

**Sea lice regulatory framework overview**

September 2025

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**Note:**

From 1st November 2025, all the activities referred to in this overview are regulated under the [Environmental Authorisations (Scotland) Regulations 2018 (EASR),](https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/) as amended, rather than the Water Environment (Controlled Activity) (Scotland) Regulations 2011 (CAR), which EASR replaces.

Any reference to a “regulated activity” in this document means a controlled activity under CAR and a “water activity” under EASR, and any reference to a “permit” includes a water use licence under CAR and a permit under EASR.

# Regulatory frameworks

### What is a regulatory framework?

A regulatory framework is the set of approaches we use to regulate a particular regulated activity, including:

* Applying for a permit (including pre-application advice).
* Consulting on permit applications, including with other public bodies and interested third parties.
* Deciding whether to grant a permit.
* Issuing a permit, including conditions of the permit.
* Monitoring compliance with permit conditions.
* Taking action (enforcement) in the event of non-compliance.
* Monitoring the environment to inform, and assess the effectiveness of, regulation.

Some of the approaches are specific to the regulated activity concerned. Others are common across [multiple regulated activities](https://beta.sepa.scot/regulation/how-we-regulate/).

### What can I find in this document?

This document provides an overview of the activity-specific and shared approaches to regulation that comprise our sea lice regulatory framework.

We have integrated the sea lice regulatory framework into our existing approach to regulating marine fish farming activities liable to cause pollution of the water environment (discharges of fish faeces and uneaten fish food, and discharges of anti-sea lice medicines and other pollutants).

The [sea lice regulatory framework’s](https://www.sepa.org.uk/regulations/water/aquaculture/sea-lice-regulatory-framework-implementation/) activity-specific approaches include its:

* Assessment of risk posed by sea lice from marine fish farms to wild salmon and sea trout; and
* Permit conditions for mitigating risks to wild salmon and sea trout.

The framework differs in several respects in its application to wild salmon versus its application to sea trout. The differences are highlighted in this overview.

# Applying for a permit

### What is our general pre-application process for marine fish farm developments?

We provide a structured [pre-application process](https://beta.sepa.scot/topics/water/aquaculture/permit-application-process/) for those interested in developing a new marine fish farm or expanding an existing marine fish farm.

The pre-application process considers marine fish farming activities liable to cause pollution of the water environment (discharges of fish faeces and uneaten fish food, and discharges of anti-sea lice medicines) and is designed to:

1. Provide an initial assessment of whether the proposed fish farm development is likely to have a significant adverse impact on the water environment, considering the mitigation being proposed by the developer and any other mitigation that we consider necessary or expedient for the protection of the water environment; and
2. Advise developers on the information we will require them to provide if they proceed to make an application.

For the purposes of (a) above, the pre-application process involves:

* Us undertaking a screening assessment of the proposed discharges. For this exercise, we use screening models to model the discharges and their potential effects on the water environment.
* The developer engaging with local communities to help identify any potentially sensitive water uses or environmental features for consideration in the screening assessment.

For the purposes of point (b) above, based on the screening outcome, we will advise the developer on:

* The scope and detail of any environmental modelling information they will need to provide to support an application.
* The suitability of the developer’s proposed modelling methods and of any data collected by them to calibrate the models.
* The scope and detail of any baseline environmental survey information that will be required.
* The suitability of the developer’s proposed method for carrying out a baseline survey.

### How are sea lice interactions with wild salmon and sea trout considered in the pre-application process?

* We will ask developers to tell us about their proposed sea lice mitigation (e.g. location of farm and information for calculating the maximum number of adult female sea lice within which they plan to operate) when initiating pre-application discussions about a proposed new farm; a proposed expansion of an existing farm; or an application to increase a permit’s sea lice limits.
	+ 1. **Consideration of sea lice interactions with wild salmon**
* We undertake a sea lice-specific risk screening assessment of pre-application proposals. For this, we use sea lice-specific screening models unless a more refined sea lice model is already available for the sea area concerned.

More refined models than the screening models will typically include:

1. more comprehensive and sophisticated representation of physical processes (e.g. sea water movements) and ecological process (e.g. sea lice behaviour); and, as they become more refined,
2. testing and validation of their predictions using suitable environmental data.

