliance with biosecurity requirements should be defined to constitute an offence.

Under the regulations, movement of animals to or from a site should be subject to a certificate of health for transfer. The regulations should set out the number of veterinary site visits and the types of tests to be conducted before such a certificate can be issued. There should be brood stock testing requirements, requirements on records management relative to the movement of fish and mandatory reporting requirements relative to transfers.

The role of the Provincial Fish Health Veterinarian (PFHV) has caused us some difficulty. On the one hand, the PFHV provides veterinarian services to the industry. He is, in effect, their veterinarian. This model is similar to the role that provincial veterinarians have played in the agriculture sector. On the other hand, the DFA relies on the PFHV in its application, interpretation and enforcement of regulatory requirements relating to fish health. If the regulatory framework becomes more extensive and explicit on fish health, as we recommend it should, this reliance is likely to become more important to the DFA. The perceived conflict between the dual roles of the DFA that is a concern to many would seem to be at its highest in the multiple roles discharged by the PFHV.

We can understand that the role of the PFHV as the veterinarian of the industry enables the PFHV to build relationships of trust and confidence with the industry that allows the PFHV to proactively identify and address issues before they become problems. In other words, we can understand that the dependency of the industry on the PFHV provides the PFHV with considerable opportunity to ensure the industry operates in accordance with the regulations and fish health best practices. In addition, the current position of the PFHV as the veterinarian of the industry is undoubtedly an important part of the DFA's system of disease surveillance. A more regulatory role for the PFHV may make crucial surveillance information less available to the PFHV than is currently the case. It is also relevant to the discussion that the PFHV carries out his or her mandate as a regulated member of the veterinarian profession.

For these reasons, we would not be comfortable recommending that the role of the PFHV become an exclusively regulatory one. We are however strongly of the view that it can only continue to be a service-provider and a regulatory role if our recommendation on transparency and openness are adopted and if a system of independent third-party periodic review of the compliance of the industry with regulatory requirements relating to fish health is instituted as part of the regulatory framework.

12.2 Fish Welfare

Overlapping with the issue of fish health is the issue of the well-being of farmed fish. Only one person spoke to us directly on this concept but it was implicit in the concern that others voiced about the health of farmed fish.

As under Nova Scotia's *Animal Protection Act*, legislation on the well-being of farm animals typically aims to ensure they are adequately cared for. This includes receiving necessary veterinarian care and protection from neglect and abusive treatment. Under the Nova Scotia Act, the definition of "farm animal" includes "fin-fish raised in an aquaculture site for commercial purposes". Our understanding is that the Minister of Agriculture is designated as the Minister responsible for the Act in its applicability to fin-fish. Among other things, this makes the Minister responsible for investigations where farm animals may be in distress. It also gives the Minister the authority to appoint inspectors to "carry on such activities and exercise such powers as are necessary or conducive to preventing, ending or remediating distress to farm animals" including by investigating cases of farm animals in distress, promoting the humane treatment of farm animals and formulating and co-ordinating the establishment of industry customs and codes of practice supporting the humane treatment of farm animals.

This legislative framework is primarily if not exclusively concerned with the prevention of neglect and abuse. This is an important aspect of animal welfare. It is not only covered by provincial animal welfare legislation but by section 445.1 and 446 of the Criminal Code.

It was pointed out to us that there have been no prosecutions under the *Animal Protection Act* (or the *Criminal Code*) for violations in relation to fish. This might raise questions about whether existing legislation is being enforced with sufficient diligence and rigour. Our expectation, however, is not that prosecutions should be taken for the sake of demonstrating that the Act is being strongly enforced. Instead, our concern would be that prosecution is not being considered where it may be warranted on the facts of particular cases due to a general view that the matters addressed in the Act are not serious enough to warrant prosecution. Actions should be taken to ensure that such an attitude is not guiding the administration of the Act and that prosecution for violation of the Act is actively considered where circumstances suggest it is the appropriate and proportionate response to a situation of non-compliance.

In addition, our attention was drawn to subsection 21(4) of the *Animal Protection Act*, which says that the provisions of the Act that create the offence of causing distress to an animal do not apply if the distress is caused by an activity carried on "in accordance with reasonable and generally accepted practices of animal management, husbandry or slaughter or an activity exempted by the regulations". These words are not defined in the Act. They are therefore left to be defined in the administration of the Act. This can result in the words being defined in ways that do not accord with the objectives of the Act, which is to provide animals with meaningful protection against treatment that causes them distress.

A similar but broader concern is that the Act defines distress in subsection 2(2) in quite general terms. To some extent, this is unavoidable and desirable given the wide range of situations and circumstances the Act must cover. It does however mean that the Act provides limited guidance either to farmers or to regulators. In the case of fin-fish aquaculture, the lack of guidance may be more problematic given that the Act's definition of distress may apply more straightforwardly to terrestrial animals than it does to aquatic animals. For example, the definition refers to adequate water, shelter, ventilation and "reasonable protection from injurious heat or cold". What these parts of the definition require may be easier to determine for terrestrial animals than it is for

aquatic animals. Even their applicability to fin-fish may be doubtful, although by the words of the Act they are as applicable to fin-fish as to other kinds of farm animals.

There is a third area of concern. Although the Act contemplates industry customs and codes of practice supporting the humane treatment of animals, it is primarily about protecting animals from neglect and abuse. It says little about the positive level of care that animals are to be provided. All it says in effect is that it must be above the level at which it would cause distress.

We conclude that the regulatory framework should more clearly define the animal welfare standards that are required in fin-fish aquaculture. It should do this at three levels:

- First, by outlining the animal welfare standards that should generally be met and maintained in areas such as (a) water quality, (b) stocking levels, (c) feeding rates, (d) cage design, construction and maintenance and (e) general husbandry;
- Second, by better defining distress (i.e. neglect) as it applies to fin-fish aquaculture; and
- Third, by better defining what practices of animal management, husbandry and slaughter will be regarded as “reasonably and generally accepted” in aquaculture in Nova Scotia for the purpose of determining the applicability of the statutory provision which creates the offence of causing distress.³³

³³ Guidance as to how this can be done may be provided by the Aquatic Animal Health Code developed by the World Organisation for Animal Health. Chapter 7 of this Code deals with “Welfare of Farmed Fish” and more particularly with standards and practices on the welfare of farmed fish during transport, in the stunning and killing of farmed fish for human consumption and in the killing of farmed fish for disease control purposes. We have also been told about developments in New Zealand (which has adopted an animal welfare code dealing specifically with commercial slaughter) and in Europe (where Commission of the European Commission has said that farmed fish are covered by EU legislation on the protection of animals during transport and at the time of killing).

13 Disease Control and Management Procedures and Capacity

In the previous section, we made recommendations on fish health and fish well-being. A related issue is the regulation of the industry by the CFIA, which is responsible for control of aquatic animal diseases as part of its broader mandate over the health of animals raised for human consumption. To discharge this mandate, the CFIA is in the process of implementing the National Aquatic Animal Health Program.

The CFIA administers a list of reportable diseases. Where one of these diseases is detected in farmed aquatic animals, it must be reported to CFIA. Our understanding is that this obligation applies to the farmer, the veterinarian who monitors the health of the farmer's animals, and to the laboratory at which samples from the farmer's animals are tested for disease. Our further understanding is that the DFA operates a system of surveillance for reportable diseases as part of the veterinary services it provides to the industry. This role of the DFA appears to be contemplated by its MOU with the DFO, which had the federal mandate to control aquatic animal diseases before it was transferred to CFIA.

The diseases on the list of reportable diseases include those that have been determined by international agreement to be diseases that all countries should control. The goal of the international agreement is to prevent the spread of aquatic disease through trade in the products of aquaculture. It does this by requiring each country to control the diseases that are agreed to be diseases of concern. The other goal of the international agreement is to protect international trade in the products of aquaculture. It does this by permitting trade to take place on the assumption that all countries party to the agreement are controlling the diseases that all countries regard as diseases of concern. In other words, it allows trade to take place on the assumption that aquaculture products from participating countries are safe. This avoids or at least minimizes the alternative scenario under which each country would decide for itself whether the aquaculture products of other countries were safe for importation.

The international agreement requires participating countries to order the destruction of aquatic animals where it is determined that this is necessary to control the spread of a reportable disease. Under Canadian legislation, the authority to order destruction of diseased fish is exercised by the Minister responsible for the CFIA. Where the Minister exercises this authority, this legislation requires the CFIA to compensate the grower of the fish that are destroyed.

We heard a high level of anger about the compensation that CFIA pays when the Minister orders the destruction of farmed fish, something that has happened and attracted a lot of media attention in Nova Scotia in recent years.³⁴ For many, this is using taxpayer money to reward farmers for the bad practices that allowed their fish to become diseased in the first place. Similarly, many expressed the view that if farmers know they will be compensated for producing sick fish, they will

³⁴ There was qualified approval by the Roundtable for a recommendation that, "Publicly funded compensation for catastrophic loss related to disease should not be available except where the effect is industry-wide or the compensation is otherwise required under international agreements relating to reportable diseases. (Roundtable Final Report, page 26)

be content to make a profit by producing sick fish and collecting compensation after they are ordered destroyed instead of taking the more difficult, expensive and uncertain route of doing what has to be done to produce healthy fish that can be sold for a profit on the market.

We understand and respect the strength with which these views are held. Nevertheless, we think the role of CFIA in compensating farmers for the fish it orders them to destroy needs to be put in context. This context includes the following points:

- The obligation to compensate is required by international agreements to which Canada is a party;
- The rationale for the obligation to compensate is to minimize the risk of growers failing to report reportable diseases to avoid the possibility of being ordered to have them destroyed. This would be more likely if they knew there was no compensation for destroyed fish or if compensation was not certain. The concern is that if growers were subject to a financial incentive to conceal reportable disease the entire system for the control of disease would be less effective. Another concern is that Canadian aquaculture products would be more vulnerable to being excluded from international trade channels; and
- The system under which aquaculture is compensated for fish destroyed by order is similar to the one under which farmers can be compensated for animals they are required to destroy for disease control purposes.

We were advised by CFIA officials that provinces and the aquaculture industry have been informed that the current approach to compensating for loss due to disease is not sustainable and that a stricter approach will soon be implemented. In future, orders to destroy will not be issued in provinces or parts of provinces declared by CFIA to be infected with the disease in question. This is because disposal serves no disease control purpose in such circumstances. With no order to dispose, there will be no authority to pay compensation. We were told that this approach is consistent with Canada's international obligations since Canada only has international control obligations in relation to parts of Canada not declared as "infected".

This approach may provide some assurance to the public that where compensation is given it is because it is serving a public purpose and not simply fixing a problem for a farmer who loses fish. For the public in provinces or areas of provinces where compensation is paid, it may reassure that the disease which leads to the destruction of fish is not endemic in their province or area but generally under control.

For the industry as well as provincial governments, the implication of the new approach is that they must control the prevalence of disease if they want to continue to have access to compensation when disease strikes despite best efforts to prevent it. More seriously, they must effectively control disease if they wish to avoid their province or part of their province being designated as one in which one or more reportable diseases are endemic. If that happens, they will have lost much of their market as well as their access to compensation.

The impending changes to the CFIA approach reinforce the rationale for all of the recommendations we have made which can play a role in fostering, maintaining and protecting the health of farmed fish. In addition, they show how important it is for industry and government to have the capacity to conduct effective surveillance for disease and to effectively manage outbreaks when they occur to ensure that disease does not become endemic. Our understanding of what we were told by CFIA officials is that CFIA was confident in the strength of the surveillance systems in Nova Scotia and the Maritimes more broadly, and with their functioning. We understood them to express less confidence in the readiness of the industry in the region to manage outbreaks.

To illustrate, CFIA officials explained the difficulties they have observed in the handling of the limited ISA events that have occurred. In the view of CFIA, necessary equipment was not readily available or readily procurable. For example, there were no boats in the region dedicated to this function and no arrangements made to take boats used for other purposes out of their normal service to prevent cross-contamination. There were also no arrangements made in advance for biosecure access to docks, which caused undue reliance on land transportation. Another kind of difficulty was in requisitioning the equipment needed to harvest diseased fish. Another was the unavailability of pre-approved disposal sites. This raised concerns about the treatment that would be applied to the effluent from the rendering of destroyed fish. CFIA has also found that the expertise needed to write the standard operating procedures needed for a response plan and process was generally not available.

CFIA officials expressed concern about an absence of urgency in addressing these gaps in capacity and readiness. They expressed concern that the cooperation that would be needed to ensure the needed capacity and infrastructure is in place and available to all is not evident, even though the scale of the industry is in their view such that the needed capacity and infrastructure can only be available if it is developed and maintained on an industry scale. We were told this collective approach has been the approach taken on the west coast where the industry is much larger and is a primary reason why the readiness to effectively manage disease outbreaks is more advanced on the west coast than it is on the east coast.

14 Site Selection and Utilization for Fin-fish Aquaculture

14.1 Nature and Rationale for a Classification System

We have been told throughout the regulatory review process by industry, community members and other stakeholders that proper site selection and utilization is critical for an effective regulatory framework for marine-based fin-fish aquaculture.³⁵ We agree. A suitable site is one that has appropriate biophysical conditions while being compatible with other economically, socially, and culturally important activities. Using language from EGSPA, it is a site that makes a net contribution to sustainable prosperity and that can be utilized in a manner that maximizes benefits while minimizing risk and negative impacts.

Biophysical conditions in Nova Scotia are different than in many other jurisdictions with marine-based fin-fish aquaculture operations. We have many geographically protected coastal waters around Nova Scotia, and areas with strong tidal currents, but we also tend to have shallower waters than other jurisdictions and water temperatures are not always suitable. Wild salmon populations in Nova Scotia have traditionally had economic and social significance, but are in a perilous state. In addition, many of our rural communities have long-standing economic dependence on coastal waters for their livelihoods, largely in terms of fishing and tourism. Compatibility with other uses of coastal waters and social acceptance of the industry are therefore critically important considerations in site selection.

Under the current regulatory framework, the suitability of coastal areas for fin-fish aquaculture is determined largely if not exclusively through the licensing process. This approach may be inefficient and resource-intensive for both industry and regulators. It may also lead to avoidable conflict to the extent it results in applications for licences and leases being made for sites that would be identifiable as being generally unsuitable if a more general process of characterization and categorization of the suitability of coastal areas for fin-fish aquaculture was carried out. In addition, too much reliance on the licensing process to determine the suitability of coastal areas for fin-fish aquaculture may lead to mistakes that could be avoided or reduced if the licensing process was supplemented by a more general process of evaluation as the starting point for the licensing process.

