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**Changes to SEPA charges for the marine fish farm sector**

May 2025

**Consultation digest**

# Overview

The [Scottish Environment Protection Agency](https://beta.sepa.scot/about-sepa/who-we-are) (SEPA) is Scotland’s principal environmental regulator, protecting and improving Scotland’s environment.

In November 2024, we consulted on [changes to SEPA charges for the marine fish farming sector](https://consultation.sepa.org.uk/regulatory-services/marine-pen-fish-farming-charging-changes/).

The purpose of our proposed changes in charges is to recover the cost of environmental monitoring programmes that will investigate the interaction between sea lice from existing marine fish farms and wild salmon and sea trout. This monitoring will underpin the on-going implementation of our spatially-based, adaptive and risk-proportionate [sea lice regulatory framework](https://www.sepa.org.uk/regulations/water/aquaculture/sea-lice-regulatory-framework-implementation/).

# Consultation summary

In the consultation, we described three environmental monitoring programmes that form part of the implementation of our sea lice regulatory framework:

* Sentinel-pen based monitoring, the results of which will be used to evaluate and refine the skill of sea lice dispersion models. This monitoring will be targeted at those Wild Salmon Protection Zones in which modelling currently indicates the sea lice exposure threshold for salmon is at risk of being exceeded.
* Sea trout monitoring programmes, the results of which will be used primarily to identify where action is needed to reduce pressure from sea lice on sea trout; and to assess the effectiveness of the regulatory framework in protecting sea trout.
* Juvenile salmon and trout monitoring in rivers, the results of which will be used alongside other evidence to identify where any action is needed to reduce pressure from sea lice on wild salmon; assess the effectiveness of the regulatory framework in protecting wild salmon; and contribute to the assessments of sea lice pressure on sea trout.

We said that fish producers have volunteered to deliver the first of the monitoring programmes listed above, sentinel pen-based monitoring, and are already committed to delivering a pilot programme for 2025. For this reason, we have not included any costs for this monitoring in the proposed charge increases.

We said that we intend to procure the other two environmental monitoring programmes, sea trout monitoring and juvenile fish monitoring, as we believe that using external contractors will be more cost-efficient than inhouse delivery.

**Table 1: Summary of monitoring programme costs that the increase in charges will recover**

| **Monitoring programme elements** | **2025/26** | **From 2026/27** |
| --- | --- | --- |
| Contracted environmental monitoring | £84,000 | £614,000 |
| Programme design, procurement, contract management, analysis of results | £223,000 | £296,000 |
| Overall programme | £307,000 | £910,000 |

We received 12 responses to the consultation. Of these:

* 5 were from salmon producers.
* 1 was from a trout producer.
* 2 were from trade associations for the salmon and trout sectors, respectively.
* 4 were from those involved in the conservation and management of wild salmon and sea trout.

# Monitoring proposals

1. **We asked:**

**If you agreed that, in Section 4 of the consultation, we had identified an appropriate scale of monitoring work to allow us to improve our understanding of the interactions between sea lice and salmonids**.

1. **You said:**

There was broad support for the proposed scale of monitoring from representatives of organisations responsible for wild salmon and sea trout fisheries. However, two respondents felt that sentinel pen monitoring should be delivered by SEPA or an independent third party rather than fish producers.

The common view among fish producers and their trade associations was that there was insufficient detail about the monitoring programmes to judge the appropriateness of their proposed scale.

There was also concern that the proposed annual review and amendment of monitoring programmes would create business uncertainty because of the potential for the reviews to result in increases in monitoring scope and associated costs.

1. **Our response to what you said:**

We intend to proceed based on the scale of monitoring we proposed in the consultation.

*Delivery of sentinel pen monitoring programme*

In our [response](https://consultation.sepa.org.uk/regulatory-services/detailed-proposals-for-protecting-wild-salmon/user_uploads/sepa_response_to_consultation_feedback_december_2023-2.pdf) to the feedback we received on our second public consultation, we decided to proceed with a collaborative approach to sentinel pen-based monitoring programmes under which fish producers will directly fund and undertake the monitoring programmes on a voluntary basis. Fish producers have confirmed to us that they are committed to collaborating in this way and will be running a pilot sentinel pen monitoring programme in 2025. The programme will include provisions for independent audit, which will be discussed fully with our stakeholder advisory groups. We will keep this approach to delivering sentinel pen monitoring under review and, if necessary, raise charges as needed to undertake, or commission independent third parties to undertake, sentinel pen monitoring rather than fish producers.

