Regulation of marine cage fish farms

Updating our approach to protecting the sea bed

Consultation Document June 2017
Scottish Environment Protection Agency

Foreword

Globally, our oceans are under stress. This was powerfully emphasised at the recent *United Nations Ocean Conference* in New York. One of the many pressures on our marine environment is the harvesting of wild fish stocks. Aquaculture, including caged fish farming, represents one way to reduce this pressure but only if it is done well. If done poorly, it can also cause damage to the marine environment. SEPA's role is to ensure that aquaculture in Scotland's marine environment operates responsibly and with minimum environmental impact.

As a result, we intend to modernise and strengthen the way we regulate aquaculture. We have prepared draft proposals and we want your views about whether our proposals are right.

Aquaculture is an important industry for Scotland, helping to sustain economic prosperity in the rural and coastal communities of the north and west. The Scottish Government has a clear vision of *"an aquaculture industry that is sustainable, diverse, competitive, economically viable and which contributes to food security whilst minimising environmental impact"*.

SEPA believes that if this vision is to be delivered, we must strengthen environmental controls so that the risks to Scotland's environment from existing fish farms and future new farms is minimised. In our new Regulatory Strategy – called *One Planet Prosperity* - we made clear that compliance with environmental standards is the minimum expected of all those we regulate in every sector. We also want to support as many responsible businesses as possible to do better than compliance by helping them reduce their environmental impact in a way that builds business benefits.

To turn our strategy into practice, we are in the process of changing the way we work with the fish farming sector, including the way we regulate marine cage fish farms. Our goal is to help ensure that fish farming in Scotland is world-leading in the way it manages and minimises risks to the environment and to fish health.

Minimising environmental impacts from farming fish is a significant challenge for Scotland and for the world's other major fish farming countries. Doing so will require innovation and investment from the sector. Today's farming techniques release fish faeces; uneaten feed; and used medicines directly into the sea where they can interfere with marine ecosystems. The techniques also leave farms vulnerable to outbreaks of fish diseases that can result in severe losses in fish production.

To ensure the protection of Scotland's marine environment, we want to encourage fish farming businesses to find and invest in innovative ways of farming that pose the lowest possible risk to the environment and better safeguard the health of the fish.

Farming in exposed waters with strong tides is one way that risks of disease and risks to the environment can be reduced. One step we propose is to regulate in a way that encourages fish farm business to locate production in such exposed waters rather than in more sensitive parts of the marine environment.

To support this approach, we are also proposing new, improved arrangements for environmental monitoring around fish farm cages. These new arrangements are designed to provide enhanced information so that farm businesses can better manage environmental risks and we can more tightly regulate their activities.

We would welcome your comments on these proposals. Your input will help us make sure we have the strongest and best approach to protecting the marine environment and promoting environmental excellence in Scotland's caged fish farming sector.

Terry A'Hearn
Chief Executive

Depositional Zone Regulation:
A new regulatory method for marine cage fish farms

1. Introduction

1.1 To control their impact on the marine environment, cage fish farms are regulated by SEPA[1]. Our job is to ensure that aquaculture in Scotland's marine environment operates responsibly and with minimum environmental impact.

1.2 The Scottish Government recently published a policy statement setting out its aim of "*an aquaculture industry that is sustainable, diverse, competitive, economically viable and which contributes to food security whilst minimising environmental impact*".

1.3 SEPA believes that if this vision is to be delivered, we must strengthen environmental controls so that the risks to Scotland's environment from existing fish farms and future new farms is minimised. We are in the process of reviewing how we can best work with fish farm businesses and other public bodies to help fish farm businesses progressively reduce risks to the environment and to the health of farmed fish.

1.4 Minimising these risks will require investment in new and innovative fish farming systems by the sector. Examples include investing in farming systems capable of operating in exposed, deep water sites with strong tides; and developing new techniques that intercept farm wastes and allow them to be treated and possibly usefully recycled.