Following the approach that is central to Scotland's relatively new regulatory framework, the basic approach we recommend is a process of proactive evaluation of the coastline for the purpose of determining whether coastal areas are suitable, marginally suitable or generally unsuitable for fin-fish aquaculture. The result of this process would be a designation of coastal areas as being

³⁵ The Roundtable gave partial support to the recommendation that, "The regulatory framework should establish siting criteria to include water depths, current flows, distances from wild fisheries and harvest areas for Irish moss, sea urchin, shellfish etc., distances from salmon rivers, migration paths, fishing grounds, other marine resource uses, natural conservation areas, and spacing of aquaculture sites." (Roundtable Final Report, page 20)

either green, yellow or red areas for the purposes of fin-fish aquaculture.³⁶ In general terms, these designations would have the following meaning:

1. Green areas would be areas found to be generally suitable for fin-fish aquaculture;
2. Yellow areas would be areas that have potential to be suitable but are not ideal and would require a more careful approach to site selection, a more rigorous assessment in the licensing and leasing process, stricter or more limiting terms and conditions for approval and additional regulatory oversight; and
3. Red areas would be areas that were unlikely to be suitable for fin-fish aquaculture.

The basic idea is that regulatory approval for fin-fish aquaculture would be unlikely in red areas and less likely in yellow areas than in green areas. Whether it would be given for a site in a yellow or red area at all would depend on whether the applicant for a licence and lease in a yellow or red area was proposing a fin-fish operation that was suitable for a site having yellow or red area characteristics. For example, a small-scale or low-density operation might be suitable in a yellow area whereas a larger-scale and higher-density operation would not be. It would be less likely that even small-scale and low-density fin-fish aquaculture would be found suitable for red areas. But to be suitable, it would have to be an operation that had less impact than the operations that would be suitable for yellow areas. For example, an operation that was smaller-scale and lower-density than those suitable for yellow areas and which also was required to operate under stricter regulatory control might be suitable in some red areas.

The starting point for considering which of the three categories a coastal area of NS falls under should be the biophysical conditions, such as water depth, current speed, oceanographic and benthic circulation patterns, proximity to salmon rivers, etc. Social, cultural, and economic implications could also be considered in categorizing Nova Scotia's coastal waters based on its suitability for fin-fish aquaculture, however, these considerations will feature more prominently in the review of individual proposals for aquaculture operations. Finally, our understanding of what makes for a suitable site will undoubtedly evolve with science, changing conditions as a result of climate change, new technologies, changes in industry practice, changing markets, and the industry's evolving place in rural communities. This means that the categorization needs to remain open to being adjusted, but based on strong, open and transparent processes and clear criteria. The following sets out the criteria we recommend for the three categories.

14.2 Green Areas

It is our recommendation that Green Areas for fin-fish operations in coastal waters be determined based on criteria that include the following:

³⁶ In rudimentary form, a similar concept is currently provided for in the *Fisheries and Coastal Resources Act*, which gives the Minister of Fisheries and Aquaculture, with cabinet approval, to designate sub-aquatic lands as a "closed area ... not suitable for aquaculture".

- (A) Biophysical conditions such as water temperature, water depth, current speed, frequency and other hydrological and bottom conditions show that fin-fish aquaculture can be conducted in the area with confidence that it will meet or exceed environmental standards; and
- (B) The absence of significant conflicts between fin-fish aquaculture and other uses or values, such as:
 - Interference with the recovery effort of an endangered species;
 - Unavoidable interference with a clearly competing use that is of significant economic, social or cultural value; or
 - Proximity to a salmon river or to land that is under legal protection.

14.3 Yellow Areas

Yellow Areas would be coastal areas where there is reason for caution, but there may still be potential for productive and low impact fin-fish aquaculture provided it is conducted on terms or subject to limitations which specifically address the area's limited suitability for fin-fish aquaculture. Conditions that would result in an area being designated as a Yellow Area would include the following:

- (A) Biophysical conditions showing (for example) that a fin-fish aquaculture should not be authorized unless it is authorized on terms and conditions (such as terms and conditions on scale and density) that address the specific biophysical limitations of the area; or
- (B) The presence of significant potential conflicts between fin-fish aquaculture and other uses or values that would have to be addressed before aquaculture could be authorized or conducted, such as
 - Interference with a clearly competing use that is of significant economic, social or cultural value;
 - A reasonable fear that a fin-fish operation would interfere with the recovery effort of an endangered species;
 - Proximity to a salmon river or to land that is under legal protection; or
- (C) Both the biophysical conditions and the potential for conflict with other significant uses or values indicate the area is properly classified as a yellow area.

14.4 Red Areas

Red Areas would be coastal areas considered to be unlikely to be suitable for any fin-fish aquaculture. Conditions that would result in an area being designated as a Red Area would include the following:

- (A) Biophysical conditions showing that it is highly unlikely that fin-fish aquaculture can be conducted in the area in accordance with environmental standards, particularly in light of current technology and aquaculture practices; or

- (B) The presence of serious conflicts between fin-fish aquaculture and other significant uses or values, such as
 - Fin-fish aquaculture in the area poses a clear risk to an endangered species;
 - Fin-fish aquaculture poses a proven threat to an important industry in the area;
 - Immediate proximity to a salmon river or to land that is under legal protection; or
- (C) Both the biophysical conditions and the presence of serious conflicts with other significant uses or values indicate the area is properly classified as a red area.

Although Red Areas would be generally off-limits for fin-fish aquaculture, the regulatory framework should not preclude the possibility that fin-fish aquaculture could in exceptional circumstances be authorized in a Red Area. It would however place a heavy onus on the DFA in its assessment of an application for a licence and lease to satisfy itself and to demonstrate that any aquaculture project proposed for a Red Area fully addressed the conditions or the combination of conditions that made the area a Red Area and generally off-limits to fin-fish aquaculture. This approach is consistent with the approach taken in Scotland.

14.5 Process for Applying the Coastal Classification System for Fin-fish Aquaculture

The objective of the regulatory framework should be a comprehensive classification of the suitability of the coastal areas of Nova Scotia for fin-fish aquaculture. To achieve that objective, the DFA should take a three-pronged approach.

First, it should undertake a proactive classification process that operates in parallel to the licensing and leasing process. Although we are not in a position to say exactly how we think this process should be organized and conducted, we can say that the process should have the following characteristics or elements.

- The process should be evidence-based, open and transparent. People with local and traditional knowledge of coastal areas should have opportunities to input that knowledge into the process. They, along with all Nova Scotians, should have the opportunity to comment on the process as it proceeds.
- The process should draw on the knowledge and research of experts in scientific and other disciplines from within and outside of government, including those in the scientific community who have worked on classification systems such as the one we have recommended above as well as on the work and knowledge of those who have done research that is relevant to developing and applying such a system.³⁷ Knowledge experts

³⁷ Later, we recommend that the regulatory framework include a mechanism such as a formal network, standing committee or “knowledge” roster, through which the DFA can receive advice from experts on science relating to aquaculture on a continuing basis. One of the uses of this mechanism could be to involve knowledge experts in the process of classifying the coastal areas of Nova Scotia relative to their relative suitability for fin-fish aquaculture. At the Roundtable, there was vigorous discussion of a recommendation that there was partial support from the Roundtable for a recommendation that, “The province together with federal partners should, within a reasonable period of time, develop an overall coastal planning

could be asked, for example, to provide advice on how the criteria for green, red and yellow areas could be refined and on how they can be applied in a range of contexts and conditions.

- The process should build on the large body of existing research that has been done in and outside of government on coastal conditions and on the relationship between diverse coastal conditions and the suitability of coastal areas for fin-fish aquaculture when it is conducted at different scales, under different management systems and with different technologies. With as much transparency as possible, the process should utilize the modelling system for evaluating the environmental impacts of aquaculture that is widely used in the regulation of aquaculture across Canada and in many other jurisdictions.
- The process should build on previous successes in similar undertakings. One example is the success of the Colin Stewart Forestry Forum on development of a plan or framework for achieving Nova Scotia's objectives in wilderness conservation while ensuring the availability of fiber to the forestry industry.

Due to the high-level nature of such a process, it is likely that this approach would be only useful for classification of coastal areas that can be classified without much controversy. For example, it is more likely to be useful for areas that are clearly red areas than it would be for areas that may be green areas. For the latter classification to be accepted, a more focused process is likely to be needed.

For this and other reasons, the regulatory framework should authorize the DFA to undertake strategic assessments on a more targeted basis of particular coastal zones. In the following section, we outline the process and function of such assessments. On process, they would be in the nature of a strategic environmental assessment. On function, such assessments may be especially applicable in differentiating between green, yellow and red areas within a particular coastal region that cannot easily or sensibly be classified as entirely green, yellow or red. More specifically, strategic assessments may be helpful in identifying green areas in which the DFA can encourage fin-fish aquaculture and in more clearly differentiating those areas from coastal waters in which fin-fish aquaculture is less likely to be approved.

Third, until a comprehensive classification is completed, the DFA will have to classify sites on an individualized basis whenever an application is made for a licence and a lease in an area that has not yet been classified in either the general classification process or through a strategic assessment. This is explained in more detail in the section on licensing (site approval) process. The rationale for this approach is two-fold. On the one hand we do not think the regulatory process should be held in abeyance until the classification process has been completed. On the other hand, we do not think

process to address the location of aquaculture operations in the context of environmental suitability and other marine resource uses." In the end, the recommendation received only partial support by the "narrowest of margins". An alternative, that the Province should collate existing coastal planning information and make it publicly available to assist with decision-making regarding aquaculture siting, likewise received only partial support. The recommendation that, "Improvements to the aquaculture regulatory system should proceed in a timely fashion, independent of progress made with developing a coastal planning framework" received qualified support. (Roundtable Final Report, page 12)

the licensing process can go forward without regard to the important role that we think classification must play in the licensing process.

The relationship between each of these prongs of the process of classification should be dynamic. Classification choices made in the general process or through strategic assessment will be taken into account as a fundamental input into the licensing process. At the same time, classification choices made through strategic assessment or in the licensing process would add to the overall progress toward comprehensive classification of the coastline, which will be the main concern of the general or overall classification process.

14.6 Effect of Classification as Green, Yellow or Red Area

Designation of a part of Nova Scotia's coastline as green, yellow or red for fin-fish aquaculture will have a variety of implications for the regulatory process as it applies to specific applications for approval of specific sites and projects.

First, if a proposed project is in an area designated in the general process or a strategic assessment, it will not have to go through a classification process during the licensing and leasing process. Projects proposed in areas that have not been previously designated will require a determination from the regulator as to whether the site is a green, yellow or red area site. Such a designation of an individual site at the licensing and leasing stage may usefully serve as a starting point for initiating a designation process for the wider area, particularly if there is reason to believe that there is broader interest in operating aquaculture facilities in the area.

Second, the designation of an area as green, yellow or red will have implications for the process of reviewing individual applications for a lease and licence to operate an aquaculture facility in the area. As set out in more detail below, the regulatory process in green areas will be more streamlined, whereas the process in red areas will be most onerous.

Third, the likelihood of an application to operate an aquaculture facility being granted will differ. In green areas, it would be reasonable to expect that licences would be granted for well-designed operations that are sensitive to other users and are proposed in suitable locations. On the other hand, the likelihood of a successful application in a red area would be low.

Finally, the terms and conditions under which aquaculture facilities would be licensed to operate would vary. Because of the biophysical constraints and potential social and economic concerns in yellow and red areas, operations that do get approved will have to meet additional terms and conditions, such as additional monitoring and reporting obligations. They would typically also be approved on terms and conditions that would be more restrictive of the scale and/or density of the aquaculture that can be conducted than would typically apply in green areas and require additional measures to be taken to reduce the higher risk of adverse impacts present in yellow and red areas.

14.7 Relevance to Classification of Differences Between Kinds of Fin-fish Aquaculture

Although we have outlined a process of fin-fish aquaculture, the reality is that the rationale for such a system is primarily found in the concerns associated with salmon farming or more broadly, with the farming of salmonids. We have been told by experts in the field that a number of these concerns are not relevant at all or to the same extent to other kinds of fin-fish aquaculture, such as halibut or cod aquaculture.

In the classification framework we have proposed, these differences can be taken into account in either of the following ways. First, the framework can be applied by taking the differences between salmon and other kinds of fin-fish aquaculture into account in how the framework is applied. Under this option, the result could be that areas that may be yellow or red for the purpose of salmon aquaculture might be green (or yellow instead of red) for other kinds of fin-fish aquaculture. Alternatively, other kinds of fin-fish aquaculture could, like shell-fish, be exempted from the classification system.

In our view, unless it can be said that the concerns that exist with respect to salmon aquaculture are non-applicable to other kinds of fin-fish aquaculture, the first option would be the better option. It would ensure that the differences between salmon farming and other kinds of fin-fish farming are taken into account in the application of the classification system without assuming that those differences justify an entirely different treatment of other kinds of fin-fish aquaculture.

15 Strategic Assessment of Coastal Areas

In this section we will outline the process for evaluating and determining the suitability of coastal areas for aquaculture at a regional scale. This process could be used to classify coastal regions and areas within coastal regions as green, yellow and red areas for fin-fish aquaculture. For shell-fish aquaculture this process could be used to proactively identify areas that are and that are not suitable for the development or growth of that kind of aquaculture.

We refer to this process as a strategic assessment of coastal areas of the aquaculture potential of the area. Our recommendation is that this strategic assessment be carried out not at a provincial level, but rather at a more local level, keeping in mind which areas are most likely to be of interest to operators, and which areas are connected from a social and ecological perspective.

In the case of fin-fish aquaculture, the strategic assessment process should have two primary goals in any region in which it is carried out. One goal would be to identify green, yellow and red areas for fin-fish aquaculture. A second goal is to identify any specific sites that are particularly suitable and promising sites for the development of aquaculture because, in addition to meeting the criteria for green areas, they are located in or close to communities in which there is significant support for fin-fish aquaculture development under the proposed regulatory framework. This second goal would also provide the rationale for strategic assessments in relation to shell-fish aquaculture.

For the process to be effective, it needs to be transparent, it needs to be flexible, and it needs to fully engage all interested parties in the region in question, including First Nations³⁸, potential operators, other users of the coastal area, industries, interested residents, and all levels of government. A key goal of the process should be to integrate biophysical, social and economic aspects, and their interactions, and to identify to what extent the area in question is a suitable area for aquaculture in light of the overall goal of ensuring that aquaculture in Nova Scotia minimizes environmental impact while maximizing social and economic benefits to Nova Scotians.

The process should be carried out in a manner consistent with the following principles and elements:

³⁸ The Roundtable expressed qualified support for the following recommendation: “Both the Province and the proponent should carry out meaningful consultation with KMK, other First Nations umbrella groups, First Nations leaseholders and with First Nation communities near a proposed site to ensure a solid understanding of the proposed aquaculture venture and address community concerns and rights issues. The consultation should follow KMK guidelines.” There was also unanimous support for the idea that, “First Nations food, social and ceremonial fisheries must be addressed through the siting criteria and throughout the siting process.” (Roundtable Final Report, pages 16 and 20 respectively)

- *Broad scoping and information gathering to ensure the full range of biophysical, social and economic impacts, benefits, risks and uncertainties of each form of aquaculture under consideration are identified;*³⁹
- *Careful review and analysis of the information gathered to properly designate coastal areas within the study area in accordance with the principles set out in the previous section;*⁴⁰
- *Documentation of the results of the analysis for public comment;*
- *Decision making in light of the analysis and comments received; and*
- *Public engagement and transparency throughout.*

We recommend that the process be initiated with a background report prepared by the DFA (with input from relevant provincial and federal departments) that considers the general biophysical suitability of the area for each type of aquaculture under consideration. The background report should also include information about other users of the coastal area, and any other information that could be relevant to the consideration of the suitability of the area for aquaculture operations. The background report should focus on providing information. It should not seek to reach conclusions or suggest designation of areas as green, yellow or red areas.