*Detail of the monitoring programmes*

In the consultation, we provided:

* an overview of the proposed scale of the environmental monitoring programmes for 2026.
* a description of the work planned in 2025 on the detailed design of the programmes, which included recruiting additional specialists to support that work.

As we develop the detailed design of these monitoring programmes, we will share with our stakeholder advisory groups to get their input and advice.

*Annual reviews and amendments*

We will review the monitoring programmes on an annual basis. This is an important element of an adaptive approach and will help ensure that the programmes are optimised in terms of their targeting and cost-effectiveness. For example, in the annual reviews, we will consider whether to re-prioritise monitoring effort (eg to different locations); otherwise update the design of the programmes; or adopt new, more cost-effective monitoring methods.

However, over the next 4 to 6 years, we do not expect the overall scale of those environmental monitoring programmes for which we will be recovering costs to change. Consequently, there would be no increase in charges (other than inflation-related) unless we take on delivery of the sentinel pen-based monitoring that operators are currently piloting and directly funding. If this were to be the case, we would consult on the associated changes to charges.

The environmental monitoring programmes are investigative, with an expected timespan of 4 to 6 years. After they have concluded, the type of further programmes needed, and their targeting, will depend on the outcome of the investigative programmes.

1. **We asked:**

**If you had any suggestions to improve our estimates of the scale of monitoring work required.**

1. **You said:**

Among representatives of the sector, there were three main suggestions relevant to our estimated scale of monitoring work:

* The programmes should be much more comprehensive and consider all pressures from all sectors, with costs shared accordingly.
* Existing data should be analysed before implementation.
* Adult populations should be assessed to understand population status.

There were also several suggestions from representatives of organisations responsible for wild fisheries management:

* There should be more frequent sentinel pen-based monitoring in the early period of implementation.
* More detail is required on the costs identified in the consultation for arranging permissions to carry out monitoring.
* The costs of work in remote areas and islands might be greater than we had suggested in the proposed charges.
* More detail on the frequency of sea trout monitoring would help in understanding the scale of the monitoring programmes.

One of the fish producers made similar points to the latter two noted above

1. **Our response to what you said:**

*Monitoring of all pressures*

We have been monitoring a wide range of pressures from human activity on Scotland’s rivers, freshwater lochs, estuaries and coastal waters for many years as one of our duties under the [Water Environment and Water Services (Scotland) Act 2003](https://www.legislation.gov.uk/asp/2003/3/section/8). Information these monitoring programmes have provided on the impacts of the pressures on the water environment is available on our [website](https://informatics.sepa.org.uk/RBMP3/). This evidence has underpinned [river basin management](https://www.sepa.org.uk/environment/water/). The costs of the river basin monitoring programmes are partly covered by charge payers from the multiple sectors responsible for pressures on the water environment.

Up to now, river basin management monitoring programmes have not investigated the effects of sea lice on fish populations. The purpose of the proposed environmental monitoring programmes is to address this gap by investigating the pressure from sea lice from fish farms on wild salmon and sea trout. The information generated from these new, targeted monitoring programmes will be considered alongside the evidence of the effects of other pressures on the water environment provided by previous, and on-going, river basin management monitoring programmes.

*Use of existing data*

The design of the environmental monitoring programmes for 2026 will be informed by relevant existing information. This will include the results of previous monitoring programmes, such as sea trout monitoring programmes carried out under environmental management plans. We are currently in the process of analysing the existing monitoring data.

*Assessments of adult salmon*

In investigating the interaction between sea lice from fish farms in a sea area and wild salmon, we will consider assessments of adult salmon as well as the evidence gathered from our proposed environmental monitoring programmes. Assessments of adult salmon are:

* carried out by Marine Directorate and used to inform understanding of [salmon population status](https://www.gov.scot/publications/status-of-salmon-in-scotland/pages/conservation-status-of-individual-salmon-stocks/); and
* not specifically targeted at investigating the effects of sea lice on wild salmon or sea trout populations.