 The screening models provide predictions of:

1. the dispersion of sea lice from the proposed development and from existing fish farms in the sea area; and
2. the resulting exposures of wild salmon to infective sea lice in [wild salmon protection zones](https://map.environment.gov.scot/sewebmap/).

We then compare the predicted exposures with the wild salmon [exposure threshold](https://beta.sepa.scot/topics/water/aquaculture/environmental-standards/).

* If, based on our initial screening assessment, we are unable to conclude that a proposal will not have significant adverse impact on the water environment (i.e. conclude it will not result in the wild salmon exposure threshold being exceeded or further exceeded) without additional mitigation, we will:
1. Inform the developer; and
2. Explain the options if they wish to progress with the proposal – i.e. propose additional mitigation or proceed with their initial proposal on the understanding of the potential for it to be refused authorisation.
* If the developer chooses to proceed with a proposal that we have been unable to conclude will not be likely to have a significant adverse impact on wild salmon, more refined modelling will normally be required to improve the precision of the predicted exposure of wild salmon to infective sea lice.
* If we consider it required for the more refined modelling, the developer will be asked to collect suitable environmental data with which to test and validate the refined model predictions of sea lice dispersal within the wild salmon protection zone concerned.
* If the developer wishes, they may choose to build the more refined model rather than leaving it to us. If so, we will ask them to produce a modelling method statement. We will audit their modelling method statement; and confirm whether the statement is acceptable (i.e. in terms of producing a model that will provide the information we reasonably require to assess a subsequent application).
	+ 1. **Consideration of sea lice interactions with sea trout**
* Considering the potential contributions from the proposal and from existing farms, we assess the likely concentrations of infective sea lice in sea areas likely to be used by sea trout (e.g. sea areas within the likely home range of sea trout and typically close to river mouths). We will normally use our initial screening model predictions of the dispersion of sea lice from the proposed development and from existing farms to do this.
* If the proposal is predicted to increase infective sea lice concentrations in a sea area likely to be used by sea trout, we will consider the results of any existing suitable monitoring information on sea lice infections of sea trout in that sea area.
* If there is suitable monitoring information and it provides evidence that sea trout in the sea area are being harmed by sea lice from existing fish farms, we will discuss options with the developer. These will include:
1. modifying their proposal (i.e. including additional mitigation) to the extent needed that the screening assessment can conclude that a significant adverse impact on sea trout is not likely; or,
2. if they wish to proceed with the original proposal, developing a more refined model to more precisely predict sea lice dispersal from the proposed development. The purpose of this further modelling is to provide an improved assessment (compared to screening) of whether the proposal is likely to contribute to infective sea lice concentrations in the sea area concerned and, if so, to what extent.

Further information on how the sea lice framework is embedded in our pre-application process for marine fish farm developments is available on SEPA’s [website](https://beta.sepa.scot/topics/water/aquaculture/pre-application/).

### What is our general permit application process for marine fish farm developments?

For all applications for new marine fish farms or to increase discharges at existing fish farms, we:

* Require the applicant to complete relevant application forms. We require applicants to do this to help ensure that we have all the information that we need from them to determine the application.
* Allocate a lead officer to act as the primary contact with applicant on the application.
* Validate the application to ensure that all the information we reasonably require form the applicant, and the required application fee, have been submitted.
* If applicable, initiate consultations on the application (see Section 3).

### How are sea lice interactions with salmon and sea trout considered in the permit application process?

* We specify the sea lice-related information that we require (including information about proposed mitigation) in our application forms.
* Our application validation process makes sure that the required sea lice-related information has been provided by the applicant.
* If an applicant has not gone through our pre-application process, we will carry out the sea lice risk screening exercise (see Section 2.2) at the application stage to identify:
1. The information we need from the applicant to determine the application and compare this with the information that the applicant has submitted. If information has not been provided, we may return the application.

If the application, considering the proposed mitigation, is likely to have a significant adverse impact on the water environment.

# Consulting on permit applications

### What is our general approach to consulting on permit applications?

We have a generic approach to consulting on applications with public bodies and with the public.

We normally consult on proposals for new fish farms and for increases in biomass at existing marine fish farms by requiring advertisement of such applications and by publishing the proposals on our [consultation hub](https://consultation.sepa.org.uk/). One of the purposes of consulting the public is to help us identify any other uses of the water environment near the proposed location of the fish farm development that may be affected.