1.5 One of the risks posed by fish farms is to the health of the sea bed: Waste food and faeces can settle on the sea floor beneath and around fish farms. This build-up of organic matter can adversely affect marine wildlife. The tendency for large quantities of waste to settle and accumulate on the bed is greatest in sheltered, inshore sites. Exposed sites with strong tides are much better able than sheltered sea lochs and bays to disperse the wastes before they can build up on the sea floor and pose a significant risk to marine life.

1.6 One step we propose is to regulate in a way that encourages fish farm business to locate production in such exposed waters rather than in more sensitive parts of the marine environment. We are proposing to do this by revising the way we control the amount of waste farms can release into the sea. Our proposed, revised approach is called Depositional Zone Regulation (DZR).

1.7 DZR will be underpinned by recent improvements in our ability to predict risks to the health of the sea bed and by new environmental monitoring arrangements. The latter will involve us doing much more environmental monitoring around fish farm sites and using the results to help farm businesses control environmental risks, for example, by careful management of stocking levels.

1.8 In summary, our proposed new DZR approach will:

- facilitate, and incentivise, future development in exposed waters that are best able to cope with fish farm wastes;
- increase our environmental monitoring and auditing around fish farm sites;
- use the improved monitoring arrangements to ensure we can regulate fish farm businesses to effectively manage and control risks to the health of the sea bed; and
- prevent restocking at farm sites which fail to protect the sea bed to the required environmental standards.

[1] *under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR)*

1.9 The application of DZR will not change how we control the risks posed by the release of used medicines into the sea, including medicines excreted by fish following in-feed treatments for sea lice infections.

2. The key features of DZR

2.1 The key changes we are proposing to make to how we regulate fish farms are described below. These relate to:

(a) Making it easier to develop farms in exposed sites
(b) Improved environmental monitoring arrangements
(c) New depositional zone limits

(a) Making it easier to develop farms in exposed sites

2.2 Exposed waters with strong tides are better able to cope with fish farm waste than shallow, sheltered parts of the coast. However, the risk assessment methods that we have used to date when evaluating proposals for farms in exposed waters have tended to overestimate the environmental risk to the health of the sea bed. This has had the effect of constraining the size of farms (in terms of fish biomass) that we have been able to authorise in such waters.

2.3 To make it easier and more attractive for fish farm businesses to develop in exposed waters, DZR will be based on new, improved risk assessment methods. These have been designed to work well in exposed waters as well as in sheltered parts of the coast.

2.4 Under DZR, each farm will have a fish biomass limit set for the first fish growth cycle[2]. We will use the new, improved risk assessment models to evaluate the proposed stocking levels for the farm and set that biomass limit.

2.5 After the farm is operational, risks associated with increases in stocking levels will then be evaluated using feedback from our environmental monitoring: from the second fish growth cycle onwards, provided seabed monitoring continues to show that wastes from the farm are not threatening seabed quality standards, farms will be allowed to iteratively increase fish biomass by up to 10%.

2.6 We will provide advice to fish farmers when their farms' effects on the seabed are approaching the limits set by the seabed environmental standards. This will ensure the farmers know when to stop increasing biomass and so avoid breaching the standards.

2.7 Our current regulatory framework also sets a limit of 2,500 tonnes on the maximum fish biomass that any farm can stock. This limit was set to ensure that, given our then limited understanding about effects of the environment at high stocking levels, we were not creating unnecessary environmental risk.

2.8 Under DZR, we will not need a maximum biomass limit because we will be better able to predict, and then monitor, environmental effects[3] than we have been previously, even at such high stocking levels.

---

[2] A fish growth cycle on a salmon farm is typically 18 - 22 months in duration followed by a 6 - 8 week fallow period when no stock is held on the site.

[3] We will be better able to predict impacts because of a combination of improvements in our models and changes to the quality and quantity of information we will collect from our own monitoring and require applicants to provide.

