

# Environmental Monitoring Plan

## Shuna, Loch Linnhe (CAR/L/SEPA2021-100)

### Version 1, 8 July 2021

#### Introduction

This Environmental Monitoring Plan (EMP) details the proposed monitoring protocol for our proposed new Scottish Sea Farms (SSF) site at Shuna, Loch Linnhe (CAR/L/SEPA2021-100). It has been produced by SSF as an appendix to the accompanying CAR application.

Proposed site information and modelled medicine consent limits are summarised in Table 1.

Table 1: Shuna site summary

Company	Scottish Sea Farms Ltd
Site Name	Shuna
Licence Reference	CAR/L/SEPA2021-100
Fish species	Atlantic salmon
Maximum biomass	1870.4 T
Azamethiphos	458.4g/24hrs; 329.1g/3hrs
Deltamethrin	22.3g/3hrs

Other chemicals may be discharged as described in the Permitted Substances Working Plan or Permitted Substances List.

#### Post-peak biomass benthic monitoring

SSF propose to monitor in accordance with the transects and station positions generated by NewDepomod modelling, as detailed in the accompanying modelling report (“Shuna, Loch Linnhe, NewDepomod Report ID 0121-1 DRAFT”). In line with the new Environmental Monitoring Protocol, four sampling transects have been positioned at orthogonal angles (Fig. 1). Seven sampling stations have been placed along each transect at regular intervals. Stations are detailed in Table 2 below.

Note that in practice, sample stations are determined with respect to distance from the relevant cage edge for each transect. The actual cage edge positions may differ slightly from those detailed in Tables 1 and 2 due to the cage grid not being moored in exact accordance with the licenced position (but within the 50m limit imposed by condition 2.4.3 of the licence), or to movement of the cages due to wind/tide. Where there is a difference between modelled cage edge positions and their actual positions at the time of survey, it follows that there will be a corresponding offset in the transect station positions.

From Figure 1 below, it appears likely that the number of proposed monitoring stations is in excess of what would be required to demonstrate compliance at the 0.64 IQI 100m mixing zone edge – particularly along the N, S and W transects (T2-4). We may therefore choose to prioritise analysis and reporting of selected stations along these transects, in line with SEPA guidance applicable at the time of the survey. The remaining samples will be held in storage in case further analysis is required.

This monitoring protocol will be reviewed and amended as considered necessary following the first benthic survey. At the time of writing (January 2021), this is projected to be in May 2023. Should revision be required, the revised version will be submitted to SEPA for review. Once approved, an application will be made to vary the CAR licence accordingly. This application will be submitted within three months of the start of the next production cycle, or as otherwise agreed with SEPA.

Table 2: Benthic sampling station positions (from NewDepomod Report)

Transect	Bearing	Distance	Latitude	Longitude	Easting	Northing
1	96.5	0m	56°35.850'	-5°22.828'	192571	750182
1	96.5	50m	56°35.847'	-5°22.780'	192621	750175
1	96.5	125m	56°35.850'	-5°22.706'	192696	750176
1	96.5	250m	56°35.850'	-5°22.584'	192821	750169
1	96.5	375m	56°35.849'	-5°22.462'	192945	750163
1	96.5	500m	56°35.849'	-5°22.340'	193070	750156
1	93.4	625m	56°35.849'	-5°22.218'	193195	750149
1	96.5	750m	56°35.849'	-5°22.095'	193320	750143
2	183.3	0m	56°35.898'	-5°22.988'	192412	750279
2	183.3	25m	56°35.912'	-5°22.988'	192413	750304
2	183.3	50m	56°35.925'	-5°22.988'	192415	750329
2	183.3	75m	56°35.939'	-5°22.987'	192416	750354
2	183.3	100m	56°35.952'	-5°22.987'	192417	750379
2	183.3	125m	56°35.965'	-5°22.987'	192419	750404
2	183.3	150m	56°35.979'	-5°22.987'	192420	750429
3	272.6	0m	56°35.890'	-5°23.217'	192177	750276
3	272.6	25m	56°35.890'	-5°23.241'	192152	750278
3	272.6	50m	56°35.890'	-5°23.266'	192127	750279
3	272.6	75m	56°35.890'	-5°23.290'	192102	750280
3	272.6	100m	56°35.890'	-5°23.314'	192077	750282
3	272.6	125m	56°35.890'	-5°23.339'	192052	750283
3	272.6	150m	56°35.890'	-5°23.363'	192027	750284
3	272.6	200m	56°35.895'	-5°23.412'	191979	750296
4	3.2	0m	56°35.844'	-5°22.987'	192407	750178
4	3.2	25m	56°35.763'	-5°22.988'	192400	750028
4	3.2	50m	56°35.776'	-5°22.988'	192401	750053
4	3.2	75m	56°35.817'	-5°22.987'	192405	750128
4	3.2	100m	56°35.830'	-5°22.987'	192406	750153
4	3.2	125m	56°35.790'	-5°22.988'	192402	750078
4	3.2	150m	56°35.803'	-5°22.988'	192403	750103

The proposed sampling stations are shown in Figure 1 relative to the cage group and modelled benthic footprint.