### Who do we consult about sea lice interactions with wild salmon and sea trout?

* We will normally consult with the relevant district salmon fishery board or, in parts of the country where there is no district salmon fishery board, Marine Directorate. The purpose of this consultation is to identify any relevant information that is available on wild salmon or sea trout populations in the area concerned.
* We must formally consult NatureScot if we consider that:
1. An appropriate assessment under the [Conservation (Natural Habitats, &C.) Regulations 1994](https://www.legislation.gov.uk/uksi/1994/2716/contents) is required because the proposal is likely to have a significant effect on a special area of conservation designated for the protection of wild salmon or freshwater pearl mussels; or
2. There could be a significant impact on the national status of a priority marine feature (i.e. sea trout or Atlantic salmon),

In practice, consultation with NatureScot for the above reasons is expected to be rare. This is because we do not expect applicants who have gone through our pre-application process (see Section 2.2) to proceed to make applications that, taking account of the mitigation they are proposing, would be likely to have such an effect or impact.

We won’t normally require advertisement of proposals on the basis of sea lice interactions with wild salmon or sea trout. Again, this is because we do not expect applicants who have gone through our pre-application process (see Section 2.2) to proceed to make applications that, taking account of the mitigation they are proposing, would be likely to have a significant adverse impact on the water environment.

However, because we routinely advertise proposals for new marine fish farms and significant expansions of existing fish farms, interested third parties will have an opportunity to make representations about sea lice interactions with wild salmon or sea trout when responding to the advertisements.

# Deciding whether to grant a permit

### What is our general approach to deciding whether to grant permits?

Our primary consideration in deciding whether to grant a permit is whether the proposed development is likely to result in a significant adverse impact on the water environment.

For most regulated activities, to make such assessments, we compare the predicted environmental effects of the proposal on the current condition of the water environment against environmental standards or limits.

If a proposal is assessed as likely to have a significant adverse impact on the water environment we will only consider granting a permit if:

* There is potential, under environmental law, to allow the regulated activity to have a significant adverse impact / cause deterioration of the status of the water environment; and
* The relevant conditions under environmental law and policy for allowing a significant adverse impact on the water environment are met.

### How are sea lice interactions with wild salmon and sea trout considered in deciding whether to grant a permit?

* We assess the risk posed by sea lice to wild salmon and/or sea trout when determining whether to grant a permit for new marine fish farms; an expansion of an existing fish farm; or a variation to increase a permit’s sea lice limits.

A screening assessment using our screening model will be sufficient for this purpose if, considering the mitigation proposed, it shows that the proposal is unlikely to have a significant adverse impact. If this is not the case, the risk assessment will normally involve the use of a more refined model. The need for more refined modelling will normally already have been identified as part of the pre-application process (see Section 2.2).

# Issuing a permit, including permit conditions

### What is our general approach to issuing permits?

Our general approach to issuing permits includes imposing conditions that:

* We consider necessary or expedient for the purposes of preventing or mitigating risk to the water environment.
* Are outcome-focused, such as limit conditions which control the maximum magnitude of the activity (e.g. the magnitude of a discharge); or environmental standards that must maintained in the water environment. One of the benefits of outcome-focused conditions is that they provide operators with the flexibility to use their knowledge of their business processes to decide how best to comply with the conditions.
* Require [operators to monitor](https://beta.sepa.scot/regulation/how-we-regulate/operator-monitoring/#anchor-measurementassuranceandcertificationscotland(macs)) (e.g. to a suitable and verifiable quality), and report (e.g. on their compliance with their permit conditions).

### How are sea lice interactions with wild salmon and sea trout controlled by permits?

Our [permits](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fy4tb4j5n%2Fcar-mpff-permit-272-embz-standard.docx&wdOrigin=BROWSELINK) for marine fish farms authorise the operation of a marine fish farm, which encompasses as relevant:

1. discharges of fish excreta and uneaten food;
2. discharges of medicines and other chemicals;
3. abstraction of seawater; and,
4. for the purposes of the sea lice regulatory framework, the keeping of fish in sea pens and associated releases of sea lice (from sea lice on those fish) into the surrounding sea.