2.9 Some sites, particularly those in exposed, deep waters with strong tides, may have potential to hold a much greater biomass than 2,500 tonnes without threatening seabed environmental standards. We are, therefore, proposing to remove the cap to further encourage farm businesses to consider developing in exposed sites.

(b) Improved environmental monitoring arrangements

2.10 A key component of DZR will be increased monitoring and auditing by SEPA.

2.11 Currently, we set conditions in our licences for fish farms that require the farmers to monitor effects on the seabed. Under DZR, SEPA will monitor the environmental effects on the seabed during each fish growth cycle. The change implements our new Regulatory Evidence Strategy. As is the case for other sectors, the monitoring we undertake will be a chargeable component of environmental regulation.

2.12 We will use the information provided by our monitoring to assess how well the seabed is coping with the farm wastes and check that seabed environmental standards are not at risk of being breached, particularly where fish stocks are increasing.

2.13 We will also advise farmers on what we find so that they can make decisions on the biomass that they can sustainably hold at a site without breaching the seabed standards. This will enable farmers to better manage environmental risk.

2.14 Where farms fail to heed this advice and breach seabed environmental standards, we will consider amending licence conditions and taking appropriate enforcement action.

2.15 In all such cases, further stocking will not be permitted until seabed conditions come back into compliance with the seabed standards and the site is capable of accommodating further waste. At many sites, the seabed may recover within a year. However, recovery rates depend on a number of site-specific factors and may take longer at some sites.

(c) New depositional zone limits

2.16 At most marine cage sites, fish faeces and waste food tend to be deposited on the sea floor beneath and around the cages. The exceptions are some exposed sites where the wastes can be dispersed over a wide area before dropping onto the sea bed.

2.17 Where wastes build up beneath and around the cages, this pollutes the seabed reducing the health and diversity of sea life. The area of seabed affected varies in size but can be many hectares. Current fish farming techniques are unable to prevent such damage from occurring and it will take time to develop and implement new farming systems capable of reducing or even eliminating this adverse effect. In the interim, because of the economic and social importance the aquaculture industry, our regulatory framework will continue to permit a controlled zone of impact on the seabed around fish farm cages.

2.18 Under our existing approach, the size of the zone of impact that we permit varies from farm to farm. For DZR, we are proposing to standardise[4] the maximum area of seabed that can be affected to 0.5 km^2. Farms will be required to meet strict environmental standards at the edge of the zone to avoid any effects on the health of the seabed beyond.

[4] Under DZR, the seabed standard at the edge of the depositional zone is stricter than the standard we currently apply at the edge of depositional zones. Taking account of this, the median size of existing depositional zones is estimated to be around 0.2 km^2.

2.19 As now, farms will also be required to meet a cage-edge standard. Waste build up tends to be greatest directly beneath the cages. The purpose of the cage-edge standard is to ensure that the key seabed animals needed to break down the waste under the cages can survive and do so. For many farms, meeting the cage-edge standard will remain the limiting factor on the amount of wastes they can release.

2.20 The implications of the cage-edge standard and the proposed maximum depositional zone area of 0.5 km^2 will vary depending on where farms are located:

Exposed sites

- At the most exposed, deep water sites with strong tides, wastes are typically dispersed widely rather than building up on the sea floor around the cages. In these locations, any areas of deposition on the seabed are likely to be small in extent and transient. With little or no adverse impact on the seabed likely (and no threat to seabed environmental standards), there is potential to farm a much greater biomass of fish in these exposed locations than is currently farmed at any farm in Scotland.

Sheltered sites

- The maximum biomass that can be farmed at sites in sheltered waters will tend to be limited by the cage-edge standard rather than the proposed 0.5 km^2 depositional zone limit. This is because farm wastes tend to accumulate in large quantities on the sea floor close to the cages. At most if not all such sites, the maximum area of seabed affected by waste deposition will remain considerably smaller than 0.5 km^2 at no more than around 0.2 km^2.