The report should be shared with communities, stakeholders, and members of the public in the area under consideration. This should be followed by a flexible process of engaging with all interested parties to assist in the designation of the coastal area under consideration according to the criteria set out in the previous section. The process should consider whether there are sites within the area that are particularly suitable for aquaculture, so as to warrant a proactive call for proposals by the DFA to interested operators.

We do not want to be overly prescriptive on the nature of the engagement process once the background document is released, particularly in light of our recommendation that it be implemented at a local or regional level rather than at a provincial level. The process needs to be sufficiently flexible to be suitable and effective in different parts of the province and potentially at different scales. We do suggest, however, that the public and stakeholder engagement process used by this Panel for the regulatory review and the 2008 Offshore Renewable Energy SEA process in

³⁹ The Roundtable gave unanimous support for a recommendation relating to required data in the environmental assessment process, as “Detailed habitat and water chemistry data for a proposed site must be provided as part of the EIA process and a reference site identified for comparison. The data should be applicable to the Environmental Monitoring Program process.” (Roundtable Final Report, page 17)

⁴⁰ Partial support was indicated for the related recommendation that, “The EIA process should include a risk analysis for all existing fisheries in the proposed site area, followed by a bay carrying capacity study.” Furthermore, there was qualified support for using “the best available prediction model to assess site suitability” and also for using “the best available prediction model to predict levels of settled organic wastes below fin-fish cages, and address the cumulative effects of successive grow-out cycles of the lease term.” (Roundtable Final Report, pages 17, 20, and 21 respectively)

Nova Scotia can serve as a general guide on how to effectively engage with interested members of the public.⁴¹

At the conclusion of the public engagement process, it will be up to the DFA to decide on the appropriate designations within the coastal area under consideration. The DFA would prepare a draft designation decision for public comment, after which the Minister would make the final decision. The designation should be reviewed periodically through a process that is similar to the process followed for the original designation.

Where strategic assessment identifies areas particularly suitable for the development of either kind of aquaculture, the DFA would have the option of putting out a call for bids on those sites to proactively encourage their development. In this way, strategic assessment could lead to the designation of aquaculture development areas as currently contemplated by the *Fisheries and Coastal Resources Act*. Where bids are called, they could be called either on the basis that the selected bidders would still have to go through the more streamlined version of the licensing process described below, or on the basis that a licence could be granted on the basis of the strategic assessment process alone. For the latter to happen, the strategic assessment process would have to provide residents in local communities with ample opportunity to participate in the assessment process, and it would have to be transparent from the outset that this would be a potential outcome of the process. In addition, it would have to conclude not only that the area was a green area (or an area suitable for shell-fish aquaculture) but that the development of the area for aquaculture enjoyed high levels of community support. In other words, the absence of concerns about conflicts with other users would not be enough. Positive support for development would have to be established through a very open strategic assessment process before a licence could be issued outside of the normal licensing process.

⁴¹ The Roundtable gave partial support to the related notion that, “EIA reports should be prepared by an independent third party.” (Roundtable Final Report, page 17)

16 Licensing (Site Approval) Process

16.1 Introduction

Under the current regulatory framework, aquaculture is regulated through a licensing process that works in conjunction with a leasing process. Under this mode of regulation, aquaculture is prohibited unless licensed. Once licensed, it has to be conducted in accordance with the terms and conditions set out in the licence.

In addition to a licence, an operator needs a lease if the licensed aquaculture is to be carried out on Crown land. Most marine-based aquaculture is conducted on Crown land. A lease is not authorization to conduct aquaculture. Rather, it confers an exclusive right to use the leased space for aquaculture when and if a licence is obtained. Licensing and leasing tend to be used interchangeably in describing the process, perhaps because most sites need a lease as well as a licence and because the *Fisheries and Coastal Resources Act* provides that the lease is to be on the same terms and conditions as the licence.

Our reviews of regulatory frameworks for aquaculture in place across Canada and in other jurisdictions shows that the mode of regulation consistently used is a licensing model. Under this model, aquaculture is prohibited unless licensed. Once licensed, the regulatory framework requires it to be conducted in accordance with the requirements and limitations that are either written into specific licences or in the licensing statute, in which case they are applicable to all licencees operating within the scope of the statutory requirements.

The licensing mode of regulation should continue to be the mode of regulation used in Nova Scotia. However, we think it should be conducted in accordance with the following improvements.

16.2 Licensing and Environmental Assessment

As noted earlier, the regulation of aquaculture deals with many issues that otherwise would be addressed under environmental regulation. The impact of a proposed aquaculture project on the environment is a critical component of the evaluation that must be undertaken before a licence is issued, renewed or amended.

For this and other reasons, it was proposed to us that we should recommend that licensing be subject to environmental assessment conducted under the *Environment Act*.⁴² Some pointed out that until recent changes made to the *Canadian Environmental Assessment Act*, some aquaculture projects were subject to environmental assessment at the federal level. In light of this no longer

⁴² The Roundtable expressed qualified support for the recommendation that, “The regulatory framework should include a requirement for environmental impact assessment to be carried out by the Province as a part of the licensing process, including consideration of environmental, economic and social issues.” In addition there was partial support for two related recommendations; first, that “The EIA process should include a risk analysis for all existing fisheries in the proposed site area, followed by a bay carrying capacity study”; second, that “EIA reports should be prepared by an independent third party.” (Roundtable Final Report, page 17)

being the case, some suggested that this strengthened the case for a provincial environmental assessment under the *Environment Act* to take the place of the federal environmental assessment that will no longer occur.

Our review of the regulation of aquaculture in other jurisdictions indicates that environmental assessment separate and apart from the licensing process is not typically part of the assessment of a proposed aquaculture project. In addition, it should be kept in mind that the federal environmental assessments that applied to aquaculture were typically conducted as screening reviews conducted by the same federal agency that was called on to make a regulatory decision in respect of the proposed project. They were not environmental assessments conducted by an independent third party.

Consistent with our conclusion that the regulation of aquaculture should generally continue to be the responsibility of the DFA, we have concluded that the provincial environmental assessment process should not be applied to the assessment of aquaculture projects. Instead, we think assessments of an application for a licence should be conducted by the DFA on the understanding that the assessment must cover all of the ground that an environmental assessment would cover, in addition to whatever additional ground it must cover from a general licensing and resource utilization perspective. It should in other words be conducted and be understood as a kind of specialized environmental assessment, which, like the federal environmental assessments that have been conducted in the past, is conducted within the regulatory approval process.

So conducted and so understood, environmental assessment would be built into the regulatory framework in somewhat the same way as environmental assessment was built into federal decision-making in respect of aquaculture before the recent changes to the CEAA were made. The end result should be one regulator that is in a position to integrate environmental, social and economic considerations into an overall determination on how to maximize net benefits to all Nova Scotians in a manner that is fair and equitable.

16.3 Statutory Licensing Principles

The legislation governing the licensing process should set out the principles that are expected to guide that process. Putting the principles in the legislation will mean that the DFA is under a legal duty to address the principles in its assessment and decision-making on applications for licences. The principles would inform and guide but not determine the outcome in any particular licensing decision. They should be set out in the Act or the regulations using a non-exhaustive approach to drafting to avoid the implication that the listed principles are the only ones relevant to licensing no matter the circumstances of a particular licence application, variation or renewal. Our process leads us to conclude that the principles should address the following matters:

- i. Compatibility with public rights of navigation;
- ii. Compatibility with fishery activities, including the lobster fishery;

- iii. Compatibility of the nature and scale of proposed operation relative to the biophysical, oceanographic and community context;⁴³
- iv. Compatibility with the activities of other users or beneficiaries of the public waters in question;
- v. Responsiveness to the cumulative effect of aquaculture in the area; and
- vi. Contribution of the proposed project to net community socio-economic benefits.

For fin-fish aquaculture, the application of these principles would be framed by the classification of the area of the proposed operation as a green, yellow or red area for fin-fish aquaculture purposes.

Our proposal is similar to the approach that has been taken in Maine. In that state, the Commissioner who is responsible for licensing is required by law to consider the following factors:

- i. Impact on riparian owners;
- ii. Interference with navigation;
- iii. Interference with fishing or other water-related uses;
- iv. Intensity and frequency of other aquaculture in the area;
- v. Impact on the ability to support wildlife or marine habitat;
- vi. Fish health practices;
- vii. Impact on public use and enjoyment of the area; and
- viii. Lighting, noise and visual impacts.

This approach is different from the one we have proposed in three respects: instead of licensing principles it lays out the factors that must be considered; it lists the matters that must be taken into account in a more specific way than does our list of licensing principles; and it explicitly addresses some matters, such as lighting noise and visual impacts, that might not be encompassed within our list of more general principles.

The advantages of a guiding principles approach is the flexibility it creates to address variation between cases as well as change and evolution over time. It may also have greater capacity to encompass issues of concern that are relevant to particular cases but that are not included in a specific list of the factors that must be considered in all cases, although this could be addressed by adding a “basket clause” to the list of specific factors. The other advantage of a guiding principles approach is that it goes beyond identification of the factors that should be considered to indicating how those factors should be taken into account in the decision-making process.

Either approach would accomplish our core objective in proposing a statutory list of guiding principles. This is to ensure that those interested in a decision on an application for a licence have a

⁴³ The Roundtable expressed unanimous support for the recommendation that, “The regulatory framework should require the determination of the carrying capacity of a proposed site and its reference site, in order to maintain oxic conditions. Licensing should include maximum biomass levels based on carrying capacity.” There was further qualified support for the recommendation of using “the best available prediction model to assess site suitability” in the context of a decision support system. (Roundtable Final Report, page 20)

stronger basis than they do under current legislation to hold the DFA accountable for addressing the issues that licensing should, as matter of law, address. On balance however, we favour a guiding principles approach.

16.4 Universal Elements of the Licensing (Assessment) Process

For all kinds of aquaculture, the licensing process would have the following elements. The content of the elements would differ depending on whether the application is a shell-fish or a marine-based fin-fish project and depending on whether the proposed fin-fish site was in a Green, Yellow or Red zone. The content of the elements will also vary to reflect the differences between the cases that come forward within these broad categorizations.

a. Introduction of an “Option to Lease”⁴⁴

One of the concerns pressed on us most strongly is that too many project proponents do not seek input from the public until they are required to do so by the licensing process. By then, a lease is in place and project plans are quite advanced. It was said that this denies the public a meaningful opportunity to make their views known when they are most likely to have the greatest impact on planning by proponents and decision-making by regulators. It means that public participation only occurs when the community is faced with what looks like a done deal between the proponent and the regulator, which helps encourage distrust and community opposition. It may also mean that the project has been developed without input that could have made it better in ways that would make it more acceptable to the community and a better overall project.

Industry representatives explained that proponents must do a lot of preparatory work to determine the suitability of a site for aquaculture and the kind or scale of aquaculture that would be suitable for a particular site. They explained that if proponents included consultations with the community in this preparatory work before securing a lease, information about the site and the proponent’s plans for the site would make its way to competitors who could then use it to apply for a lease before the proponent has an opportunity to do so.

We think the process of developing aquaculture projects and the regulatory process would both work more smoothly and effectively if community involvement was able to start from early in the planning process and in particular, before a lease is applied for. To facilitate this, we recommend that the regulatory framework should follow the recommendation which received qualified support at the Roundtable, that “there

⁴⁴ There are situations where the applicant for a licence does not require a lease because they own the land on which their project is to be conducted. In that situation, the industry concern which the option to lease is intended to address does not arise because the proponent does not risk losing their site to a competitor.

should be a regulatory requirement to notify the public early to incorporate local knowledge and public input into licence applications”.⁴⁵

At the same time, we think this will only be feasible if proponents can inform the public of their intentions and engage with communities with reasonable confidence that competitors cannot use the information that proponents share with communities to pre-empt the proponent in applying for a lease. In other words, the regulatory framework should address the main concern of those members of the Roundtable who qualified their support for the recommendation quoted in the previous paragraph, which was how the interests of a prospective operator could be protected if knowledge of their interest in and plans for a particular site become generally known prior to their application for a licence and lease.

To strike this balance, Nova Scotia’s regulatory framework should adopt the “option to lease” concept that is part of the regulatory framework for aquaculture in Scotland. Under this concept, the regulatory process begins with an application for an option to lease. Once an option to lease is issued, only the holder of the option can apply for a lease of the site while the option is in effect. This allows the holder of the option to engage with stakeholders in developing their project with security that competitors cannot use their work to apply for a lease ahead of them. The basic idea is that an option to lease would give a particular operator priority access to a particular site over all other operators, without offering any guarantees that a lease or licence will ever be issued to them for the site.

The option to lease would give proponents a limited period of time during which they would have the exclusive right to submit a project for regulatory consideration. Based on what we have heard, this should remove a key barrier to engagement with communities in the early stages of project development and planning.

Given its limited effect and purpose, the option to lease should be easily obtained with minimal process. Essentially it should be granted when it is applied for unless the DFA has some very specific reason to deny the application, such as the ineligibility of the applicant to apply for a licence and lease. To avoid the temptation businesses may have to “sit” on an option to lease, an option to lease should only be issued for sites if the proponent is ready to commence the licensing process, and should expire after a set period of time.

b. Clearer/stronger Notification and Information Provision Requirements

As soon as the option to lease is issued, the public and interested stakeholders would be immediately notified by the DFA. The public notice of the option to lease in essence constitutes the initial public notice of the start of the licensing process. From this point

⁴⁵ See Roundtable Final Report at page 14.

on, the licensing process should be designed to engage interested members of the public and of affected communities proactively, and to be as transparent as possible. The commitment to openness and transparency should continue beyond the initial lease and licensing process for as long as the site is considered an active aquaculture site. The DFA should create a webpage for each aquaculture site under option or lease on the DFA website that provides all relevant information to interested members of the public about the status of the site and, for every approved site, the terms and conditions under which it is permitted to operate, monitoring results, and any other relevant information. This same webpage could serve to facilitate full and timely transparency throughout the operation of the facility.