Consequently, we do not consider it appropriate to recover the costs of adult assessments from marine fish farms.

We calculated costs for arranging permissions using a standard day rate, and a time estimate considering the range of requirements for the sea trout and juvenile monitoring, and SEPA’s own experience in liaising with landowners and other stakeholders for fish monitoring. We accounted for potential efficiency of scale where we believe that permissions could be arranged centrally.

1. **We asked:**

**If you agreed with our proposal to apply the additional charges across all marine fish farms that pay an environmental charge.**

1. **You said:**

There was broad support from representatives of organisations responsible for wild salmon and sea trout fisheries for our proposal to recover the costs of environmental monitoring programmes from all marine fish farms that pay an environmental charge.

There was an acceptance by representatives of fish producers that SEPA should recover the costs for appropriate monitoring it undertakes in relation to the sector.

Most representatives of fish producers emphasised that:

* Fish producers should not bear the cost of monitoring non-aquaculture-related pressures on the water environment.
* Contracting out of monitoring by SEPA may result in recovery of more than costs in the form of profits for the contractor. Any profit should be borne by SEPA or procurement managed through suitable procurement procedure/framework like that imposed by other UK environmental regulators.
* They needed reassurance that requirements for environmental monitoring under planning permission conditions for environmental management plans would cease before fish producers were asked to pay for SEPA environmental monitoring.

They also highlighted other work mentioned in the consultation which they believe should not be paid for by fish producers, including the costs of:

* Fish tissue collection for DNA analysis, as they believed this was intended to be used for assessing introgression and not the effects of sea lice from fish farms.
* Creating a spatial visualisation of tool for sea lice-related data.

1. **Our response to what you said:**

We intend to proceed with our proposal to recover the costs of sea lice-related environmental monitoring programmes from all marine fish farms that pay an environmental charge.

*Non-aquaculture related pressures*

The costs we recover from the marine fish farming sector will be solely for monitoring programmes intended for the purpose of investigating the effects of exposure to sea lice from marine fish farms on wild salmon and sea trout. The costs will not include the costs of monitoring the effects of any other pressures on the water environment.

We will not charge fish producers for the cost of building a spatial visual tool for sea lice-related data. We have not included recovery of any costs for such work in our proposed changes to charges, however, the wording we used in the consultation may have wrongly implied that we had. The costs we have included are solely the costs of data management, analysis and reporting.

DNA analysis of trout tissue samples will enable netted sea trout to be traced to the rivers from which they originate. This information will be used in interpreting the results of the sea trout monitoring programmes and juvenile trout monitoring programmes. We have not included the cost of collecting tissue samples from juvenile salmon for DNA analysis. Such analysis is used to assess introgression rather than the interactions between sea lice from marine fish farms and wild salmon.

*Use of contractors*

When contracting out environmental monitoring, we will:

* Follow public sector procurement rules to ensure value for money; and
* Keep under review the relative cost-efficiency of outsourcing the monitoring versus carrying it out ourselves. We will switch to an inhouse approach if in future it becomes more cost-efficient to do so.

*Transition from EMP monitoring*

Based on discussions with Scottish Government, local authorities and NatureScot, separate sea lice-related environmental monitoring under EMPs will not be necessary after the implementation of our new, national investigative monitoring programmes in 2026.

The details of the process for transition from EMP-driven sea lice monitoring to sea lice regulatory framework monitoring will be finalised during 2025.

If there are delays in the transition away from EMP-driven sea lice monitoring, we will revise the scope (and associated costs) of the national investigative monitoring programmes as necessary to avoid duplicate effort.

1. **We asked:**

**If you agreed with our proposal to allocate the charges in proportion to the scale of the environmental charge.**

1. **You said:**

Representatives of organisations responsible for wild salmon and sea trout fisheries agreed with our proposal to allocate charges in proportion to the scale of the environmental charge.

There was support among fish producers for the principle of allocating charges in relation to the scale of an activity, and, by doing so, avoid charges for non-productive farms.

However, many representatives of the sector said that the scale of activity as determined under the current charging scheme (based on fish biomass and pollutant emissions) did not necessarily relate to the risk posed by sea lice to wild salmonids.

There was also a concern raised that adding the proposed charges for environmental monitoring to the existing charging scheme would increase the latter’s complexity, making fees less transparent.