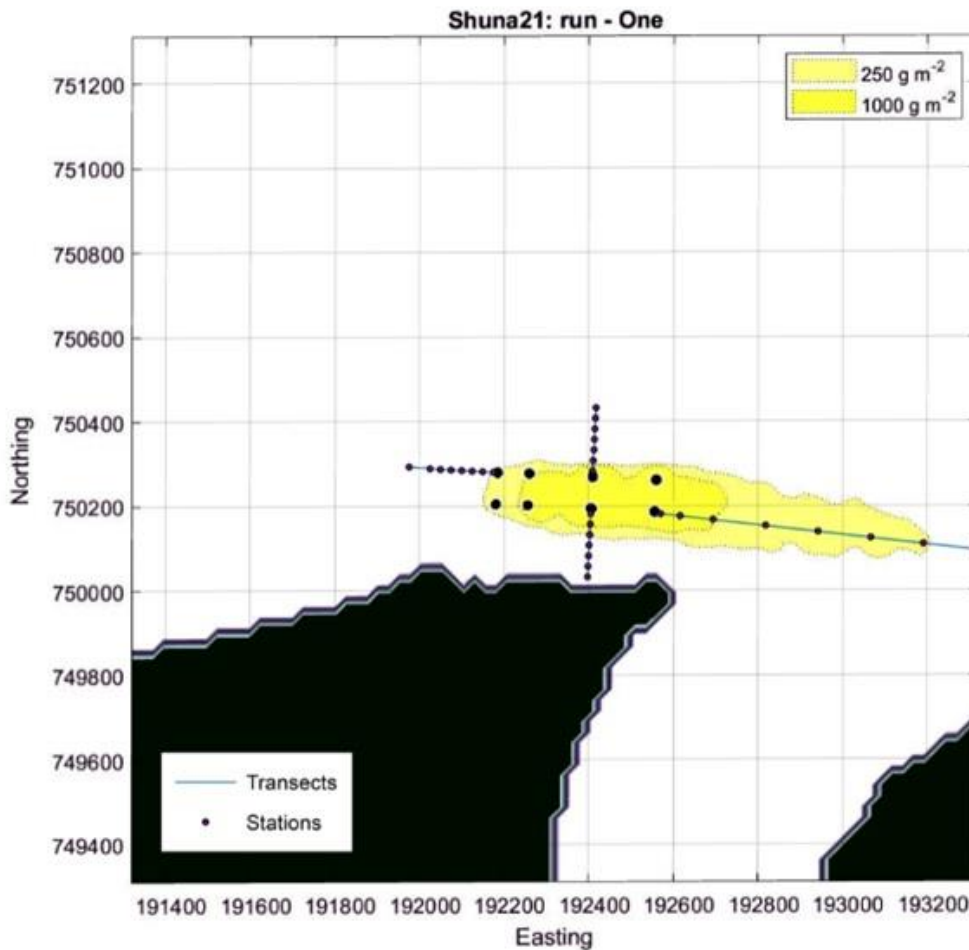


Figure 1: Diagram showing modelled footprint and proposed sampling transects/stations detailed in Table 2 relative to the cage group at Shuna (from NewDepomod report).

### Emamectin benzoate residues monitoring

Consent to use Slice at the proposed site is not being applied for at this time, and monitoring for emamectin benzoate residues will therefore not be required. Should we wish to use Slice in the future, this would be the subject of a separate application to SEPA and subsequent amendment to the EMP.

## **Benthic survey protocol**

- The benthic survey will be carried out by suitably qualified SSF staff or SSF-approved contractor.
- SEPA will be provided with at least 14 days' notice of the survey date.
- The survey will be carried out within 35 days either side of the date on which fish biomass has reduced to 75% of peak biomass for the last time during that cycle.
- All stations listed in Table 2 and depicted in Figure 1 will be sampled, subject to any amendments required in the field.
- Sampling stations will be located using vessel or hand-held GPS.
- Three 0.045m<sup>2</sup> van Veen grab samples will be obtained from each station – two replicates for benthic fauna, and one for particle size analysis (PSA).
- The two faunal replicates will be combined into a single sample prior to/during sieving. The combined sample will be carefully rinsed through a 1mm mesh sieve, with the residues being transferred to labelled 1 litre containers and preserved in a buffered formalin solution (approx. 10% concentration). The containers will be placed in clear plastic bags secured with a cable tie, and stored in large, watertight plastic boxes for delivery or dispatch to the laboratory for analysis.
- The PSA samples (one per station) will be obtained direct from the grab sampler through the full depth of the sediment, and transferred to labelled polypropylene pots, to be stored in a freezer (-18°C) until they can be dispatched to the laboratory for analysis.

For all sampling work, records will be made of station positions, water depths, sediment type and condition, and any other relevant observations. Data reporting will be carried out using the environmental monitoring survey results template provided by SEPA.

## **Sample analysis**

The faunal samples will be analysed by APEM Ltd (Hertfordshire) or another suitably qualified company, depending on survey timing and analytical capacity.

The PSA samples will be analysed by Peatfield Scientific (Aberdeen) or another suitably qualified company, depending on survey timing and analytical capacity.