In these ways, the new regulatory framework will be responsive to several recommendations that received qualified support at the Roundtable: first, that there should be a regulatory requirement to notify the public early and to incorporate local knowledge and public input into the licence applications and second, that all licence application information pertaining to environmental impacts and impacts on other resource use and users should be made publicly available.

c. Mandatory Pre-Application Scoping Process

To apply for a licence, the holder of an option to lease would be required to initiate and conduct a pre-application scoping process in the community or communities in close proximity to the proposed aquaculture project. The DFA would be responsible for ensuring appropriate notification of the process but the process would normally be conducted by the proponent. The purpose of the scoping process would be two-fold. First, it would be to address the desire for community members to know about and to have an opportunity to have input into the development of the project before it gets into the formal regulatory process. The process would give local residents a chance to learn about the proposed project, to express their early support or opposition for the project to the proponent and to provide local knowledge to the proponent that may discourage or improve the application for a licence and a lease. The second objective would be to ensure the proponent has access to local knowledge which may be relevant to its decision of whether to proceed to the application stage and, where it does decide to proceed, to the content of its application.⁴⁶

In broad terms, this new stage of the process, which is similar to what may happen informally and inconsistently under the current framework, is based on the Pre-Application Scoping Session that applicants must conduct before applying for a licence in Maine. Under that approach, the regulator must be satisfied that the applicant for a licence has fairly and seriously conducted the pre-application scoping process before it

⁴⁶ The Roundtable expressed qualified support for a recommendation that, “There should be a regulatory requirement to notify the public early and to incorporate local knowledge and public input into license applications”, among general agreement that early public input was vital.

agrees that the application for a licence is complete and ready for consideration. We think this should be the approach adopted in Nova Scotia.

To that end, we recommend that applicants for a licence be required to include a section on how the pre-application process was conducted and what was learned from the process in the background document (or scoping report) that we say below should be a required part of every application. This portion of the report would be expected to address matters such as:

- Overall levels of support and opposition to the proposed operation;
- Views on the proposed location, scale, species, operator, technology, etc.;
- Views on compatibility with existing activities in the area;
- Views on impacts, benefits, risks and uncertainties; and
- Views on what the operation should be required to do to minimize its impact on the natural environment and on other uses of the coastal area.

By requiring information learned in the pre-application scoping process to be included in the report that the applicant must submit with an application for a licence and lease, the regulatory framework would be responsive to a recommendation that received qualified support at the Roundtable, that there should be a regulatory requirement to incorporate local knowledge and public input into licence applications.

d. Filing of Background Document (Scoping Report)

As in Maine, applicants for a licence and lease in Nova Scotia should be required to submit a background document (or scoping report), which would become the primary factual foundation for the application. The background document or scoping review would be a document available to the public. As such, one of its functions will be to enable meaningful public participation in the formal stages of the licensing process. One of the other functions of this report will be to enable the assessment of the application to encompass and address the matters and issues that would typically be covered in a process of environmental assessment. In the case of fin-fish aquaculture, another function of the report (in combination with public feedback on the report) will be to give the DFA the information it will need to either classify a proposed site in the green, yellow or red classification or to decide how an application should be assessed and decided given its prior classification in the green, yellow or red classification system.

The information that a background document or scoping report will include will vary with the kind of aquaculture being proposed and with the location of the proposed operation. It should however include the information on the pre-application scoping process outlined above. It should also include information on the following matters:

1. A detailed description of the proposed lease site and of the proposed operation (including scale/size, location, species, and stocking density);
2. Biophysical conditions at the proposed site of relevance to the suitability of the site for the proposed operation, including bottom characteristics, tide levels and current speed and direction, and resident flora and fauna;
3. An overview of all current and recent activities in area that have the potential to be affected by the proposed operation or that have the potential to interact cumulatively with coastal ecosystems that have the potential to be impacted by the proposed operation (including fishing, angling, tourism, recreational, land based industrial and agricultural operations);
4. The presence of any endangered species in the area potentially affected by the proposed facility;
5. Specific measures the proponent intends to take in terms of operational practice and technologies to reduce the environmental impact of the operation and to ensure the suitability of the proposed operation for the proposed site; and
6. Any other matter on which the DFA specifically asks for information⁴⁷

The background document (or scoping report) requirement and the requirement that it be a public document will help to ensure that the regulatory framework responds in an organized and consistent fashion to the recommendation of the Roundtable, which received qualified support, that “All licence application information pertaining to environmental impact and impacts on other marine resource use and users should be made publicly available”.

e. Application Screening Process

Once an application for a licence and lease is submitted with the DFA, the department would carry out an initial screening. This would be to consider whether the application is complete and ready for a hearing. But it would also be to determine if the application has a reasonable prospect of success if it were moved on to the next stage of the process. The screening would take into account public comments made to the DFA on the application through a notice and comment process described below.

The decision options available to the DFA at this stage of the process would be send the application back to the applicant if the DFA determines that the application is incomplete; to reject the application if the DFA determines it has no reasonable prospect of success; or to send the application on for a hearing. Where the decision was to send the application back or to reject the application on the basis it had no prospects

⁴⁷ In developing this list of items to be addressed in the background document or scoping report, we have noted that in Maine, the application must address: a description of the proposed lease site; a list of species to be cultured and the source of the organisms; an environmental evaluation of the site including bottom characteristics; resident flora and fauna, tide levels and current speed and direction; a description of the recreational and commercial fishing activity in the vicinity; evidence of technical and financial capability; and any other information the Commissioner may require.

for success, the DFA would be required to explain the basis for its decision. A decision to reject an application at this stage on the basis it had no prospects for success would be subject to appeal due to its final nature. Other decisions made at this stage would not be subject to appeal.

To address files where incompleteness or absence of prospects for success are clear, the DFA would have the authority to send back or to reject on a summary basis without seeking public input or input from other regulators. Otherwise, there would be 30-day public comment period within this stage of the process. In other words, the public would have a 30 day period to give its comments to the DFA on the report/application submitted by the applicant. For that purpose, the screening period would be initiated by posting of the report/application on the DFA's website. Where an application passes the screening stage, the public comments received become part of the file for the purpose of the hearing.

The consultations of the DFA with other regulatory agencies would also happen at this stage of the process, again, unless the DFA sends the application back or rejects the application solely on its own assessment. The consultations could become part of the basis of a decision to send back or to reject. Where they do not have that effect, they would become part of the file for the purpose of the hearing.

For fin-fish applications that are in locations that have already been categorized as Green, Yellow or Red, that prior characterization would be taken into account at this stage for the purpose of deciding whether the application will proceed to a hearing. For fin-fish applications in locations that have not been categorized, part of the analysis to be done at the screening stage is whether the application includes the information that is needed to categorize the location as green, yellow or red.

For applications that pass the screening process and on which there is a discretion to be exercised as to the kind of hearing that will be held, this discretion would be exercised in the application screening process. So, for example, if there was a discretion to choose between what we subsequently call an administrative style of hearing and an adjudicative style of hearing, that discretion would be exercised at this stage.

The screening process will also give the DFA the opportunity to identify the issues that it believes are those that must be addressed by the applicant in the hearing. This will help to ensure the hearing is organized, productive and efficient.

f. Mandatory but Variable Hearing

Under the current regulatory framework, the Minister of Fisheries and Aquaculture is authorized but is not required to conduct a hearing before licensing a project and issuing a lease. The Act is very open-ended as to the kind of hearing that the Minister can conduct when he or she decides to conduct a hearing.

Under the new regulatory framework, a hearing would be part of the process for every application for a licence. What would vary would be the kind of hearing that would be conducted in each case. We envisage two basic kinds of hearings with some room for variation as to how each is conducted in specific cases. One would be an “administrative” style of hearing and the other would be an “adjudicative style” of hearing. Administrative hearings would be conducted largely through a process in which participants are given the opportunity to comment, ask questions and make submissions in writing. Adjudicative hearings would be conducted through a process that includes a formal hearing conducted in person before the person who is designated to make the decision or to conduct the in-person portion of the hearing on behalf of the decision-maker.

For shell-fish applications, the legislation would leave the choice of which of the two kinds of hearing will be used to the DFA but lay out the kind of factors the DFA would be required to take into account in deciding on the form of hearing to be held in particular cases. We would anticipate that most hearings for shell-fish applications would be administrative hearings. The DFA would however have the discretion to order an adjudicative hearing in particular cases. Its exercise of this discretion would be subject to appeal.

In contrast, for fin-fish applications, the legislation would specify that the hearing to be held must be, with one possible exception, an adjudicative hearing. The possible exception would be for applications in green areas where the classification of the area as a green area has been determined through a strategic assessment or a previous licensing decision. In those cases, the DFA would have the discretion to conduct the hearing for a fin-fish licence in a green area as an administrative hearing. The exercise of that discretion would be subject to appeal.

Both kinds of hearings would be required to meet essential procedural protections to ensure fairness. For example, participants in both kinds of hearings would have access to the information needed to make their participation in the process meaningful. In other words, the access of participants to the application file would be the same in administrative and adjudicative hearings. In both kinds of hearings, the exception would be information that would be withheld because the applicant established it was business confidential information. As explained in our earlier discussion of transparency, the onus of establishing the business confidentiality of information should be on the applicant under a statutory definition of confidential information that is narrow and restrictive.

In both kinds of hearings, participants would have the opportunity to present whatever information or make whatever submissions they wanted, subject only to showing its relevance and to reasonable limits required to ensure the hearing is conducted efficiently and economically.

In both kinds of hearings, there would be a requirement that the decision be made on the basis of the information considered at the hearing and a requirement for the

reasons for the decision to be released publicly and to everyone who directly participated in the hearing.

In these respects, the regulatory framework would be responsive to the Roundtable recommendation that “A public hearing should be a mandatory requirement with formal procedures”. We recognize that this recommendation only received partial support. We have tried however to address at least one of the reasons that prevented some from supporting the recommendation, which was “past experience with public meetings that were poorly run without formal procedures”. We have not addressed the other reason that was given for those who were not able to support the recommendation, which was the view that a public hearing should not be necessary where a proponent had carried out effective consultation. Our view however is that such a proponent will usually be rewarded with an efficient and positive hearing experience.

Our recommendations on the openness of the hearing process responds to the Roundtable recommendation that, “All licence application information pertaining to environmental impact and impacts on other marine resource use and users should be made publicly available”. This recommendation received qualified support, with the qualification relating to protection of sensitive business information. In addition to the protection for confidential information that we have proposed we also note that the recommendation specifies public access to “information pertaining to environmental impact and impacts on other marine resource use and users”.

g. Written Reasons for Decision

The DFA would be subject to a statutory duty to give reasons for its decision following a hearing. The legislation would specify that the decision and the reasons for the decision must be posted on a web site and otherwise made available to participants in the hearing and the broader public. This would be consistent with the recommendation from the Roundtable, which received qualified support, that “Government should be required to respond to the issues raised during the public hearing process”.

This is another aspect of procedural rights that would be the same in administrative and adjudicative hearings. To ensure it is a meaningful tool of accountability and transparency, the legislation would specify that the reasons for the decision would have to explain how the licensing principles were taken into account and how the decision advanced the principles and the goals of the broader regulatory framework ⁴⁸

⁴⁸ In Maine, the Commissioner who is authorized to determine applications for leases can only grant a lease if satisfied: the lease will not unreasonably interfere with ingress and egress of riparian owners; the lease will not unreasonably interfere with navigation; the lease will not unreasonably interfere with fishing or other uses of the area; the lease will not unreasonably interfere with significant wildlife habitat and marine habitat or with the ability of the lease site and surrounding marine and upland areas to support existing ecologically significant flora and fauna; the applicant has demonstrated that there is an available source of organisms to be cultured at the site;

h. The role of Third Parties in Conducting the Process

The DFA would have the authority to require a proponent to use a third party to facilitate the pre-application scoping process.

The DFA would have the authority (as it does now) to commission a third party to conduct a review of any application before rendering its decision on the application. This could be done before the hearing. In that case, the report from the third party would be considered in the hearing. Alternatively, a report by a third party could be commissioned after a hearing. In that case, participants in the hearing would be given an opportunity to comment on the report before it could be taken into account in deciding the application. In both cases, the report from the independent third party would be posted on the webpage created for the site on the DFA website.

Utilized in this way, third party reports would serve somewhat the same function as focus studies perform under the *Environment Act*. They would generally be of a fact-finding nature but could also be mandated to include recommendations. They would be a device the DFA could use where it required additional information and/or information from a neutral source and/or from someone with a particular expertise. They could be used to assist with the re-building of trust where views have become polarized and relationships adversarial. Third parties could also be engaged to consult with potentially affected communities, including aboriginal communities, stakeholders, and interested members of the public, to inform them of what is proposed, and to solicit their views on the proposed facility.

Third parties could also play a role in the conduct of the hearing. The DFA could assign responsibility for the decision to an independent third party or to a Panel of independent third parties. Alternatively, an independent third party could be included in the conduct of the hearing with DFA members.

i. Appeal to the Minister

As under the current framework, proponents should have the statutory right to appeal the decision to refuse a licence to the Minister and opponents of projects should have the opportunity to appeal to the Minister on a decision to grant a licence.⁴⁹ Appeals would have to be made within 30 days of public notice of the decision being appealed

the lease does not unreasonably interfere with public use or enjoyment within 1,000 feet of beaches, parks or docks owned by government; the lease will not result in unreasonable impact from noise or light at the boundaries of the lease site; and the lease complies with visual impact criteria relating to colour, height, shape and mass. This is a more prescriptive approach which mirrors the list of things the Commissioner is required to consider. We will be considering this approach as we continue to work on the document.

⁴⁹ There was partial support for the Roundtable for a recommendation to that effect: "The public and the potential operator should have the right to appeal a decision to issue or renew a license or a refusal to issue a licence." (Roundtable Final Report, page 31)

and the Minister would be required to decide the appeal within 60 days of receiving the appeal. While this is all a continuation of what is currently provided under the existing framework, the difference would be that under the new framework the Minister would not be both the licensing official and the person being appealed to. This is because under the proposed framework, the licensing and leasing decision would be made by the official in the DFA delegated the authority to make those decisions.

j. Appeal to the Nova Scotia Supreme Court

Where an appellant to the Minister is unsatisfied with the Minister's determination of an appeal, they would have the right to appeal to the Nova Scotia Supreme Court within 90 days of public notice of a decision of the Minister. This is a change from the current situation where a party dissatisfied with a Ministerial decision has to apply for judicial review, i.e. for the permission of the court to challenge the Minister's decision. It would make the legislative framework for review of aquaculture projects consistent with the *Environment Act* in this respect except that we are recommending that people be given 90 days rather than the 30 days that is usually provided in legislation to decide whether or not they will appeal and to prepare their appeal.

k. Procedural Clarity and Certainty

One of the concerns about the current regulatory framework we heard from industry is that it is procedurally uncertain and sometimes unwilling or unable to reach or to stick with decisions once made. These concerns could increase under the proposed regulatory framework if it does not function in a predictable fashion given the significant additional work the framework will require from proponents at the early stages of the process.

We heard a similar set of concerns from community members, even though it was often expressed from the perspective of those who perhaps expected different decisions from the process than would typically be expected by those in the industry. The unpredictability of the current process is a concern for everyone, even if they are concerned about it for somewhat different reasons.

We think the new regulatory framework should respond to these concerns. It should contain elements of process certainty for those who will have invested time and resources into the development of an aquaculture project under a licensing and leasing process that will impose higher demands and costs on applicants than the current framework does. At the same time, care needs to be taken to ensure that the regulatory framework addresses process certainty in ways that reflect and respect the differences that will exist between individual applications. Therefore, the approach should be to achieve certainty within the context of the relative scale, complexity and disagreement associated with each application.