Intermediate sites

- The implications of DZR will vary for sites in waters that are intermediate between very exposed and sheltered in terms of their ability to disperse wastes. For some existing sites in these waters, the scope to increase biomass will be constrained by the cage-edge standard rather than the proposed 0.5 km^2 depositional zone limit. For others, there is likely to be sufficient dispersion to mean that it will be the 0.5 km^2 depositional zone limit that dictates the maximum biomass of fish that can be farmed. We expect this to be the case at least at the 10 or so farms whose current biomass limit is capped at 2,500 tonnes. Most of these farms are also likely to be among the farms in intermediate waters with the greatest scope to increase current stocking levels under DZR.

2.21 Healthy marine ecosystems are important for the many people in Scotland who use coastal waters for recreation or to earn their livelihoods. They are also important because of the rich and varied biodiversity they support. This is why Scotland's river basin management plans set clear objectives for protecting and improving the status of Scotland's coastal ecosystems.

2.22 DZR will provide increased assurance that the impact of aquaculture on the seabed is controlled in a way that is consistent with the achievement of these objectives. In particular, we will not allow depositional zones that would put at risk the status of any coastal water body ecosystems. Such risks can result if deposition zones overlap with parts of the seabed that support habitats and species that are of key importance for conservation or wider ecosystem functioning, or if the total area of seabed affected by deposition from farms becomes sufficiently extensive. In some smaller sea lochs and bays, there is already limited or no scope for development using current farming systems for this reason. However, if appropriately low-impact farming systems can be developed and utilised, opportunities to increase production in these locations may become available.

Summary comparison of DZR and our current approach

	Current Approach	DZR Approach
Scope for expansion	Can be limited in exposed, dynamic sea areas on the basis of the risk suggested by the assessment methods we have used to date.	Considerable in the most exposed, dynamic sea areas (i.e. areas better able to cope with wastes). Increased potential for some sites in locations that are intermediate between very dynamic and sheltered. Unlikely to be different in sheltered waters compared with the current approach.
Sustainable biomass limits	Must operate within a maximum limit specified in the licence. No fish farm can exceed a 2,500 tonne cap regardless of its location.	A fixed biomass limit for the first fish growth cycle. For subsequent fish growth cycles, farms may expand by 10% incrementally provided environmental standards for seabed quality continue to be met. Restocking not permitted at sites which fail to meet environmental standards.
Seabed monitoring	Typically undertaken by the farmer. SEPA carries out a limited amount of audit monitoring of the effect on the seabed from sites.	Regularly undertaken by SEPA. SEPA will provide advice to the farmer where it identifies that effects on the seabed are increasing.
Depositional zone limits – Cage-edge requirements	No change. Operators meet a seabed quality standard that ensures the seabed beneath the cages can support animals able to break down the wastes.	
Depositional zone limits – Outer-edge requirements	Must meet an environmental standard designed to ensure that farm wastes have no more than moderate impacts on seabed communities beyond the depositional zone. The maximum zone area is derived from modelling and varies from site to site. The typical area (if related to the standards proposed for DZR) is around 0.2 km^2.	Must meet an environmental standard designed to ensure that farm wastes have no effect on seabed communities beyond the depositional zone. The maximum area of the zone would nominally be 0.5km^2. However, other constraints, such as the need to comply with the cage-edge standard, mean that, for many sites, the size of the depositional zone is likely to be considerably smaller.

2.23 You can find further, technical details about DZR in the accompanying technical annex to this consultation.

3. How will DZR be implemented?

3.1 Following this consultation and the adoption of the approach, DZR will govern how we regulate applications for new fish farms and substantial changes to existing farms. Existing sites will continue to be licensed under the old system.

3.2 An application for an existing site to move to the DZR system may be submitted at any time by applying for a variation to the existing licence. Applications for existing sites will need to be supported by data that demonstrates that existing impacts on the seabed at the site are likely to meet the DZR standards.