The conditions we impose when granting permits for marine fish farms include conditions relevant to mitigating the risk posed by sea lice to wild salmon and sea trout:

1. Conditions specifying the authorised location of the fish farm. The location of a fish farm affects its contribution to infective sea lice in wild salmon protection zones and areas of sea used by sea trout. All permits will specify an authorised location. This will be the only mitigation condition required for fish farms for which suitable modelling has shown do not contribute to infective sea lice in wild salmon protection zones or areas of sea used by sea trout.
2. Site-specific sea lice limit conditions (i.e. limits on the number of adult female sea lice permitted on the farm).

**Sea lice interactions with wild salmon**

Permits will normally include sea lice limit conditions (applicable from week 12 to week 22 only each year) to protect wild salmon unless one or more of the following apply:

1. In accordance with the provisions of our [regulatory position](https://beta.sepa.scot/media/xjiluc1v/sea-lice-regulatory-conditions-position-statement.pdf) on sea lice conditions, we have concluded that the location of the fish farm is sufficient mitigation – see (a) above.
2. The fish farm is to be fallow in weeks 12 and 13 each year – see (d) below.
3. We have concluded, based on the farm being assessed as being in the lowest relative risk category, that the water environment can be protected by monitoring sea lice numbers on the farm and intervening where necessary in response to rising trends in those numbers to avert a likely significant adverse impact on wild salmon. We use a relative risk matrix to decide if a farm is in the lowest relative risk category. The matrix combines the modelled relative contribution of the farm to the exposure of wild salmon to sea lice in wild salmon protection zones and the gap between the modelled overall exposure and the sea lice exposure threshold. Details of the risk matrix can be found [here](https://consultation.sepa.org.uk/regulatory-services/detailed-proposals-for-protecting-wild-salmon/user_uploads/sepa_response_to_consultation_feedback_december_2023-2.pdf).
4. Subject to the provisions of our [regulatory position](https://beta.sepa.scot/media/xjiluc1v/sea-lice-regulatory-conditions-position-statement.pdf) on sea lice conditions, the fish farm uses pens that are semi-enclosed or fully enclosed and have been demonstrated to prevent the farm being a source of sea lice releases into the sea.

**Sea lice interactions with sea trout**

Permits will normally only include sea lice limit conditions (applicable from week 12 to week 44) to protect sea trout if we determine that:

1. based on monitoring evidence, concentrations of infective sea lice from existing fish farms are likely to be adversely impacting sea trout; and
2. sea lice numbers on the proposed fish farm need to be limited to prevent it increasing infective sea lice concentrations in the sea area concerned.

If there is currently no monitoring of sea trout in a sea area likely to be used by sea trout and in which the fish farm development is predicted to contribute to infective sea lice concentrations, on issuing the permit we will:

* Consider the relative concentrations of infective sea lice in the sea area concerned in comparison with modelled concentrations in other sea areas used by sea trout.
* Based on the relative concentrations of infective sea lice, review whether to prioritise sea trout monitoring in the sea area concerned.
1. Sea lice monitoring (i.e. weekly counts of fish numbers and [counts](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2F1lpfqdkk%2Fsea-lice-count.docx&wdOrigin=BROWSELINK) of the average number of adult female sea lice per fish from week 12 to week 44) and associated reporting conditions. All permits will normally include monitoring and associated reporting conditions unless:
2. In accordance with the provisions of our [regulatory position](https://scottishepa.sharepoint.com/sites/SEPA-SCOTGOV-Sealiceregulatoryframework/Shared%20Documents/Sea%20lice%20regulatory%20framework/Implementation/In%20accordance%20with%20the%20provisions%20of%20our%20regulatory%20position%20on%20sea%20lice%20conditions%2C%20we%20have%20concluded%20that) on sea lice conditions, we have concluded that the location of the fish farm is sufficient mitigation – see (a) above.
3. Subject to the provisions of our [regulatory position](https://scottishepa.sharepoint.com/sites/SEPA-SCOTGOV-Sealiceregulatoryframework/Shared%20Documents/Sea%20lice%20regulatory%20framework/Implementation/%28iv%29%09Subject%20to%20the%20provisions%20of%20our%20regulatory%20position%20on%20sea%20lice%20conditions) on sea lice conditions, the fish farm uses pens that are semi-enclosed or fully enclosed and have been demonstrated to prevent the farm becoming a source of sea lice releases into the sea.