To address these objectives, we recommend that the legislation subject the DFA to the following three procedural obligations:

- To specify and abide by a maximum length of time for reaching a decision on an application once it concludes that an application passes the screening stage of the process;
- To specify a maximum length of time for the completion of the hearing stage of the process at the commencement of that stage of the process and to complete the hearing stage of the process within that period of time; and
- To specify a maximum length of time within which a decision will be reached at the end of the hearing stage of the process and to make and release a decision within that period of time.

We also recommend that the legislation provide applicants with the option of applying to the Nova Scotia Supreme Court for an order requiring a decision to be made on an expedited basis where it has not been made within the time specified at the conclusion of the hearing for the making of the decision or where the time specified for the making of a decision at the end of the hearing is beyond the time specified at the screening stage of the process for the completion of the overall process.

16.5 Variation in the Licensing Process

16.5.1 Between Fin-fish and Shell-fish Aquaculture and Between Shell-fish Applications

The licensing process will have the same elements (or steps) when applied to fin-fish aquaculture as it will have when it is applied to shell-fish aquaculture. The main procedural difference will be that the hearing will be an adjudicative hearing for fin-fish applications unless the application relates to a green area which has been determined to be a green area through a strategic assessment or a previous licensing process in which an adjudicative hearing was held. In that scenario, an administrative hearing may be held for a fin-fish application. In contrast, the hearing will typically be an administrative hearing for most shell-fish applications.

This will not however be the only difference between how the licensing process applies to fin-fish and shell-fish applications. The common elements of the licensing process will typically require more of the applicant and of the DFA where the application is a fin-fish application than it typically will of the applicant and the DFA where the application is for a shell-fish operation. For example, although both the proponent of a fin-fish operation and a shell-fish operation would be required to submit a background document with their application, the one submitted for a fin-fish operation will typically be expected to identify more potential environmental impacts that have to be addressed than would the report submitted with a shell-fish application. This will mean that the applicant for a fin-fish licence will typically have to address more issues and more difficult issues in the screening and hearing stages of the process than most applicants for a shell-fish licence and lease.

It follows that the applicant for a fin-fish licence will typically have more work to do to show that the licence would be consistent with the statutory licensing principles, even though the licensing principles would be the same for them as for an applicant for a shell-fish licence. Similarly, although the onus the legislation would place on the DFA to justify a decision to licence would be legally the same in the consideration of fin-fish and shell-fish applications, it would in practical terms usually be more demanding where the application is for a fin-fish operation.

Such differences in what is practically demanded of applicants and of the DFA when the universal elements of the licensing process are applied to fin-fish and shell-fish applications will generally increase where the fin-fish application is for a licence in a coastal area that is yellow or red. In other words, there will typically be a greater difference between what is expected of applicants and the DFA in fin-fish and shell-fish applications where the fin-fish application is for an operation in a yellow or red area than there will be where the fin-fish application is in a green area.

Nothing here should be interpreted as indicating that all shell-fish applications will be easily approved or that some shell-fish applications will not present difficult issues or face significant opposition. We heard directly from members of communities who are very concerned about shell-fish aquaculture and more particularly about its expansion and scale, particularly in relation to its potential to adversely affect other users of public waters and shore lines.

Here, our only point is that the licensing process we have proposed will generally operate differently when applied to fin-fish and shell-fish aquaculture in ways that reflect the differences that generally exist between those two branches of aquaculture, particularly as regards their respective potential to adversely affect the environment. Meanwhile, we believe the licensing process we have proposed is one that can accommodate the real differences that can exist between the potential impact of different shell-fish operations considering issues such as their different scales, the technology they use, and the degree and nature of their potential impact on other users of public waters.

16.5.2 Between Fin-fish Applications in Green, Yellow and Red areas

As already indicated, the licensing process will be different for fin-fish applications depending on whether they are in green, yellow or red areas. This section discusses those differences in more detail. First, we point out again that the starting place for the licensing process will be different depending on whether or not an application relates to an area or a site within an area that has been previously classified. Where it is, that classification will be the starting place for the licensing process. Where the application relates to a site that has not been previously classified, the starting point for the licensing process is for the DFA to apply the criteria for identifying green, yellow and red areas to classify the specific site that is the subject of the application.

The general rule should be that applications for the licensing of fin-fish aquaculture should be determined through an adjudicative hearing. As we have already indicated, an administrative hearing may instead be used where the application relates to a site that was previously classified as a green area or in a green area either in a strategic assessment or a previous licence application process. The rationale for this is that the level of public participation that would have been

provided though the earlier process justifies the use of an administrative hearing in the subsequent process. The DFA would however have the discretion to conduct an adjudicative hearing and the duty to consider whether case-specific factors warrant an adjudicative hearing despite the earlier participation opportunities.

Regardless of whether an administrative or adjudicative hearing is used to consider an application in a green area, the starting assumption for the licensing process in green areas is that the proposed site is well suited for fin-fish aquaculture and that there are no significant competing use issues that cannot be resolved. One procedural consequence may be that the DFA sets a time-line for the completion of the hearing process and a rendering of a decision that is relatively expeditious. However, the process would be expected to address information brought forward or raised in the licensing process that called into question the assumption of the site's suitability for the proposed fin-fish operation. Such issues could be identified by the DFA or by members of the public. In either case, the licensing process would have to address them just as it would if they arose in applications for sites in yellow or red areas.

For applications in areas previously classified as yellow or red areas, or for sites that are classified as yellow or red in the licensing process itself, an adjudicative hearing would be mandatory. The question will be what kind of adjudicative hearing is called for and what additional procedural steps should be taken to ensure applications for sites in yellow or red areas are analyzed with sufficient rigour and opportunities for community and public input.

The starting assumption for yellow areas would be that there are significant questions about the biophysical suitability of the proposed operation and/or with its potential impact on other resources or uses. The expectation is that no licence will be granted unless these significant questions are satisfactorily answered. At the same time, the assessment of applications in yellow areas would be expected to take seriously the possibility that the concerns present in yellow areas are capable of being addressed by operations that are carefully designed, implemented and managed to address the concerns.

The starting assumption for applications for red areas is that fin-fish aquaculture will only be licensed in exceptional circumstances. This assumption reflects the rationale for a red area classification, which is that it is biophysically inappropriate for fin-fish aquaculture and/or that there is clear proof that fin-fish aquaculture will harm other important activities. While the licensing process would need to be open that an applicant has developed a proposal for a fin-fish operation in a red area that satisfactorily addresses these serious concerns, it would require very convincing proof before issuing a licence for a fin-fish operation in a red area.

In short, the licensing process must give a level of scrutiny to applications for fin-fish licences in yellow and red areas that is proportionate to the questions, issues and concerns raised by such application. This is the primary reason why we have said an adjudicative hearing would be required for all such applications. In addition, the framework we have proposed will give the DFA additional tools to ensure such applications are scrutinized with appropriate rigour. For example:

- It could use the screening stage of the process to ensure that applications for yellow or red areas do not proceed to the hearing stage unless there is some prospect for their success at that stage of the process;
- It could engage in more extensive and more detailed consultations with other regulatory agencies than would typically be the case for application in green areas or for shell-fish applications;
- It could appoint an independent third party or parties to conduct consultations on the proposed aquaculture operation, provide independent analysis on the proposal's technical aspects, provide other kinds of specialized technical advice, or to conduct some or all of the hearing;
- It could determine that assessment of the applications requires focused and more detailed scientific work on the biophysical conditions of the proposed site or on the site's broader ecosystem or further socio-economic research on the potential impact on other resources uses or users;
- It could specify a longer time-line for the completion of the licensing process and for the completion of the hearing stage of the process than it typically would for fin-fish applications in green areas or for shell-fish applications;
- It could provide greater latitude for participants in the hearing process to challenge the applicant than it might in a case involving an application for a licence in a green area by, for example, allowing wider cross-examination than would normally be allowed; and
- Where it determines after a hearing that a licence may be appropriate, it could issue its decision in draft form to provide the public with an opportunity to comment (for example, of 30 days duration) on the draft decision, after which the DFA would make its final decision.

In addition, the duty to give reasons for its decisions will of course be applicable to the DFA in yellow and red area applications just as it will be for green area and shell-fish applications. In practical terms however, it will impose a heavier burden of justification on DFA where it decides to grant a licence given that it will be harder to show the licensing principles are addressed where a licence is given for a yellow or red area than it will be for a licence given in a green area. This is simply a function of the fact that there will be more room to question the appropriateness of licensing in yellow and red areas. This means that there will typically be more room to question the justification provided by the DFA through the appeal and judicial review processes and outside of those processes than there would be in green area or shell-fish licensing decisions.

It should also be kept in mind that in addition to adjusting the process for consideration of applications in yellow or red areas, the DFA will have the authority where it decides to licence an operation in a yellow or red area to do so on terms and conditions that go beyond the terms and conditions that would be applied to licences in green areas or to shell-fish licences. Given the higher risk of harm to the environment or to other uses that will be present when fin-fish aquaculture is licensed in yellow or red areas, it would be expected that these additional terms and conditions would impose a more stringent level of regulatory control than would be the case with operations in green areas.

17 Changes in the Leasing of Aquaculture Sites

Through our process, people referred to licensing and leasing as closely associated or even as interchangeable concepts. This makes a certain amount of sense given that a lease is currently required to include the terms and conditions contained in a licence. Presumably, this is to ensure that the DFA has the power to revoke a lease when a licence is revoked and vice-versa.

We heard a number of valid concerns that to our mind are distinct to leases and how and when they are issued, monitored and enforced. The following summarizes the concerns and the corresponding recommendations.

First, concerns were raised about the number of lease that are issued and are left in the hands of individuals and businesses that are not involved in active aquaculture. One aspect of the concern is that this prevents development of the site by others. Another is that it creates an apprehension in communities that they are surrounded by potential aquaculture development. There is a related concern that applications for a licence are pre-determined when made by an applicant who already has a lease to the proposed aquaculture site.

To address these concerns, we recommend that a lease be issued after and only when a licence to conduct aquaculture has been granted. We also recommend that leases return to the Crown when a licence is revoked, lapses or is relinquished.⁵⁰ This approach will emphasize that the licence is the fundamental authority to conduct aquaculture and the role of the lease is the distinct one of giving the licence holder possession of the site at which they intend to conduct the aquaculture authorized by the licence.

Second, we heard concerns about the difficulty people have in obtaining information about the location and boundaries of leases. To use but one example of the kinds of difficulties created by the current inaccessibility of this information, purchasers of a residential property may only learn that the property is immediately adjacent to an aquaculture lease after they have completed the purchase of the property when the site is either activated or reactivated. Another kind of example we were frequently given related to the problems boaters have experienced in obtaining information about the extent of lease in relation to navigational routes.

The DFA must take steps to make information on the location and breadth of leases much more readily available to landowners and users of the coastal waters than is currently the case. Although lease holders should be required to do more in this regard, the DFA should take a much more proactive role in making information on leases of public space readily available to the public, such as through a map readily available on the internet.

⁵⁰ The Roundtable gave qualified support to a related recommendation that seeks to balance the interests of all involved: "The current system of lease tenure should be reviewed to ensure that decisions to allow the maintenance of a lease on an inactive site balances the interests of the leaseholder, other aquaculture businesses that may wish to develop the site, the adjacent communities, and other marine resource uses and users." The support for this provision was nearly unanimous.

Third, greater clarity must be on the rights of lease holders in relation to rights of others in leased waters. Although a lease of crown waters for aquaculture gives a significant degree of control over those waters to the holder of the lease, it does not give the lease holder ownership of the waters. In other words, waters that are leased for aquaculture continue to be public waters.

In various community meetings and in meetings with a number of stakeholders, we were told that one of the problems with the current regulatory framework is that leases give or are interpreted by lease holders to give lease holders too much control over leased waters. Most frequently, the issue was the restriction of boating in the lease area or in proximity to the lease area.

From an industry perspective we heard that restricting access to the leased area was needed to protect equipment and stock and to comply with essential biosecurity protections.

Based on what we have heard, our conclusions on the rights of the holders of aquaculture leases and the limitations that those rights place on public access to leased waters by others, are as follows:

- There is not as much clarity as there should be as to exactly what rights are conferred by a lease and on the nature and extent to which those rights limit the rights of others in respect of what are still public waters even when leased. The extent and exclusivity of the rights of possession and use given under a lease relative to uses other than aquaculture is the key question. This should be one of the issues addressed in the terms of a lease, along with the requirement to hold and comply with a valid licence.
- There is not as much clarity as there should be on the rationale for the restrictions which aquaculture leases place on the rights of others, which in turn perpetuates the perception that the restrictions are arbitrary and unjustified.
- More care should be taken to ensure that the rights given to leaseholders to control public waters for the purpose of conducting aquaculture are only as restrictive of the continuing access of others to public waters as is necessary to address the legitimate needs of the industry.
- The law should require that all leases be configured in such a way as to provide reasonable accommodation for boaters. The approach used in Prince Edward Island, where a mandatory navigational channel is incorporated into every lease, may be an approach to emulate in Nova Scotia.
- Assertion by leaseholders of rights of control over public waters that go beyond their actual rights should be treated by the DFA as a regulatory issue.

Fourth, we also heard questions about lease boundaries and their enforcement. For example, in several communities, we were told that anchor lines for aquaculture pens extend beyond the boundary of the operator's lease but that neither provincial nor federal regulators have done anything about it. Those who raised this with us objected to what they saw as obvious non-compliance with the law. Their additional concern was that aquaculture companies were being

allowed to limit the use of public waters by others beyond what was authorized by their lease. We think it obvious that lease boundaries should be enforced whether or not the violation of the boundaries interferes with the activities of others. Moreover, we think it important to emphasize that the DFA is responsible for enforcing the boundaries of the leases it issues whether or not an alleged violation of those boundaries also violates laws enforced by the Coast Guard or other federal regulators.

We were also asked to consider a number of concerns about the transfer of licences. We deal with most of these later in the section headed “Transfers, Expansions, Other Changes”. Here, we deal only with the concern expressed by some that the transfer of a lease (or a licence) should be something that has to be approved under the regulatory framework. We agree with that viewpoint.

18 Security of Tenure for Operators and Sites in Good Regulatory Standing

We were told by industry representatives that one of the major problems created for the industry by the current regulatory framework is the limited tenure it provides to licensed operators. In Nova Scotia, a first licence is 10 years. Each subsequent licence is for 5 years. In contrast, in New Brunswick, licences are for 3 years, however, leases are issued for periods of 10 and 20 years respectively for shell-fish and fin-fish. In addition, approvals to operate under the *Clean Environment Act* are issued for 5 years. There are a great variety of approaches to the duration of licences, leases and approvals in other jurisdictions.

The problem short licensing periods create for industry is one of financing. We were told that financing is more difficult and expensive than it otherwise would be due to the concern of lenders that a licence may not be renewed before the operator has the opportunity to repay the amount that typically has to be borrowed to finance aquaculture operations. We were told that the barrier this creates for growth in the industry is accentuated by the fact that the government does less in Nova Scotia to make working capital available to the industry than does the governments of each of the other Atlantic Provinces.