3.3 If the site is currently breaching the cage-edge standard, the application will be refused unless sufficient evidence is provided that the farm will be able to comply with the required environmental standards when operating under DZR. For example, this evidence might include a proposed reduction in fish biomass for the next fish growth cycle or proposed alterations to the layout, size or number of cages at the site.

3.4 The assessments we need to make to determine applications to move existing sites to DZR will be similar to those we make when determining applications to develop new sites. Because of this, an application to move to DZR will be treated as a substantial variation and be charged an application fee of 70% of the relevant charge for new applications[5]. Variation applications will generally be advertised in accordance with our normal approach to advertising and consultation.

3.5 Any DZR licence will only take effect from the start of the next planned production cycle. This is because the new monitoring arrangements cannot be implemented part way through a production cycle.

3.6 Once operating under DZR, increases in production of up to 10% of that of the previous production cycle can be made, but only where our monitoring evidence indicates that the seabed standards will not be breached. Where an increase in production requires changes to cage sizes, numbers or layout, an application for a variation to the licence must be made. This is because changing the size or layout of an existing site may change the depositional zone around the cages.

3.7 At present, we are not proposing to require existing sites to be regulated under DZR. It will be up to the farm businesses concerned to decide if they want to switch their farms to DZR.

Other changes to licences

3.8 We intend to produce simpler, joined-up, outcome-based licences that make legal obligations clearer to understand and easier to enforce. This increased clarity will provide greater flexibility for authorisation holders in how they manage their activities and fulfil their environmental obligations.

3.9 We will aim to combine the introduction of DZR with the introduction of simpler licences for fish farm activities that provide clear rules and standards that must be met but allow greater flexibility about how these are achieved. We believe this change will make it simpler for fish farm operators to comply, support innovation and lead to further sustainable farming and growth. It will also make it easier for us to hold fish farm operators to account for their compliance performance.

What next?

This consultation covers the key changes to our approach to regulation of caged fish farms.

The feedback from this consultation will inform the detailed guidance, regulatory methods, policy documents or other associated documents produced to implement any changes.

[5] For details, see SEPA's charging scheme

How to respond to this consultation

This consultation paper seeks views on the principles underpinning Depositional Zone Regulation (DZR) – our proposed new regulatory approach for managing the impact on the seabed of marine cage fish farm wastes.

The questions on which we are seeking your views are summarised below.

Question 1 – Do you support the principle of trying to make it easier and more attractive for fish farm businesses to develop in exposed, deep waters with strong tides?

Question 2 – What are your views on our proposal to remove the current cap of 2,500 tonnes on the maximum fish biomass that a farm can stock?

Question 3 – Do you support our proposal to allow fish biomass to increase by up to 10% per production cycle, provided compliance with the proposed seabed standards is not threatened?

Question 4 – What are your thoughts on our proposal that, for DZR sites, we will take on responsibility for monitoring the effects of the farms on the seabed?

Question 5 – What are your views on our proposal that there should be a break in production if seabed standards are breached to allow the seabed to recover?

Question 6 – What are your views on our proposal that, under DZR, the maximum area of seabed that can be affected by the deposition of farm wastes would be standardised to 0.5 km^2?

Question 7 – Are there any other comments or suggestions you would like to make about the proposals?

We are seeking your views to shape our approach to the regulation of marine caged fish farms. We want to get it right so that all stakeholders can benefit from a more flexible outcome-focused approach to regulation.

How to respond and by when

You can respond by sending your comments on the proposals in this consultation in writing to the following address:

Anne Anderson
DZR consultation
Scottish Environment Protection Agency
Strathallan House
The Castle Business Park
Stirling
FK9 4TZ

Or by email to:
E-mail: dzr@sepa.org.uk

Responses should be submitted to us by 31 August 2017. Earlier responses would be welcome.

Handling Your Response

We would like to know if you are happy for your response to be made public.

If responding online, please complete the confidentiality questions where prompted. If responding by post, please complete and return the Respondent Information Form with your response.

If you ask for your response not to be published it will be regarded as confidential and treated accordingly.