Sea lice monitoring is not required:

* In the first 6 weeks after a farm has been stocked provided the fish it is stocked with are sea lice-free.
* In any week when the number of fish on the farm is not greater than 35,000.
1. Fallow period conditions. A minimum break between harvesting and re-stocking a farm of 21 days will normally be required. For the protection of wild salmon, developers can propose to time fallow periods to help minimise the number of adult female sea lice on their fish farms during weeks 12 to 22.

Permits will normally include a fallow period condition unless:

1. In accordance with the provisions of our [regulatory position](https://scottishepa.sharepoint.com/sites/SEPA-SCOTGOV-Sealiceregulatoryframework/Shared%20Documents/Sea%20lice%20regulatory%20framework/Implementation/In%20accordance%20with%20the%20provisions%20of%20our%20regulatory%20position%20on%20sea%20lice%20conditions%2C%20we%20have%20concluded%20that) on sea lice conditions, we have concluded that the location of the fish farm is sufficient mitigation – see (a) above.
2. Subject to the provisions of our [regulatory position](https://scottishepa.sharepoint.com/sites/SEPA-SCOTGOV-Sealiceregulatoryframework/Shared%20Documents/Sea%20lice%20regulatory%20framework/Implementation/%28iv%29%09Subject%20to%20the%20provisions%20of%20our%20regulatory%20position%20on%20sea%20lice%20conditions) on sea lice conditions, the fish farm uses pens that are semi-enclosed or fully enclosed and have been demonstrated to prevent the farm becoming a source of sea lice releases into the sea.

### What are sea lice limit conditions?

* Sea lice limit conditions are limits on the number of adult female sea lice permitted on the farm as calculated by multiplying the average number of adult female sea lice per fish and the total number of fish. The limits are farm specific.
* The limits comprise a 4-week rolling average and a weekly maximum. The latter is 4 x the numeric value of the rolling average.
* The lower the number of fish on the farm (e.g. fish numbers lowered because of partial harvests of larger fish) the greater the average number of adult female sea lice per fish can be and still comply with the limits.
* Like most permit limits, operators can apply to vary sea lice limit conditions. During pre-application discussions prior to such an application, we will carry out the assessments and provide the advice described in section 2.2. In deciding whether to grant the variation, we will carry out the assessments described in section 4.2.

Our permit template for marine fish farms, including the sea lice conditions, is published on our [website](https://beta.sepa.scot/topics/water/aquaculture/permit-application-process/).

# Monitoring compliance with permit conditions

### What is our general approach to monitoring compliance with permit conditions?

We expect all regulated operators to understand their impact on the environment and to [comply with their permit conditions](https://beta.sepa.scot/media/440f3uc3/sepa-our-approach-to-regulation.pdf).

* We provide the advice and information non-compliant operators need to enable them to get back into compliance as quickly and as effectively as possible.
* We will also provide support and advice to help those operators that want to innovate in ways that reduce the environmental footprint of their business operations.
* We require operators to provide us with the right information, verify their reporting and provide assurance on environmental performance to the public.

We use the information we require operators to provide to:

* Assess, and report on, site compliance.
* Target our own compliance audits and inspections.
* Target action to address non-compliances.
* Update our assessments of risk to the water environment.
* Target environmental monitoring programmes to assess the impact on the water environment of regulated activities.

Where there is a non-compliance with permit conditions, we normally report the non-compliance to the operator.

We publish information relevant to compliance with marine fish farm discharge-related conditions on [Scotland’s Aquaculture Website](https://aquaculture.scotland.gov.uk/). This includes information on the biomass of fish on each farm; the quantities of anti-sea lice medicines used; and the results of seabed environmental surveys to assess whether environmental standards are being maintained.

We recently consulted on a new [environmental performance assessment scheme](https://www.sepa.org.uk/regulations/environmental-performance-assessment-scheme/) (EPAS). Once we have finalised and implemented the scheme, we will assess the environmental performance of each regulated site against the scheme criteria and publish the results.