We assume that the current framework starts with a 10 year licence as an accommodation to the financing needs of industry. It is however difficult to understand why it subsequently limits renewals to five years since the need for financing will remain and given that the decision to renew can be made with the benefit of better information on both the operator and the site than would be available for the initial licensing decision.

We think the licensing framework should give longer security of tenure to aquaculture businesses. It should do so however by creating stronger connections between the duration and renewal of licences and the ability of licence holders to demonstrate their suitability as operators and the suitability of their operations for their location. The concept is one of “progressive licensing” under which operators who successfully develop sites in accordance with the regulations, and operators who achieve highest standard third party certification earn renewal under longer-term licences and associated leases. In contrast, operators who by their performance show they are not willing or able to operate in compliance with the regulations and are not showing leadership in low impact aquaculture either lose their licence or are limited to renewal on more limited terms, depending on the nature and the extent of their failures to meet and maintain regulatory requirements.

Specifically, we recommend that the tenure of approved aquaculture operations be structured as follows:

- i. The initial lease would be granted for 20 years.
- ii. The initial licence would be comprehensively reviewed in light of the success of the operator in establishing and conducting a site reviewed after the first growing cycle to ensure aquaculture in accordance with the licence as originally granted generally meets regularly requirements, including environmental performance requirements.

While termination of the licence (and lease) could occur at this time (as it could at any other time where warranted by sufficiently serious non-compliance), the more typical outcomes would be either for the continuation of the licence on its original terms and conditions or an amendment of those terms and conditions to better align the scale and nature of the licensed activities with the biophysical and other conditions of the site.

- iii. Renewal of licences would be decided by an open, transparent and participatory process which would give members of the public ample opportunity to be informed about and to contribute to the process.
- iv. The appropriate length of licence renewals should be determined based on the environmental performance of the site during the previous growing cycle, and the compliance record of the operator. The licence given on renewal would be for a term that is comparable to the maximum terms for which aquaculture sites are licensed in other provinces of Atlantic Canada for well performing sites with compliant operators. Sites with less than ideal track records that are still considered to be capable of operating responsibly and within acceptable parameters would be granted shorter renewals.
- v. Any licence, of course, is subject always to the authority of the Minister to cancel for regulatory infractions or a pattern of regulatory non-compliance that would make revocation an appropriate, fair and just sanction.

19 Transfers, Expansions, Other Changes

We have discussed the importance of social licence in various parts of this report. Part of recognizing the importance of social licence is that the relationship between the operator and those who have a stake in how a facility is run is critical to social licence. This means that there is a significant risk that social licence, as well as the potential for mutually supportive relationships between aquaculture operators and other users of coastal areas will be disrupted in case of transfer, expansion or other changes to the terms and conditions of a lease and licence. As a result, it is important that the process for transfers in ownership or operator, and change in terms and conditions be clear, and that it be open and transparent.⁵¹

In our view this means that any request for transfer or for a change in terms and conditions should be made public as soon as it is received and considered. Careful consideration will have to be given to whether the proposed changes have the potential to increase the impact on natural systems or on other coastal users. A key factor in deciding whether to approve a transfer in ownership or operator is whether the new operator or owner would interact constructively with other coastal users and affected communities.

⁵¹ The Roundtable expressed partial support for a recommendation that, “If a site lease is transferred between operators or there is a change in species grown and there may be a substantial change in environmental impact, a review of the license or permit should be carried out including public input. There should also be a public comment period at the time of licence renewal.” (Page 15 of the Final Roundtable Report)

20 Protection for Wild Salmon Populations

As we have explained earlier, it is clear to us that the regulatory framework for aquaculture must pay particular attention to the potential interactions of salmon marine-based salmon aquaculture with wild salmon. It is clear that concern for wild salmon populations is an important part of the global work taking place in multiple forums to reduce the environmental impact and improve the sustainability of fin-fish aquaculture, including by improving the regulation of aquaculture. If Nova Scotia wants to be part of this path for the industry's future, it needs to be doing its part to ensure aquaculture is conducted in Nova Scotia with due regard for the health and well-being of Nova Scotia's wild salmon populations.

The protection of wild salmon populations is one of the objectives of the current regulatory framework. We believe however that the framework needs to be stronger in relation to this objective. This is one of the reasons why we have recommended the explicit inclusion of precaution into the regulatory framework. More broadly, the legitimate concerns about how the growth and conduct of the industry might impact wild salmon are among the concerns that have led us to make the recommendations we have made elsewhere in this document on a number of core elements of the regulatory framework including on site selection and utilization, fallowing and stocking densities, and fish health and well-being. Although all of our recommendations on these and on other topics are designed to ensure the regulatory framework contributes to the industry's general progress towards a low impact/high value future, they are intended more specifically to ensure that aquaculture is conducted with due regard for the health and well-being of Nova Scotia's wild salmon populations.

The regulatory framework should, however, also include a number of elements that are more specifically directed to the protection of wild salmon. To that end, we have already recommended that protection of wild salmon populations be listed in the legislative framework as one of the criteria to be considered in leasing and licensing decisions. Here we make two further recommendations for specific protection of wild salmon.

The first of these is that the regulatory framework should be clear and explicit about the need for appropriate physical separation between marine-based aquaculture and salmon rivers and known salmon migration routes. This could be a fixed separation distance. Such an approach is attractive because it is simple and does not depend on the exercise of regulatory discretion. The problem with such approaches however is that they invariably provide too much restriction in some applications and too little in other applications. They tend not to reflect the variable circumstances that can call for more restriction in some cases and less restriction in others than would be provided by an across-the-board rule. The other difficulty is that such approaches often do not evolve as circumstances (such as changing technology) change. We think a better approach would be one that allows the extent of the physical separation that is implemented into the licensing of any particular site to be determined on a case by case basis but under a legislative framework that makes it clear that appropriate distances between marine-based aquaculture and wild salmon must be established and maintained through the leasing and licensing process.

Of course, the DFA would continue to be bound by any decisions taken by the DFO in relation to minimum protection for wild salmon. Where the DFO does not make a decision but instead provides advice to the DFA, it would continue to be the case that DFA would rely heavily on that advice. But as we have discussed earlier, it should be a clear element of the regulatory framework that the DFA will go beyond what is recommended by the DFO where the DFA determines that an additional level of protection for wild salmon is called for.

Our second recommendation for specific attention to the protection of wild salmon is that the regulatory framework should deal more extensively with the prevention of escapes. The current framework requires licencees to report every escape, which is a more demanding reporting requirement than other jurisdictions, which only require escapes to be reported when they involve a certain number of fish. Concerns were expressed, however, about whether this requirement is being complied with or enforced. There is also scepticism about whether it could be enforced. The more serious concern in our view is that the regulatory framework should do more to ensure escapes are being prevented. It should require operators to adopt, implement and track and report on the performance of a comprehensive containment system that aims to prevent escapes to the greatest extent that is practicable using best management practices and best available technology.

Many encouraged us to recommend an approach in Nova Scotia similar to the one in place in Maine.⁵² The following is a description of what is called a containment management system in that state:

A CMS is a process control system built on seven principles which, when implemented together, form a logical and realistic system for minimizing the escape of farmed salmon. CMS systems are based on a Hazard Analysis Critical Control Point (HACCP) system and the aquaculture industry's October 1998 Code of Practice. HACCP systems were originally developed by NASA to ensure quality control and safety in the space program. The HACCP approach has been adopted by the Food and Drug Administration Food Safety Program and has been used widely in the seafood processing industry. It is therefore familiar to the industry and the federal regulators. HACCP systems consist of a company specific, business confidential HACCP plan, a paper trail that documents operational performance, and an auditing system. A standard Containment Management System will be developed for the Maine salmon farming industry based on the following seven principles: 1. Assessment of the hazards and risks. 2. Determination of critical control points. 3. Establishment of critical limits and tolerances. 4. Establishment of limit monitoring procedures and schedules. 5. Establishment of predetermined corrective actions. 6. Establishment of record keeping systems and procedures. 7. Establishment of a verification system."

⁵² The Roundtable expressed partial support for the recommendation that, "The regulatory framework should include a salmonid Containment Management Code similar to the Maine Model which includes marking fish for site-specific identification. The Code should address the use of high quality twine resistant to UV to prevent escapes." The primary factor preventing greater support for this recommendation was a lack of information on the model that was not addressed given the Roundtable's time constraints. (Roundtable Final Report, page 24)

The following provisions from the general discharge permit under which individual aquaculture operations are approved in Maine spells out the obligations of approved sites with respect to the adoption of a containment management system as follows:

6. Containment management system. The permittee must employ a fully functional marine Containment Management System (CMS) designed, constructed, operated, and audited so as to prevent the accidental or consequential escape of fish to open water.

1. a) Each CMS plan must include a site plan or schematic; site plan description; procedures for inventory control, predator control, escape response, unusual event management, and severe weather; provisions for employee training, auditing methods, and record keeping requirements. The CMS must identify critical control points where escapes could potentially occur, specific control mechanisms for each of these points, and monitoring procedures to verify the effectiveness of controls.
2. b) The permittee must prepare a written CMS plan prior to fish being first introduced into a facility and must maintain a current copy of the plan at the facility.
3. c) The CMS must be audited by a qualified third party at least once per calendar year for all facilities with fish stocked in net pens.
4. d) No later than December 31 of each calendar year, the permittee must submit a written report of each annual audit required by section 6.c of this condition to the Department.
5. e) The CMS must also be audited by a qualified third party within thirty (30) days of a reportable escape required by section 7 of this condition or notification that a commercially-reared Atlantic salmon is found in a river within the range of the Gulf of Maine distinct population segment of Atlantic salmon, as defined by the Services. The Department, in consultation with the Army Corps of Engineers and the Services, may exempt a facility from any additional third party audits when the facility from which the fish escaped can be identified or when circumstances preclude the possibility that the facility was the source of the escaped fish. The permittee must submit a written audit report to the Department, with a copy to the Services, within thirty (30) days of the facility becoming aware that an audit is necessary.
6. f) Any time that a CMS audit identifies deficiencies, the written report must contain a corrective action plan, including a timetable for implementation and provisions for re-auditing, unless waived by the Department, to verify completion of all corrective actions.
7. g) The permittee must maintain for a period of at least five (5) years complete records, logs, reports of internal and third party audits and documents related to the CMS for each facility. The submission of standing inventory at the facility, including all transfers in and out, losses associated with disease, predation or escapes as reported to the Department of Marine Resources at the pen level of detail on a monthly basis pursuant to the requirements of Leases and Special Licenses, 12 M.R.S.A. § 6077, must meet the requirements of the CMS.

An additional element of Maine's system is that all farmed salmon are required to have a genetic marker that allows recaptured fish to be traced back to the farm from which they escaped. We have been told and we have read that this is a very powerful regulatory tool for monitoring the effectiveness of each company's containment system. Indeed, we have been told that this requirement accounts for the virtual elimination of escapes from Maine's farms.

We note the Roundtable recommendation that "The regulatory framework should include a salmonid Containment Management Code similar to the Maine Model which includes marking fish for site-specific identification. The Code should address the use of high quality twine resistant to UV to prevent escapes". This recommendation received only partial support. There was a concern on the part of some Roundtable members that they did not have enough information about Maine's system and also a concern that regulations should not prescribe the use of a certain kind of twine.

We understand that Maine's system to prevent escapes is an elaborate one that may be expensive to adopt in Nova Scotia. This may be especially true of the genetic tracking system. We recognize that not all of the Maine system may be required, suitable or feasible for adoption in Nova Scotia. We also recognize that a Nova Scotia version of Maine's approach would have to be implemented over time. Nevertheless, we think that the regulatory framework for fin-fish aquaculture in Nova Scotia should encompass a system to prevent escapes that is comparable to the one that has been successfully implemented in Maine, recognizing that it would not be expected to be identical to Maine's system in all respects. The key is to develop and implement a comprehensive and integrated system that is equally effective as the Maine system is in preventing escapes, not to duplicate the mechanisms Maine has used to achieve that outcome.

21 Monitoring Compliance and Enforcement Provisions

Concern about the will and capacity of the provincial government to require the industry to comply with regulations was one of the concerns we heard most frequently. It lays at the centre of the scepticism that many have about whether a new regulatory framework will make a difference.

In our view, a new regulatory framework will not obtain the public trust and confidence it needs to be successful unless it includes a strong commitment to effective monitoring of compliance and to effective and transparent enforcement. Without this commitment and sustained action that matches the commitment, regulation will not make the contribution to the social licence of the industry that regulation must make if the industry is to develop with stronger support in the communities in which it operates than it currently enjoys. In addition, although we were not tasked to conduct the kind of operational analysis of the current regulatory framework that would allow us to independently evaluate its effectiveness, what we have heard in our process leads us to conclude that monitoring and enforcement must be significantly elevated and enhanced if the regulatory framework we have proposed is to accomplish the range of objectives in this sector that regulation must accomplish.

We have already made many recommendations that are either intended to improve monitoring and enforcement or that will have a positive effect on monitoring and enforcement if they are effectively implemented. For example, we have recommended that:

- a significant increase in regulatory capacity, a good deal of which should go directly into monitoring and enforcement;
- the Department of Environment should become responsible for the administration of the Environmental Monitoring Program to ensure the independence and rigour of that aspect of monitoring of the industry's activities;⁵³
- the DFA's regulatory activities be separated within DFA from its activities in supporting and promoting the development of the industry;
- the legislative framework relies less on regulatory discretion and more on clear legislative statement both of regulatory requirements and of the process to be used in key parts of the regulatory process, including the leasing and licensing process;
- transparency to make regulators accountable for how they exercise their regulatory mandate and the industry more accountable to the public for its compliance with regulatory requirements; and
- the renewal of licences and leases should take account of the track record of operators in complying with regulations.

In this section, we make recommendations more directly related to how compliance with the proposed regulatory framework should be monitored and enforced.

⁵³ The Roundtable also gave qualified support to the related recommendation that, "All Environmental Monitoring Program data should be made available on a website in a timely manner." (Roundtable Final Report, page 29)

Currently, the DFA has six inspectors. Our information is that only one of these is fully trained for inspections on aquaculture. More fully trained inspectors need to be employed and put into the field.

Currently, there is a minimum of one scheduled inspection in each year for each site. Other inspections happen in response to complaints. The number of inspections needs to be increased. Scheduled inspections should be complimented by a significant number of unscheduled inspections. The capacity of the DFA to respond in a timely way to complaints needs to be increased.

Inspection should be automatic after changes to gear configurations or to the setup of a site. They should be automatic after significant storm events.

The DFA should have additional options for carrying out inspections. It needs additional vessels or more access to vessels other than the vessels of the industry. It should explore the role that aerial surveillance could play in the monitoring of the industry.

