



**Marine Pen Fish Farm: Carradale North, Kilbrannan Sound.  
Licence Reference: CAR/L/1131788  
Environmental Monitoring Plan**

**Mowi Scotland Limited  
February 2024**

## Environmental Monitoring Plan

EMP/CAR/L/1131788

FOR

LICENCE REFERENCE NUMBER: CAR/L/1131788

ADDRESS OF PREMISES: Carradale North Marine Pen Fish Farm, Kilbrannan Sound

Version: 1

Dated: 14/02/2024

### 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 guidance:

- Performance Standard MACS-FFA-PS-01 v2: Sampling of Soft Sediment, SEPA 2023
- Performance Standard MACS-FFA-PS-02: Physical and chemical testing, SEPA 2022
- Performance Standard MACS-FFA-PS-03: Biological testing, SEPA 2022
- Seabed Environmental Standards - Demonstrating Compliance, SEPA 2022

### 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.

Monitoring will be undertaken along four directions (transects) on bearings running seaward from each side of the pen groups. The direction of the primary transects and the sides of the pen group where they will originate are highlighted in Figure 1 below. Samples will be taken along each transect, with directions reflecting historical hydrographic data.

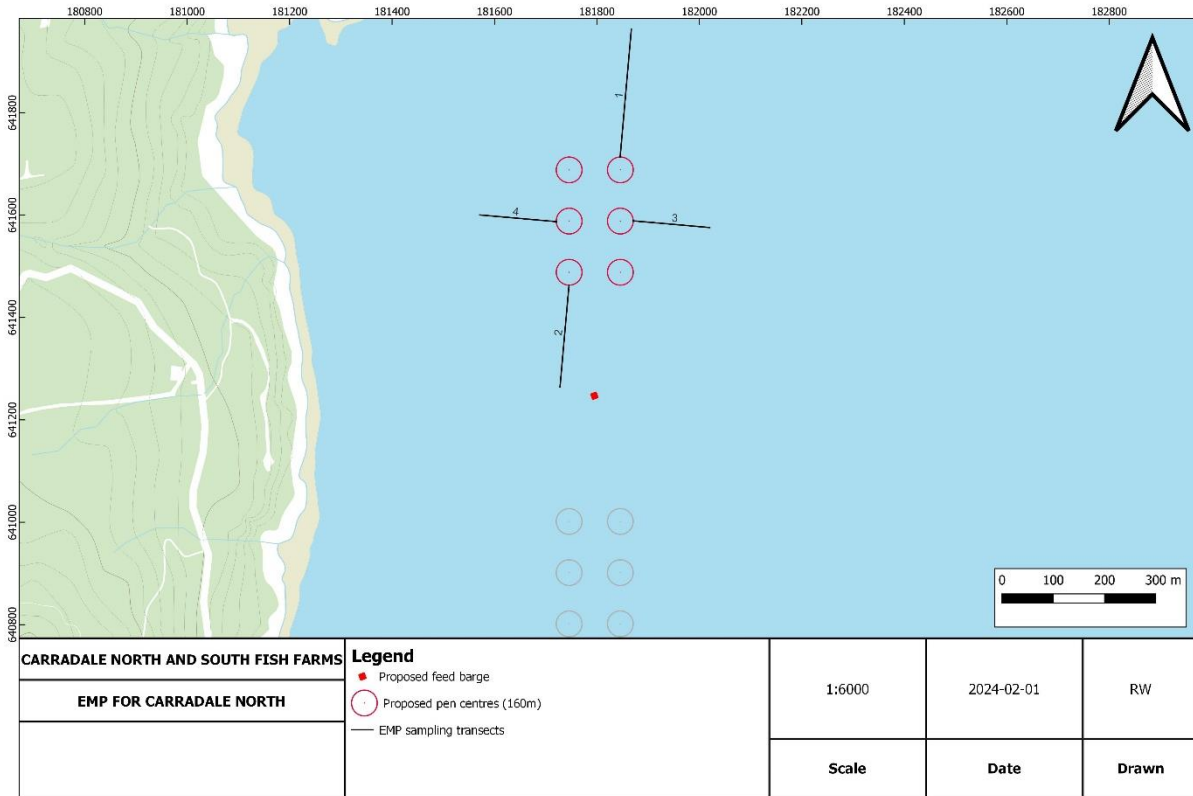


Figure 1: Biological Monitoring - Direction of Primary (T1, T2) and Secondary Transects (T3, T4). Carradale South marine pen fish farm is shown in grey to illustrate its close proximity.

The bearings for each of the transects are as follows:

- Transect 1 - bearing 5 degrees;
- Transect 2 - bearing 185 degrees;
- Transect 3 – bearing 95 degrees;
- Transect 4 – bearing 275 degrees.

Due to the predominant north-south current directions, Transect 1 and 2 are extended in order to gain sufficient data to prove 'Good' IQI status and capture sample positions between Carradale North and the neighbouring Carradale South salmon farm. All modifications to a standard EMP design have been undertaken using existing knowledge and experience, and are intended to optimise data collection for a sound assessment whilst maintaining practicality and appropriate seamanship safety.

If a suitable seabed sample cannot be collected at one or more monitoring stations on a transect:

- a) the collection of a suitable sample (or samples) will be attempted at different locations on the transect concerned.
- b) if sufficient suitable samples cannot be collected on the transect after trying to sample at different locations, the collection of samples along a replacement transect will be attempted.

If it is necessary to attempt collection of samples on a replacement transect, the identification of that transect will consider:

- (i) Any relevant information about the seabed to help choose a replacement that maximises the likelihood of being able to collect sufficient samples.
- (ii) In the light of (i) above, moving the origin for the transect on the pen group.
- (iii) In the light of (i) above, orienting the transect on a different bearing within  $\pm 5^\circ$  of the predominant direction of the bed current in the case of a replacement primary transect or, in the case of a replacement minor transect, within  $\pm 20^\circ$  of orthogonal to the direction of the predominant bed current.
- (iv) A combination of (ii) and (iii) above.

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 four transects and analysed for the following parameters:

- Particle size analysis (PSA)
- Benthic infauna

## 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 locations specified in the licence.

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

- Total Organic Carbon (TOC)
- Particle size analysis (PSA)
- Emamectin Benzoate.

### Survey Timing

During each production cycle seabed sampling will be undertaken in accordance with the periods specified in the licence. In the event of unforeseen 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 within a 26 week reporting timescale, 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 conducted in accordance with the relevant SEPA MACS Performance Standards by competent and authorised persons (with the necessary knowledge, training, and certifications) on behalf of the Responsible Person (Mowi Scotland Limited).