### How is compliance with sea lice-related permit conditions monitored?

* In advance of week 12 each year, we intend to remind operators of farms subject to sea lice limit conditions of their responsibilities for managing sea lice on their farms.
* During week 12 to 22, operators must report their weekly sea lice counts (average number of adult female sea lice per fish and the number of fish on the farm) no later than Tuesday of the week immediately following the count. During weeks 23 to 44, operators must report their weekly sea lice counts no later than 12 days after the count.
* We will monitor the reported sea lice counts and engage with operators if the numbers of sea lice on the farm are rising and would, if unchecked, exceed the farm’s sea lice limits conditions or, if the permit for the farm does not include sea lice limit conditions, be likely to have a significant adverse impact on the water environment.
* We will carry out targeted audits and inspections of operator sea lice counts, focused on periods during which sea lice limit conditions apply.
* Where we identify a non-compliance, we will normally advise the operator of our findings so that they can act to bring the farm back into compliance.
* Once our new [environmental performance assessment scheme](https://consultation.sepa.org.uk/compliance-and-beyond/epas/) is finalised, we will include compliance monitoring results for sea lice-related conditions in assessments of the environmental performance of each fish farm.

We will also use the sea lice monitoring data provided by operators to update our assessments of the relative risk to wild salmon in wild salmon protection zones; and reviews of our environmental monitoring network for sea trout.

# Taking action in the event of non-compliance

### What is our general approach to securing action in the event of non-compliance?

Many operators increasingly recognise the value to their businesses of compliance and good environmental practice. In the event of non-compliance, our experience is that most respond to advice and guidance and come back into compliance. Because of this, our main route to securing compliance is to provide the advice and guidance non-compliant operators need to enable them to get back into [compliance](https://beta.sepa.scot/media/440f3uc3/sepa-our-approach-to-regulation.pdf) as quickly and as effectively as possible.

Where necessary or appropriate to secure compliance, we have a wide range of enforcement tools that we can bring to bear. These include formal written warnings; enforcement notices; monetary penalties; and powers to suspend or vary permits. Our generic approach to taking action to secure compliance with permit conditions is set out in our [enforcement policy](https://www.sepa.org.uk/media/219244/enforcement-policy.pdf) and [guidance on the use of enforcement action](https://www.sepa.org.uk/media/219242/enforcement-guidance.pdf).

### How will we secure compliance with sea lice-related permit conditions?

Our generic approach to securing compliance applies equally to compliance with sea lice-related permit conditions.

There may be multiple ways in which an operator of a marine fish farm could secure compliance. Our outcome focused permit conditions allow operators to exercise their expertise in their farming processes to do so.

Under our [performance standard](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2F1lpfqdkk%2Fsea-lice-count.docx&wdOrigin=BROWSELINK) for sea lice counts, we have also provided operators with flexibility in how they comply: The performance standard allows for the use of automated sea lice counting technology if operators are finding it challenging to comply with their permit’s sea lice monitoring conditions using manual counting methods.

With respect to compliance with sea lice limit conditions, operators may, for example, decide to:

* optimise the timing and coordination of medicinal and physical treatments to control infections;
* control farmed fish position in the water column so that the fish spend more time at depth than near the sea surface (e.g. snorkel pens, etc);
* use physical barriers (including pen skirts; or semi-enclosed or fully enclosed pens) to prevent or reduce the occurrence of sea lice infestations;
* reduce the number of fish on the farm (e.g. by reducing stocking levels or carrying out graded harvests to remove larger fish during the run-up to the period during which the sea lice limit conditions apply);
* operate shorter production cycles to minimise sea lice numbers on farmed fish during weeks 12 to 22 (e.g. using the location as a nursery location or stocking with large smolts that will grow to harvest weight much sooner than would otherwise be the case); or

consolidating production at locations that make a smaller contribution to the exposure of wild salmon and sea trout to sea lice than current location(s).

# Monitoring the environment

### Why do we monitor the water environment?

One of our roles is to [monitor](https://www.sepa.org.uk/environment/water/monitoring/) the condition of the water environment. We do so by carrying out the monitoring ourselves, by collaborating with other public bodies and using monitoring information they collect; and by commissioning others to carry out monitoring under our direction.

Monitoring of the environment provides important feedback for regulation: It enables us to:

* Assess the effectiveness of regulation in protecting and, if relevant, improving the condition of the environment.
* Identify adverse impacts on the environment that require action to improve the condition of the environment and to target that action by helping identify those activities responsible for the adverse impacts.