Marine-based fin-fish aquaculture should generally be subject to more inspections and to more unscheduled inspections and generally to a higher level of regulatory scrutiny.⁵⁴ This is because of their greater potential to cause environmental harm and harm to wild fish and marine animals if they are not conducted in accordance with regulatory requirements. Within each sector of aquaculture, the level of regulatory attention that each operation receives should reflect its track record of compliance. It should also reflect its relative potential to cause serious harm to regulatory objectives if it is not conducted in accordance with the regulations. For example, a fin-fish site operating in a relatively open bay with a high rate of flushing and a relatively deep bottom would receive more attention than a site operating in a setting where the maintenance of oxic conditions may be more difficult even when the circumstances of the site are properly taken into account in the terms and conditions on which the site was approved.⁵⁵

Essentially, what we are recommending is an approach to inspections that includes more inspections but targets the increased inspections to the kinds of aquaculture and to the operators that warrant an additional level of scrutiny. To do that, an approach such as the HACCP (Hazard Analysis and Critical Control Point) approach might be used to calibrate the relative amount and kind of monitoring and enforcement that would be directed to different parts of the industry and to

⁵⁴ The Roundtable gave partial support to the ideas that, “Monitoring should be conducted by an independent third party” and “Monitoring should be the responsibility of the operator or its consultant but audited on a regular basis by government.” (Roundtable Final Report, pages 28 and 29 respectively)

⁵⁵ With regards to the classification of oxic conditions, the Roundtable gave qualified support to the recommendation that, “The current Environmental Quality Objective of the Environmental Monitoring Program to maintain oxic conditions should be enforced. Enforcement measures could include a change in licence conditions, remediation or licence cancellation. The current NSDFA formula used to categorize the environmental status of a site should be changed to ensure that Oxic (Normal), Hypoxic (Polluted), and Anoxic (Grossly Polluted) conditions are fairly represented.” There was also a related suggestion (with partial support) to broaden environmental indicators used: “The regulatory framework should require a move away from a narrow focus on sulphides to include the use of a more extensive list of environmental indicators for monitoring. These may include metal contamination, bacterial layers, dissolved oxygen and biodiversity of sediment life. Far-field effects and biological recovery should also be addressed.” Both recommendations received some criticism for being too prescriptive. (Roundtable Final Report, page 28)

different operators based on their track record and particular circumstances. In our view, this would be consistent with the unanimous recommendation of the Roundtable, to “Establish a QMP/HAACCP [sic] compliance model that clearly establishes industry and government responsibilities for monitoring and compliance”.⁵⁶

Currently, where there is non-compliance, a warning may be issued to the operator. If the warning does not achieve compliance, a Ministerial Order requiring the non-compliance to be addressed may be issued. A broader range of enforcement options is called for. Inspectors should have their own authority to issue orders. It should be clear that non-compliance with orders can lead to prosecution or, as discussed below, to termination of lease and licence and refusal of applications for new leases and licences.

Moreover, it should be clear more generally that non-compliance with the regulations can result in prosecution. Decision-making authority relative to the pressing of charges should lay at the bureaucratic level of the DFA, who would, like other regulatory officials, be advised by the Public Prosecution Service. Where conviction occurs, the court should have the authority to impose significant penalties where the court determines that they are warranted on established sentencing principles for regulatory offences. The sentencing discretion of the court should also encompass what is generally referred to as creative sentencing which can among other things, include sentences that require a company to take responsibility for its actions in the media, to undergo training or adopt other measures to prevent reoccurrence, or to make presentations at industry gatherings on the steps it is taking to ensure future compliance.

In addition, it should be clearly understood that monitoring and inspection is conducted on the understanding that:

- a strong and positive compliance record should be a pre-condition for being able to acquire the right to operate additional sites, either by applying for new sites or by acquiring an existing site from another operator. Demonstrated unwillingness or inability to comply with applicable regulatory requirements should make an operator ineligible for a significant number of years; and
- the ultimate penalty for serious non-compliance or persistent refusal to address non-compliance is licence and lease revocation.

We think these recommendations are consistent with the unanimously supported recommendation of the Roundtable, that:

“Regulations and license requirements must be enforced. Penalties must be significant to act as a deterrent. Ongoing lack of compliance should be associated with lease termination.”⁵⁷

⁵⁶ See Final Roundtable Report at page 29.

⁵⁷ See Roundtable Final Report at page 30.

Another unanimous recommendation from the Roundtable on monitoring and enforcement was that “Community members should be encouraged to participate in monitoring as observers in field sampling in order to increase transparency and build trust”.⁵⁸ We endorse this recommendation.

Finally, we recommend that members of the public be provided with an opportunity set out in legislation to apply to the Minister to have a lease revoked due to clear evidence of biophysical unsuitability of the site, or to have a licence revoked due to a pattern of substantial non-compliance with terms and conditions of the licence.

⁵⁸ See Roundtable Final Report at page 29.

22 Emerging Issues

The regulatory system designed under the framework we have recommended needs to carefully consider emerging issues. The key emerging issues that have been brought to our attention are the following:

The use of genetically modified organisms (GMO) in Nova Scotia seems to us to be inconsistent with the precautionary approach, and would likely undermine efforts to position the Nova Scotia industry as a high value, low environmental and social impact and risk industry. While we did not hear much about this issue, our recommendation would be to not permit GMOs in any stage of the growing cycle in Nova Scotia.

Offshore aquaculture appears to be on the verge of becoming technically viable. In designing its regulatory system and in its discussions with federal regulators, we recommend that the government of Nova Scotia consider carefully how this emerging sector should be regulated. An important starting point will be to determine whether such operations would be subject to federal regulation only, or whether the province will play a role in the regulation of offshore facilities.

As the industry diversifies, it is reasonable to expect that more and more different species of fish will be proposed for farming in Nova Scotia. This will put increasing pressure on regulators to consider the risk of invasive aquatic species. The literature is clear that prevention of introduction is the only effective method for controlling invasive aquatic species. We therefore recommend that a precautionary approach be taken to invasive species. In our view, the appropriate approach would be to not permit the introduction of non-native species, except in rare circumstances where there is clear scientific consensus that the species in question will not become invasive in Nova Scotia's waters.

We have been told that Integrated Multi Trophic Aquaculture (IMTA) holds much promise with respect to the management and minimization of environmental impacts of fin-fish aquaculture in coastal waters. In particular, there appear to be opportunities to reduce benthic impacts from fin-fish operations through the use of IMTA. While more experience is needed to fully understand its potential, we do feel that the regulatory system should be designed in anticipation that IMTA will be increasingly utilized in the future to reduce the environmental impact of aquaculture.

23 Site Closure and Clean-up

The issue of the clean-up of aquaculture sites when production comes to a close or a business is wound up was raised on a number of occasions during our process. People in local communities referenced situations where gear has been abandoned in the water and debris left floating in the water and on shorelines. They also referenced situations in other jurisdictions, where the apparatus for conducting aquaculture has been simply left in the water when operations at a site have come to an end. In response, people from the industry often commented that the industry conducts itself very differently now in these respects than it did formerly. That said, they also acknowledged that not all operators are responsible in cleaning up their sites. They also generally acknowledged the normative point, that operators should be responsible for leaving their sites in a clean condition when their operations come to a close.

In addition, it would be typical for a regulatory framework that authorizes physical infrastructure to be built in a public space for the purpose of economic activity that uses public resources to require those who are authorized to put the infrastructure in place to remove that infrastructure and all debris when the operation comes to an end.

At the Roundtable, the following recommendation received unanimous support: “The regulatory framework should require operator responsibility for decommissioning and remediation standards for both on and off-lease clean-up, including shoreline remediation.”⁵⁹ We agree with this recommendation.

We also think that the regulatory framework should authorize the Minister of Fisheries and Aquaculture to undertake necessary clean up where an operator fails to do so at all or to the standard required by the Minister. As under environmental and natural resources legislation in other sectors, the cost incurred by the Minister in doing clean-up work that is not completed by the operator should be a debt owed by the operator to the Minister. To ensure the Minister can recover on this debt, licensed operators should be required to post a bond with the DFA when they are licensed in an amount that is proportionate to the cost likely to be incurred in cleaning up their site should their operations come to an end.⁶⁰ This would be repayable where the clean-up is completed by the operator to the satisfaction of the Minister.

⁵⁹ See Roundtable Final Report at page 27. Also, there was partial support for the recommendation that, “Bottom sampling at the time of decommissioning should be carried out, to be paid by the operator”, though some members of the Roundtable believe that specific requirement already exists.

⁶⁰ This recommendation is consistent with the following one which received qualified support at the Roundtable: “The framework should require the operator to post a bond at the time the licence is issued to cover the cost of remediation”. Those who gave qualified support asked about the success of bonding arrangements and consideration of other types of financial instruments. If other kinds of financial arrangements can be shown to work as well or better than bonding arrangements, they should certainly be considered as alternatives to a bonding approach. On the effectiveness of bonding, this may depend on the willingness of the regulatory authority to require adequate bonds and to insist upon meaningful remediation, as well as on other factors. (Roundtable Final Report, page 27)

In addition, failure to clean up a site to the standard acceptable to the Minister should preclude the operator in question from being given any new licences or having existing licences renewed.

24 Relationship of the Regulatory Framework to Industry Codes of Practice

A code of practice is typically a set of standards that an industry develops for itself and that businesses belonging to that industry adopt voluntarily or as a condition of their membership in an industry association. Often, the existence of a code of practice leads regulators to adopt more limited or more general regulations than might otherwise be the case. In this way, a code of practice often starts where a set of regulations leave off. Sometimes, the existence of a code of practice takes the place of state regulation altogether.

Codes of practice can be integrated into a regulatory framework in various ways. Sometimes compliance with some or all of a code of practice is a regulatory requirement. Sometimes provisions of a code of practice are written into regulations and sometimes regulations incorporate provisions of a code of practice by reference. Another scenario is where regulations are written to give regulated businesses a choice between complying with a provision of the regulations or with a provision of a code of practice that deals with the same issue.

We have thought carefully about whether the regulatory framework for Nova Scotia's aquaculture industry should provide for the development and implementation of an industry code of practice. This is the approach taken in Scotland, which is generally regarded as having a very progressive regulatory framework. In that jurisdiction, the law requires the industry's association to develop a code of practice that meets with the approval of the regulatory authority. Various provisions in the code of practice are made mandatory by the regulatory framework. Other provisions in the code have to be implemented unless the business achieves the same objective by another means. A third category of provisions is treated as purely voluntary.

The Aquaculture Association of Nova Scotia is in the process of developing a code of practice that its members would be required to follow. We regard this as a very positive step on the part of the Association. We have considered whether this project should continue outside and in parallel to the regulatory framework or whether it should instead be carried on within the regulatory framework with a view to some or all of it being adopted as part of the regulatory framework.

Regulatory frameworks which include an industry-developed code of practice or that work in conjunction with such a code of practice are thought to have various strengths. For example, standards set in codes of practice may be superior to those set by regulators due to the superior knowledge that people in the industry may have of the industry and the options for achieving regulatory objectives. In addition, businesses may simply be more inclined to comply with or less inclined to ignore standards that are developed by peers instead of by politicians or bureaucrats. In addition, by requiring or utilizing a code of practice, a regulatory framework essentially makes the industry responsible for policing itself and its individual members.

These strengths of a code of practice as a regulatory tool depend upon the reality that codes of practice are instruments of self-regulation. This is what leads others to lack trust and confidence in any regulatory framework that significantly relies on a code of practice. Regulators can try to

address these concerns by assuming control or oversight of the process through which the code of practice is developed or by requiring the industry to include other stakeholders in the process. These actions can however reduce the effectiveness of a code of practice in gaining industry's cooperation with the regulatory process.

In Nova Scotia's aquaculture industry, low trust and confidence in the current regulatory framework is one of that framework's core weaknesses. We do not think this problem can be addressed by the adoption of a new framework under which regulation of the industry would be through a code of practice developed by the industry.⁶¹ In part, this is because trust and confidence in the industry is also not high at this time but more fundamentally, it is because of the widespread view that the industry is already too heavily self-regulating. In addition, we are concerned that the Nova Scotia industry may not currently have the capacity it would need to play the kind of role that the Scottish industry played in developing the code of practice that is the basis of Scotland's regulatory framework.

We wish however to reiterate that we are very supportive of the Association's work on a code of practice. This is the kind of initiative needed from the industry if it is gain and maintain the trust and confidence of the communities in which the industry is located and of the people of Nova Scotia more broadly. If done effectively, it can help to ensure trust and confidence in the industry depends on more than compliance with regulations. An industry-developed code of practice can also play an important role in ensuring that a new regulatory framework is effectively implemented throughout the industry. It can be particularly helpful in making regulatory compliance feasible and cost-effective for smaller businesses. For these reasons, we think the DFA should be supportive of the efforts of the Association to develop a code of practice.

The final comment we make is to encourage the Association to continue to work on its code of practice through an open process that welcomes participation and contribution from communities, municipalities, lobster fishers, salmon anglers, and environmentalists. A good first step in this direction was taken by the Association when it invited members of the Roundtable to attend a discussion on codes of practice held in conjunction with the Association's recent AGM and annual conference. Such an approach will not only help to ensure that a strong code of practice is developed but also that it is developed through a process that builds and strengthens relationships between people in the industry and people who are interested in the industry and its development.

⁶¹ Neither did the Roundtable, which did not support a recommendation that, "The regulatory framework should incorporate industry Codes of Practice." (Roundtable Final Report, page 26)

25 Relationship of the Regulatory Framework to Third Party Certification

There have been important developments with respect to third party certification in the aquaculture sector over the past decade. As is the case in other industry sectors, certification has become an important governance tool to improve the environmental and social performance of the industry. We are encouraged by recent developments in this regard, particularly with respect to fin-fish aquaculture. Consistent with the goal of maximizing value while minimizing risk and negative social and environmental impacts, we feel strongly that certification with third party certification bodies that offer industry leading standards and practices should be encouraged. At the same time, we do not feel that it would be appropriate to formally link the regulatory process in a significant way to third party certification. Rather, the regulatory process should stand on its own, while supporting and rewarding where appropriate efforts by operators to demonstrate leadership through third party certification that involves industry leading standards and practices.

The basic idea is that certification is not required, but industry and regulators should be encouraged to follow certification developments and adopt best practices. Province should identify appropriate certification as a pre-condition for financial assistance. Furthermore, certification is part of the track record regulators should take into account in regulatory decisions, such as length of licensing period.

Of the certification standards we had the opportunity to review, the Aquaculture Stewardship Council (ASC) standard appears to be currently the leading standard.⁶² Others may have superior standards in particular areas, but overall, the ASC standard appears to be, and to be recognized as the leading standard in the industry. We recognize, of course, that this may change over time, as other standards evolve, and as industry practice and technology catches up and perhaps overtakes this standard.

