



**Marine Pen Fish Farm: Loch Hourn
Licence Reference: CAR/L/1105276
Environmental Monitoring Plan**

**Mowi Scotland Limited
December 2021**

Environmental Monitoring Plan

EMP/CAR/L/1105276

FOR

LICENCE REFERENCE NUMBER: CAR/L/1105276

ADDRESS OF PREMISES: Loch Hourn Marine Pen Fish Farm, Loch Hourn

Version: 1

Dated: 03/12/2021

Aim

The aim of this Environmental Monitoring Plan (EMP) is to monitor seabed environmental impacts from the marine fish farm in order to assess compliance with the environmental quality standards that are specified in the licence.

Scope of the Monitoring Plan

This plan outlines the environmental monitoring design, sampling methods, frequency and requirements for reporting of data. The plan has been developed in accordance with the following SEPA guidance:

- Interim Performance Standard MACS-FFA-01, Version 0.1 dated June 2019¹.
- Interim performance standard MACS-FFA-02 Version 0.1 dated June 2019.²
- Seabed Environmental Standards - Demonstrating Compliance, dated 19th July 2021.

Monitoring Survey Design

Two monitoring survey designs are presented as part of this Plan:

- 1 Biological Sampling**
- 2 Medicinal Residues Sampling**

Any changes to these monitoring surveys will be agreed with SEPA prior to fieldwork commencing.

1. Biological sampling

This survey is designed to collect the required environmental data that will allow an assessment of compliance against the two environmental standards for the biological condition of the seabed. The standard that must be met at the boundary of the permitted mixing zone, the maximum area of which is specified in the permit and the other standard which must be met within the mixing zone at the outer edges of the pens.

1, 2 Guidance accessed 01.12.2021 – presently under review by SEPA

Monitoring will be carried out in accordance with the default monitoring layout as detailed in the SEPA guidance document for operators, Seabed Environmental Standards - Demonstrating Compliance dated 19th July 2021.

The direction of the primary transects and the sides of the pen group where they will originate are highlighted in Figure 1 below.