We will often use a range of monitoring information in conjunction with models of the environment to provide the appropriate confidence to underpin evidence-led regulation. For example, before requiring significant investment by operators to reduce their use of the environment (e.g. the volume of pollutants they are discharging into the water environment), we need to be confident that such action is necessary (e.g. confident the environment is impacted) and, hence, will deliver real benefits.

### How will sea lice interactions with wild salmon and sea trout be monitored?

We will use a wide range of evidence to assess the interactions between sea lice from fish farms and wild salmon and sea trout. Our principal goals are to use this evidence to:

1. Assess the effectiveness of actions taken under our sea lice regulatory framework to protect wild salmon and sea trout from further deterioration resulting from increases in current infective sea lice concentrations.
2. Determine if current infective sea lice concentrations in the environment resulting from the operation of existing farms are having an adverse impact on wild salmon or sea trout.
3. If we conclude that current infective sea lice concentrations are adversely impacting wild salmon or sea trout, assess the effectiveness of actions taken to reduce those concentrations in improving the condition of the salmon or sea trout population.

Our initial screening assessment identified 8 wild salmon protection zones in which the relative risk to wild salmon is greatest. We have prioritised these zones for targeted further assessment to determine if current infective sea lice concentrations in the zones are having an adverse impact on wild salmon - point (b) above.

The monitoring and modelling work needed with respect to each of these wild salmon protection zones is likely to take 5 to 6 years. In part this is because many marine fish farms operate on a roughly two-year cycle with varying sea lice numbers on the farm across the two years; and because there is variation between years in other factors, such as sea temperatures, that can affect sea lice and wild salmon interactions. We need multiple years of environmental data to account for this variability.

Our planned monitoring programmes include:

* Monitoring of sea lice on farmed salmon held for short periods in sentinel pens within wild salmon protection zones. This monitoring is designed to provide information to evaluate, and fine tune, the performance of sea lice dispersion models in predicting the spatial distribution of infective sea lice in the sea. Fish farm operators have agreed to undertake the monitoring and carried out a first programme in Spring 2025 in the East of Skye wild salmon protection zone.
* **Monitoring juvenile salmon and trout populations in rivers.** This multi-year monitoring, programme, which will sample salmon and trout populations by catching the fish using electrofishing equipment, will include rivers in the Northern Isles, Western Isles and the West Coast. To ensure a spatially balanced and representative sampling, the sampling design is Generalized Random Tessellation Stratified (GRTS). Many salmon and trout populations will be sampled, including populations subject to infective sea lice concentrations modelled as relatively high and others subject to relatively low modelled sea lice concentrations. The monitoring will allow us to track the condition of salmon and sea trout juveniles over time. The data will be analysed alongside information on relative sea lice pressure generated by sea lice modelling to explore whether effects of sea lice on wild salmon and trout populations can be detected in the condition of juvenile fish. We will commission others to carry out this monitoring on our behalf.
* **Monitoring of sea lice on sea trout.** Unlike wild salmon, sea trout spend much of the sea phase of their lifecycle in coastal waters. Netting them and examining them for sea lice infections (before releasing back into the sea), can provide valuable information for assessing potential adverse impacts directly and for building additional confidence in modelling predictions of infective sea lice distribution in the sea. We commissioned an initial, small programme of such monitoring in 2025, which was carried out by fisheries trusts. We will be commissioning a larger, multi-year programme commencing in 2026. This monitoring has been a common component of monitoring carried out under the environmental management plans previously required by local planning authorities as a condition of planning permission. The EMP-related monitoring will no longer be required and will, as appropriate, be subsumed into our sea trout monitoring programme.

In addition to the above monitoring, we will also use evidence generated from:

* [**The West Coast Tracking project**](https://atlanticsalmontrust.org/our-work/west-coast-tracking-project/)**,** which tracks wild salmon post-smolts as they emigrate from rivers. This information will help inform and improve our modelling of the exposure of wild salmon to infective sea lice in wild salmon protection zones.
* **Other research projects carried out by researchers in Scotland and elsewhere.** This includes research on the impacts of sea lice on wild fish and on novel methods for monitoring the concentration of sea lice in the sea. With respect to the latter, as new monitoring methods emerge, we will consider if and how to employ them as part of our environmental monitoring programmes.

We will share the details of our monitoring programmes and their results directly with stakeholder groups that we established in 2024 for that purpose.

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