1. **Our response to what you said:**

We intend to proceed with our proposal to allocate the charges in proportion to the scale of the environmental charge.

*Relevance of scale of charge to sea lice pressure*

The scale of the environmental charge for a marine fish farm under the [environmental assessment scheme](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2F594731%2F220630-the-environmental-assessment-scheme-march-2018-version-3.docx&wdOrigin=BROWSELINK) depends on the scale of its pollutant emissions. The latter depend on the biomass of fish farmed (i.e. the size of the farm) and, for example, the quantities of anti-sea lice medicines used.

The same sizes of fish farms (biomass/number of fish) may have different environmental footprints in terms of their pollutant emissions or their contribution to the exposure of wild salmonids to sea lice. This is because multiple factors other than farm size, such as location, can also affect the environmental footprint of pollutant emissions and of sea lice originating from farms.

However, we do not consider it practical or necessary to include all the additional factors in the environmental assessment scheme that would be needed to accurately characterise and differentiate the potential sea lice pressure on wild salmonids or other pressures on the water environment from each individual farm. An environmental assessment scheme that sought to incorporate all the factors that affect each fish farm’s specific environmental footprint would very complex and unwieldly.

At a fish farming company level, we consider that farm size ensures that the charge is progressive and broadly reflects overall environmental footprint, including in relation to sea lice. As part of the sea lice regulatory framework, we categorised the relative risk posed by sea lice from existing, authorised fish farms to wild salmon, placing farms in 1 of 4 relative risk categories. The three fish farming companies with the largest total licenced biomass of fish account for all but 4 of the 61 fish farms not in the lowest relative risk categories.

1. **We asked:**

**Do you agree with our proposal to phase the enhanced monitoring programme over 2025 and 2026?**

1. **You said:**

Representatives of organisations responsible for wild salmon and sea trout fisheries had mixed views, from neutral to supportive.

There were several different views among representatives from the aquaculture sector. These included:

* Insufficient detail to assess and requires further collaborative work with fisheries experts.
* Phasing must avoid overlap with monitoring under current environmental monitoring plans.
* Prior to phasing in enhanced monitoring, there should be a defined period to establish baselines for all areas (including those without salmon farms).
* Lack of engagement on proposed pilot monitoring for 2025.

1. **Our response to what you said:**

We intend to proceed as proposed, namely:

2025/26: Design and set up (including procurement) of monitoring programmes for commencement in 2026/27.

Limited pilot sea trout monitoring programme.

2026/27: Full environmental monitoring programmes, consisting of sea trout monitoring in the sea and juvenile salmon and trout monitoring in rivers, commence.

*Further collaborative work with fisheries experts*

We are currently collaborating with Scottish Government fisheries scientists on the design of scientifically robust monitoring networks. This work will continue in 2025/26, and proposed designs will be discussed with our stakeholder advisory groups, which include representatives of fishery managers.

*Avoidance of overlap with EMP monitoring*

The purposes of delaying the introduction of the full environmental monitoring programmes until 2026/27 include to provide sufficient time to:

* Plan for, and implement, an end to EMP sea lice-related monitoring.
* Design, set up and procure cost-effective and scientifically robust monitoring programmes.

*Establishment of baselines*

The environmental monitoring programmes will:

* Be designed to understand current interactions between sea lice from marine fish farms and wild salmon and sea trout to provide a baseline against which to assess the effectiveness of the sea lice regulatory framework.
* Encompass a sufficiently broad range of monitoring locations to include monitoring of wild fish populations subject to different relative pressure from sea lice including relatively low and relatively high pressure.
* Compare the results of juvenile fish population monitoring against established benchmark/reference conditions representing no or minimal impact conditions and which are already incorporated into the standard methods that SEPA and Marine Directorate use for assessing the condition of juvenile fish populations.

Our purpose-built sea lice risk screening models provide assessments of the relative pressure from sea lice from marine fish farms on wild salmon and sea trout. Our latest assessments indicate that relative pressure from sea lice from fish farms on wild salmon and sea trout varies geographically. We will use this variation, which encompasses areas of coastal waters with relatively low and relatively high sea lice pressure, to inform the design of monitoring programmes and the analysis of their results.