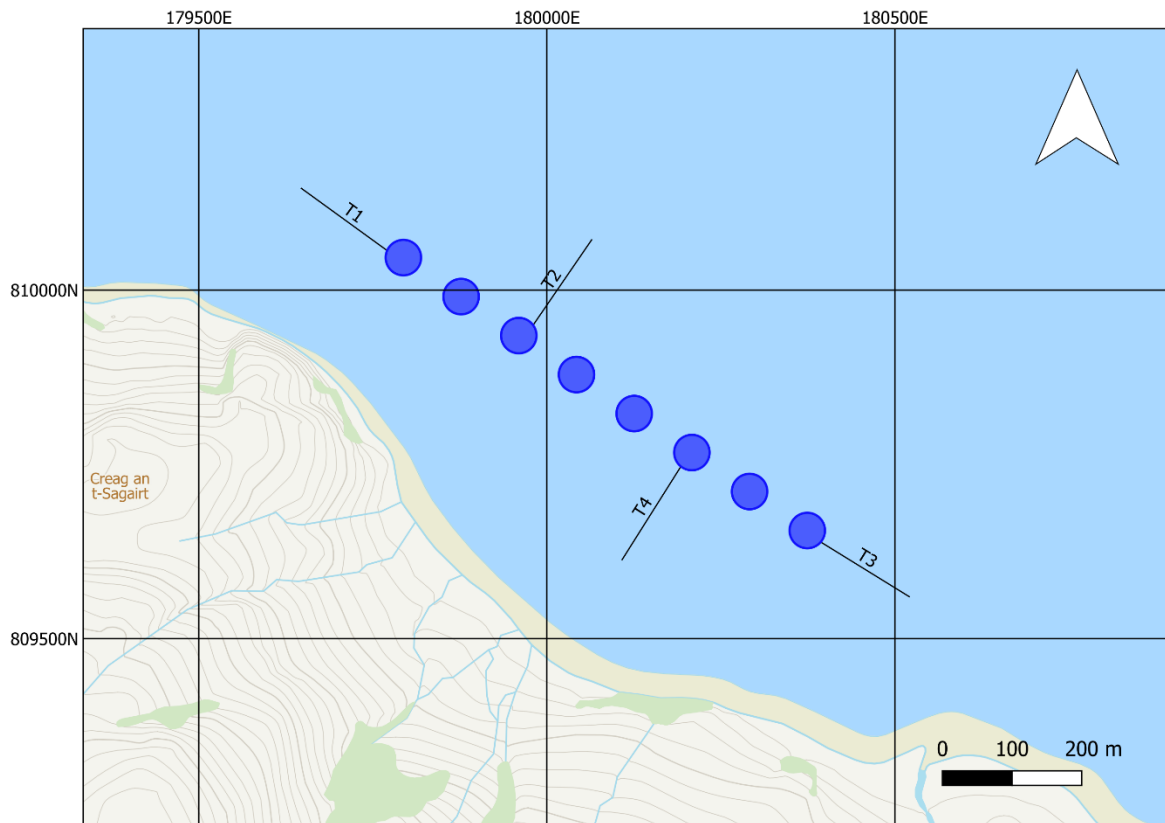


Figure 1: Biological Monitoring - Direction of Primary (T1, T3) and Secondary Transects (T2, T4)

The bearings for each of the primary transects are as follows:

- Transect 1 - bearing 306 degrees.
- Transect 3 - bearing 120 degrees.

Historically the sediment at the Loch Hourn fish farm comprises a soft mud substrate and previous monitoring confirms that successful grab sample volumes are anticipated at all stations for each transect.

Environmental standards – boundary of mixing zone

To assess compliance with the environmental standard for the boundary of the mixing zone samples of sediment will be collected at each sample station across the 4 transects and analysed for benthic infauna and the following physico-chemical parameters:

- Organic carbon.
- Particle size analysis (PSA).

Environmental standards – pen edge:

To assess compliance with the pen edge environmental standard seabed samples will be analysed to determine the number of species, and abundance, of the following re-worker polychaete worms:

- all polychaete species listed as AMBI Group V species; and
- Ophryotrocha species.

2. Medicinal Residues Sampling

This survey is designed to collect the required environmental data that will allow an assessment of compliance against the environmental standards for Emamectin Benzoate concentrations in the seabed sediment.

Samples will be collected at the following locations along Transect 1.

- Pen Edge station: 0m from the outer edge of the Northwest pen.
- Compliance station: 100m from the outer edge of the Northwest pen.

At each sample station samples of sediment will be collected and analysed for the following parameters:

- Organic carbon.
- Particle size analysis (PSA).
- Emamectin Benzoate.

Survey Timing

Biological Monitoring: During each production cycle, sampling to assess the standards will be carried out within a 70-day period beginning 35 days before the weight of fish is reduced to 75% of final peak biomass.

Medicine Residue Monitoring: During each production cycle, sampling to assess the standard will be carried out in the period between 80 & 169 days after the last use of in-feed medicine in each production cycle.

In the event of unseen circumstances impacting on survey timing notification will be provided to SEPA.

Data Reporting

Results from the analysis of all samples collected in accordance with this plan will be submitted to SEPA using the required reporting template in accordance with licence requirements. In the event of unseen circumstances impacting on data reporting timelines notification will be provided to SEPA.

Quality Assurance

Sample collection and laboratory analyses will be carried out by competent and authorised persons (with the necessary knowledge, training, and certifications) on behalf of the Responsible Person (Mowi Scotland Limited). Quality assurance and control procedures will be in accordance with SEPA Sampling of Soft-Substrate; Interim Performance Standard MACS-FFA-02 - Version 0.1. dated July 2019.