For the moment, however, the ASC standard would appear to us to be a good source of standards for the selection of regulatory standards for Nova Scotia. Among the issues addressed in the ASC standard that Nova Scotia should look to are the following:

- Standards on benthic biodiversity and benthic effects
- Standards on water quality, including biological oxygen demand (BOD)
- Standards on nutrients, with a focus on “fines” from feed
- Standards on interaction of operations with wildlife, such as birds and mammals, including the use of acoustic harassment devices, mortalities from entanglement, a focus on non-lethal deterrence, and transparency on efforts and results
- Transparency about unexplained loss of fish

⁶² The Roundtable gave partial support for the recommendation that, “Any finfish operation in Nova Scotia should be required to meet the Aquaculture Stewardship certification standards and conditions”, though discussions on this point later suggested that more appropriate regulatory tools are available. Nevertheless, there was recognition that such certification programs will likely contribute to the development of best management practices in the industry. (Roundtable Final Report, page 28)

- Requirements for net strength testing to prevent escapes
- Fish meal and fish oil ratios in feed
- Veterinary service standards
- Transparency on any treatment of fish to the public and to buyers of the product
- Requirement for only single year class of fin-fish on any site

26 Ongoing Regulatory Advisory Committee on Aquaculture Regulation

Our process benefited greatly from our Roundtable and our Advisory Committee. Both committees offered invaluable insights into the range of perspectives that have to be considered in developing fair process and reaching fair conclusions on issues related to the regulation of the aquaculture industry. We also feel that both committees served as important forums for mutual learning among some of the key parties involved in and affected by the industry.

The DFA's effectiveness as a regulator would benefit if a mechanism was created to establish an ongoing multi-constituency forum for the discussion of the regulation of aquaculture. We therefore recommend that an ongoing Regulatory Advisory Committee (RAC) be struck to continue to meet at least once a year to advise the DFA on the implementation of aquaculture regulations, on possible changes to the regulatory framework in the future, on significant policy issues relating to regulation as they arise and on the overall effectiveness of the regulatory framework. The RAC could also be a forum for the discussion of emerging issues in the regulation of aquaculture or in the aquaculture industry that may call for a regulatory response. The RAC should be made up of approximately 10 members and include representation from First Nations and the following interests:

- Municipalities
- Aquaculture industry
- Fishing industry
- Coastal communities
- Environmental and conservation organizations
- Economic development and tourism interests.

The RAC should be independently facilitated. It could play an important role in ensuring regulations keep up with science and technology, and more generally, that they continue to be updated in pursuit of the regulatory goals set out above. In our view, it would help to ensure the continuing improvement of the regulatory framework as it is being applied. We note in this regard that improvement of the new regulatory framework on an ongoing basis should not wait until it is time for the five-year review, which we subsequently recommend. We also note that at the Roundtable there was qualified support for a five-year review but unanimous support for the recommendation that "The regulatory framework should include a process to strive to ensure continuous improvement, rather than waiting for a five-year review".

Another important benefit of the creation of a RAC is that it could ensure that the dialogue on the regulation of aquaculture that has taken place in this process continues and develops after our process comes to an end. By itself, this would be an important reason for having an RAC. It could help to ensure that issues that have the potential to be polarizing and divisive have a forum in

which they can be proactively and constructively discussed and addressed before they become polarizing and divisive.

27 Science Advisory Framework/Mechanism/Process

The Panel has been fortunate to have the benefit of access to first-rate scientific and local knowledge advice in our work through the Knowledge Roster we established as part of our process. Through our Knowledge Roster, we have had access to academic and community experts in a range of fields relevant to the aquaculture industry and the regulation of aquaculture.

We recommend that the DFA establish an ongoing mechanism for consulting with experts on the science of aquaculture and its regulation.⁶³ This could be a standing advisory committee or a broader network such as our Knowledge Roster or some combination of the two approaches. Alternatively, the DFA and those who are prepared to participate in such a mechanism may identify a third and superior mechanism. However constructed, the idea would be that a standing mechanism would link the DFA with a community of experts in the science of aquaculture to facilitate the DFA's access to the combined expertise of that community. At the same time, experts who agreed to participate would have a channel through which to contribute to the effectiveness of regulation and to decision-making in the aquaculture sector more broadly. Our experience suggests many experts across Atlantic Canada are fully prepared to make this kind of contribution and would welcome an avenue to do so on a continuing basis.

The issues or questions that would be considered would include those identified by the DFA on an ongoing basis. There would be an emphasis on issues and questions of relatively direct relevance to the regulation of aquaculture. Participants in the process would also have an opportunity to identify issues or questions that warrant discussion.⁶⁴ The important limitation is that the issues and questions from either direction should be of a general nature. This would not be a mechanism through which the DFA would seek advice on specific regulatory decisions, such as whether a particular application should be approved or the terms and conditions that should be attached to an approval. Instead, the focus would be on science issues and questions that are relevant to general policy issues in regulation or to the general functioning of the regulatory framework. For example, the question of how to structure an analytical framework or a decision model for identifying Green, Yellow and Red areas for fin-fish aquaculture might be a topic to be discussed in this forum. The characterization of a particular part of the coast as Green, Yellow or Red would not be.

One of the topics that should definitely be included in the mandate of the mechanism would be to identify gaps in knowledge in how aquaculture operations interact with the natural environment, particularly in a Nova Scotia context. Options for addressing those gaps would also be an important part of the mechanism's rationale. In this way, the mechanism we have in mind could be very helpful to the DFA capacity to carry out the expanded and more proactive approach to research that we have proposed as a foundational element to the new regulatory framework.

⁶³ The Roundtable gave qualified support to the recommendation that, "The development of regulations, indicators, standards and thresholds should be science-based and should be integrated with local ecological knowledge." (Roundtable Final Report, page 18)

⁶⁴ This would tie in to the Roundtable's qualified recommendation that, "Science-based evidence should use conventional natural science to investigate and validate local knowledge with the full participation of the local knowledge holders." (Roundtable Final Report, page 18)

We recommend that expertise in the following areas be a particular focus in seeking out members of the academia and holders of traditional, local and community knowledge to participate in this mechanism:

- Fish health
- Benthic impacts of aquaculture
- Hydro-geological conditions
- Wild fish populations
- Invasive species
- Sea lice
- Disease management
- Local ecosystems
- Socio-economic issues pertaining to aquaculture at multiple scales (i.e. local, regional, provincial, national, and international)

Like the RAC, a more formal mechanism for continuing contribution to the regulatory framework from members of the scientific and traditional knowledge communities would help to ensure the continuing improvement of the regulatory framework as it is being implemented. Therefore, as with the RAC, the science and traditional knowledge mechanism we recommend would be responsive to the recommendation that found qualified support at the Roundtable that, “The regulatory framework should include a process to strive to ensure continuous improvement, rather than waiting for a five-year review”.

28 Potential Role for AANS in Supporting Compliance

In light of what we have proposed, the regulatory framework will be more demanding for current businesses and those that want to enter the aquaculture business. The cost of compliance with the regulations and of getting approval from the regulator could be more expensive. The technical capacity and resources of business will be more important to their ability to work successfully and profitably under the new regulatory framework.

This will pose particular challenges for small businesses and for start-ups. Many of these work in shell-fish aquaculture, a sector of the industry in which growth may attract greater support. But the new framework will pose challenges for those in fin-fish aquaculture as well.

This is relevant not only from a business profitability and an industry diversity perspective but also from a regulatory effectiveness perspective. If regulated businesses are not able to meet regulatory requirements, the regulatory framework will not be as fully implemented as it otherwise would be.

Many regulators develop and deliver programs to help regulated companies, especially small and medium sized companies, know, understand and comply with their regulatory obligations. We think the DFA should consider such options.

Another option would be for the Aquaculture Association of Nova Scotia to make the development and delivery of such programs part of the service it provides to its members. The advantage of this approach is that it would avoid the DFA a perceived conflict between the DFA's role as the regulator and the role it might play in building the capacity of the sector to meet its regulatory objectives.

The formation of the Regulatory Advisory Committee we recommend creates the opportunity for the Association to develop or expand of such programs with input from the larger range of constituencies interested in the regulation of aquaculture.

29 Working Capital (Aquaculture Loans Board)

Many in the industry raised the issue of the higher levels of assistance with working capital that the industry receives in the rest of Atlantic Canada as compared to Nova Scotia. Although some may question if it is a regulatory issue, it should be noted that the *Fisheries and Coastal Act* establishes the Fisheries and Aquaculture Loan Board and mandates it to provide loans to aquaculture as well as fisheries. More broadly, it is well recognized that governments can encourage regulated industries to act in accordance with regulatory objectives by providing them with the financial assistance that makes compliance with regulations more feasible and worthwhile.

The issue of the level and the nature of the financial support that the Province of Nova Scotia provides to the industry is therefore a part of the regulatory framework broadly conceived. We have not heard enough on the matter to make detailed or extensive recommendations. We can however offer the following observations:

- There is a perception in the industry that the industry suffers because the priority of the Fisheries and Aquaculture Loan Board is the fisheries sector and because the Board is not set up to understand or give equitable consideration to the issues and opportunities facing aquaculture;
- To the extent that public money is to be made available to support the development of the aquaculture industry, it should be made available on fair and equitable terms to the industry as a whole; and
- Financing should be used to not only support the growth of the industry but to support growth that moves the industry in the direction of low impact/high value we have argued should be Nova Scotia's overriding objective in the aquaculture sector. This could mean:
 - No eligibility for funding unless there is a strong track record of regulatory compliance;
 - No eligibility for funding for organizations that could be functioning under one of the stronger and well-recognized certification standards, such as the ASC standard, unless they are certified or in the process of obtaining certification; and
 - An advantage for companies applying for financing that will use the assistance to improve their environmental performance, social licence or general capacity to produce higher value products while reducing their impact on the environment.

Finally, a caution. The meetings we held in communities around the coastline of Nova Scotia made it abundantly clear to us that where the government's financial contribution to a specific company reaches a certain magnitude or scale, the willingness and ability of government regulators to rigorously regulate that company will be widely questioned. This may be especially so where the funding comes from the DFA rather than from another government department (such as Economic and Rural Development and Tourism) or an arms-length economic development agency.

30 Mandatory Independent Five-year Review (with an Advisory Committee)

At the Roundtable, there was qualified approval for the recommendation that “The new regulatory framework should include a five-year review by a committee including government, First Nations and stakeholders”.⁶⁵ The qualification related to a concern about the specification that the review would be carried out by a review committee.

Five-year reviews have been included in a number of Statutes in recent years, including the *Environment Act* and the *Environmental Goals and Sustainable Prosperity Act*. In both cases, the review process resulted in a range of amendments of the statute being reviewed which reflected lessons learned in the first five years of the statute’s operations as well changes in the conditions that affected the effectiveness of the statute. In both cases, the review process was an open one that provided all Nova Scotians with opportunities to contribute.

In short,, in legislation that has similarity with the *Coastal Resources Management Act*, a mandatory five-year review has proven to be useful in Nova Scotia in making legislation better. In our view, the same can be expected from a review of a broader regulatory framework which would include the amendments which would be made to the Act and regulations to implement the framework but which would also encompass the role of the DFA in making the framework operational through licensing and leasing, monitoring and enforcement, and working with the DFO and other federal regulators and scientific and regulatory advisory groups.

Another important rationale for a mandatory and independent five-year review is that it puts the DFA on notice that it will be accountable at the end of five-years for showing that the regulatory framework has been diligently and effectively implemented. This will help to ensure that the commitment to producing a world class regulatory framework that was expressed when we were appointed to develop this regulatory framework will be maintained through the process of translating our recommendations into effective action.

At the same time, a mandatory independent review after five years will ensure that the ongoing process of improving the regulation of aquaculture in Nova Scotia has the opportunity to improve on the framework we have recommended where experience shows that our recommendations were inadequate or mistaken.⁶⁶

On the structure for the review, there is a range of options available. We have noted the preference for some on the Roundtable for the review committee to include government, First Nations and

⁶⁵ See Roundtable Final Report at page 32.

⁶⁶ The Roundtable gave unanimous approval to the assertion that, “The regulatory framework should include a process to strive to ensure continuous improvement, rather than waiting for a five-year review.” (Roundtable Final Report, page 32)

stakeholders and the reservation of other Roundtable members about being prescriptive that the review would be by a review committee. We would also note that review committees can be structured in a number of different ways. One way is that suggested by the majority of Roundtable members, which is a review committee that is made up of representatives of the key constituencies. This is the approach adopted under the *Environmental Goals and Sustainable Prosperity Act*. Another is a committee consisting of persons who are appointed because of their professional experience and expertise and their independence of both government and stakeholders. This, more or less, has been the approach followed under the *Environment Act* and some other statutes.

In our view, what matters is that the review be mandated so that it be clear from the beginning that it will happen. It matters also that it be clear that the review will be conducted independently and not by the DFA or another part of the provincial government. It matters, in other words, that it be an external and not an internal self-review. What also matters is that the review be participatory, meaning that all who are interested in contributing their perspectives have full opportunity to do so whether or not they are directly represented by those mandated to carry out the review.

In addition, we suggest it would be important to structure the review in such a way as to be sure it was suited to deal with the details of regulatory design and administration as well as with broad policy issues. This may lean towards the expert review model explained above more than it does to the stakeholder review model. An advisory committee, such as the one that was established to help us in the development of this framework, could be formed to ensure the experts appointed to do the review worked with the benefit of advice from government, First Nations and the full range of stakeholders interested in aquaculture.

31 Thoughts on Implementation and Transition

We have identified a number of implementation issues that we feel are important for us to comment on. First, we have considered carefully whether to recommend a new Act, or whether the changes we are proposing can be implemented through amendments to the existing legislation. We have concluded that the regulatory system we have proposed can be implemented through changes to *Fisheries and Coastal Resources Act*, in combination with the development of new regulations and policies.

It will be important to be clear about the transition. At the start of our process, the government of Nova Scotia committed to not processing any applications for new marine-based fin-fish operations until the conclusion of our process, with the clear intent that any applications for new operations would be processed under the new regulatory system. This commitment has been an important step in establishing trust in communities concerned about marine-based fin-fish operations. It will be important for this commitment to continue, and for any new applications to be subject to the new regulatory system.

Existing facilities should not be grandfathered. Nova Scotia's existing aquaculture industry, while not at the scale of some jurisdictions, is considerable in size and diversity. As a result, it is critical for the effectiveness of the new regulatory system that all existing facilities be subject to all rules that can reasonably be applied to existing operations, including all statutory conditions, transparency provisions, rules for changes to and renewals of licences and leases, and to monitoring and reporting obligations. We are not in a position to suggest a specific time frame, but we do recommend that the regulatory system set a specific timeframe after which all existing operations are subject to the new regulatory system. The timeframe should be set to allow operators reasonable time to adjust to the new rules, but no longer.

Finally, there are important First Nations and aboriginal consultations that need to take place. First Nations and other aboriginal communities and individuals in Nova Scotia have an important role to play in the design and implementation of an effective regulatory system for the aquaculture industry. First Nations representatives participated on our Advisory Committee, on our Roundtable, contributed to our Knowledge Roster, and attended a number of our Community Meetings. Through these involvements in our process, we have come to understand that aboriginal communities and individuals are existing and potential owners and operators of aquaculture facilities, but others have concerns about the social and environmental impacts and risks associated with certain aquaculture operations. We have made every effort to reflect on the views expressed to us in our recommendations. The interests and concerns of aboriginal peoples in Nova Scotia should, however, be explored in direct discussions between the province of Nova Scotia and aboriginal communities before the new regulatory system is finalized.