Our assessments of sea lice pressure will continue to be further refined via on-going model development, including through testing of the models against sentinel pen-based monitoring results. We will use improvements in understanding of sea lice pressure to the fine tune monitoring networks and inform interpretation of monitoring results.

*Pilot monitoring for 2025*

We are planning a small, pilot sea trout monitoring programme for implementation in Summer 2025. The programme is based on consideration of previous monitoring programmes and discussion with Scottish Government fisheries scientists.

The purposes of the programme include to provide monitoring information that we can:

* Compare with the results of previous, national sea trout monitoring programmes managed by Scottish Government.
* Use to help inform the cost-effective design and set up of future monitoring programmes

We will engage with our stakeholder advisory groups to discuss what we learn from the programme and how we plan to use that knowledge to inform future monitoring programme development and delivery.

1. **We asked:**

**Do you agree that the proposals for a national monitoring programme will represent a significant improvement in the way that sea lice/wild salmonid interactions are monitored?**

1. **You said:**

There was broad agreement from representatives of organisations responsible for wild salmon and sea trout fisheries that moving to a national programme will represent a significant improvement in the way that sea lice/wild salmonid interactions are monitored.

In contrast, most representatives of the fish farming sector thought that the proposed national monitoring programmes:

* were little different from previous monitoring and, consequently, it was not clear how they would improve understanding of sea lice/wild salmonid interactions.
* would not help improve understanding unless baselines were established first.
* must be relevant to assessing operators’ compliance against the requirements of licences, and SEPA has not articulated how the proposed monitoring will assess the effectiveness of the sea lice regulatory framework in mitigating any risk to wild salmon or sea trout.

1. **Our response to what you said:**

Based on the feedback received, we remain of the view that our proposals for a national monitoring programme will represent a significant improvement in the way sea lice and wild salmonid interactions are monitored.

*Difference from previous monitoring programmes*

There are several key differences between our proposed environmental monitoring programmes and previous programmes. The most important of these differences is that, for the first time, sea lice dispersion models are providing us with a means of identifying relative sea lice pressure on different populations of wild salmon and sea trout. This information provides a basis for better targeting of monitoring and for evaluating the results. Previous monitoring programmes lacked this basis.

Other important differences include:

* a nationally coordinated, scientifically robust, statistical design of juvenile fish monitoring, which there has not been at national scale under EMP monitoring; and
* ease of adaptation of the monitoring programmes in the light of previous results; changes in the sector (eg changes in farming practices, growth and consolidation of production); or the emergence of more cost-efficient monitoring methods.

*Understanding of baselines*

See our response to question 5 above.

*Assessing the effectiveness of the sea lice regulatory framework*

The objectives of the planned sea lice framework monitoring programmes are to:

* Investigate the effects of sea lice from marine fish farms on wild salmon and sea trout.
* Monitor the effectiveness of the sea lice regulatory framework (including compliance with licence conditions) in protecting wild salmon and sea trout from sea lice pressure.
* Monitor the effectiveness of the sea lice regulatory framework in reducing sea lice pressure on wild salmon or sea trout where such action has been identified as necessary to address adverse impacts on the wild fish resulting from sea lice pressure.

To achieve these objectives, the monitoring programmes will:

* Monitor the effects of sea lice pressure on wild salmon and sea trout populations in the aquaculture zone (see also our response to question 5 on baselines)
* Provide a basis for assessing changes in the effects of sea lice pressure on wild salmon and sea trout.

1. **We asked:**

**Do you have any other observations that you wish to make?**

1. **You said:**

Representatives of organisations responsible for wild salmon and sea trout fisheries told us that they wanted clarity on how contracted monitoring would be overseen.

Fish producers and their trade associations offered a range of other observations. These included:

* Comments about the governance of the monitoring programmes and the results produced; and
* technical comments and questions about the details of the monitoring programmes, including monitoring methods.

*Governance observations*

Representatives of the fish farming sector said that:

* Engagement of the wild fisheries sector and academic institutions, and SEPA’s stakeholder advisory groups in the design of monitoring programmes was important.
* The governance arrangements need to ensure that fish farm operators are informed of upcoming costs; and that monitoring effort remains appropriately targeted.
* All published monitoring data must be accompanied by sufficient contextual information to support public understanding of the data and protect against misinterpretation and misrepresentation.

*Technical observations*

Representatives of the fish farming sector questioned:

* the effectiveness of monitoring juvenile populations of salmon and trout because of the indirect relationship between juvenile fish populations in rivers and sea lice pressure; and, in the case of trout, differences between rivers in the proportions of juvenile trout that become sea trout.
* the effectiveness of using a paired catchment approach as the basis for the juvenile fish population monitoring programmes.
* whether seine netting had a bias towards capturing weaker fish and, therefore, that fyke netting should be used instead, albeit that fyke netting is likely to be more difficult for contractors to undertake.
* how SEPA could design monitoring programmes without first demonstrating there is an impact, where and scale.

1. **Our response to what you said:**

*Clarity on how contracted monitoring will be overseen.*

We will directly manage the contracted monitoring programmes. We will discuss proposed technical specifications for the design of the programmes; the programme results; and proposed refinements to the designs of future programmes with our stakeholder advisory groups. Please also see our response to question 3 above.

*Input from other scientists and fisheries managers*

We will continue to work with other scientists, including those with practical experience of carrying out related monitoring programmes. This will help us ensure that the environmental monitoring programmes planned to commence in 2026 are, and remain, appropriately designed and targeted to investigate interactions between sea lice from fish farms and wild salmon and sea trout. This will include sharing and discussing plans and results with our stakeholder advisory groups on which fisheries managers are represented.

*Keeping fish producers informed*

We will provide regular updates to fish producers and other interested parties about progress with the development, implementation, and interpretation of the results of, the environmental monitoring programmes. This will include regular communication with our stakeholder advisory groups on which fish producers are represented.

*Publication of monitoring results*

We will ensure that the results of the monitoring programmes are publicly available. When publishing the results or otherwise providing them to interested parties, we will provide an accompanying information to assist understanding of the data.

In the consultation, we focused on the scale of monitoring rather than technical detail of each monitoring programmes. The latter will be developed and refined with input from our own and other scientists, and our stakeholder advisory groups. For now, we have provided a brief response on the main technical observations made by consultees.

*Approach to juvenile salmon and trout monitoring*

We will be considering multiple different sources of evidence when assessing the interaction between sea lice from existing marine fish farms and wild salmon and sea trout. The results of appropriately designed juvenile population monitoring will be only one of these sources.

We are not proposing to use a paired catchment approach as the basis for the juvenile fish population monitoring programme.

We will design the monitoring for investigating for juvenile fish populations by adapting (ie to enable assessment of sea lice pressure) the statistically robust method[[1]](#footnote-2) that was used by Scottish Government scientists to design the monitoring networks they used for the [national electrofishing programme](https://www.gov.scot/publications/national-electrofishing-programme-for-scotland/).

Juvenile trout monitoring is seen as an effective and [widely used](https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.70040) in Europe in assessments of sea trout population strength, including in the [Baltic Sea area](https://www.researchgate.net/publication/334784497_Assessment_and_recruitment_status_of_Baltic_sea_trout_populations).

*Fishing methods for capturing sea trout*

Although we are not currently planning to specify a particular fishing method for use in monitoring sea lice on sea trout, we would do so if there is scientific evidence that a method is unable to provide data of suitable scientific quality for our purposes. We are not currently aware of scientific studies which have identified a bias in seine netting but will take advice from our expert groups and incorporate any such findings if they become available. We are aware that catches in previous seine netting programmes have included substantial proportions of sea tout that are not infected with sea lice. In the [scientific literature,](https://onlinelibrary.wiley.com/doi/10.1111/fme.12010?msockid=3f4030c3a116697b1e112570a0266802) sea trout monitoring, including using seine netting, has been used in investigating the relationship between sea lice levels on netted sea trout and the proximity of where they were netted to marine fish farms.

*Design of monitoring networks without data on impacts*

A principal purpose of the monitoring programmes is to investigate interactions between sea lice from existing marine fish farms and wild salmon and sea trout – i.e. to assess whether current levels of sea lice on fish farms are adversely affecting salmon or sea trout. There is a strong empirical evidence base to suggest that these interactions exist, and that impacts are likely in some circumstances.

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1. A stratified, unequal probability, generalised random tessellation stratified (GRTS) sample design [↑](#footnote-ref-2)