

Marine Aquaculture Site **Rum**
CAR/L/1152362
SEPA CAR Application for Variation
Non-Technical Summary

July 2021

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Scotland's National Marine Plan, adopted in 2015, sets specific industry targets, including a target to grow marine finfish¹. To meet this target requires substantial effort from current fish farm operators to increase biomass sustainably. In line with this target, and recent changes in the regulatory regime to allow increases in maximum biomass in fish farms beyond 2,500 tonnes, Mowi Scotland Limited have selected the site at Rum for expansion because this site has proven to be an operationally productive and environmentally compliant farm. It is also sited in a location with the required physical and environmental characteristics, where observation and predictive modelling demonstrates an appropriately scaled increase in biomass can be accommodated within regulatory and environmental thresholds.

1. Proposed Rum Fin Fish Farm Development

This proposal for the existing Rum salmon farm is designed as part of a continuous improvement plan by Mowi Scotland Limited to upgrade a number of sites to support efficiencies, containment and fish health and welfare. The proposal seeks to replace the existing twelve 120m circumference pens, currently laid out in a 2 x 6 formation within a 75m grid with eight 160m pens laid out in a 2 x 4 formation within a 100m square grid. The proposal also seeks to sustainably increase the maximum biomass from 2500T to 3300T. There is no change proposed to the feed barge specification, but the barge position would change slightly, to a central location on the coastal side of the farm. The proposed site centre would be located ~99m to the northeast from the existing location, placing the farm slightly further offshore in deeper water. The farm would continue to be serviced by the shore base located at Kinloch.

The biomass growth element to the project is coupled to significant investment in new pen and net technology with a strong focus on improved farmed fish health and welfare. Mowi Scotland have produced a five-year plan to transition around twenty of their sites from 120m to 160m circumference pens as part of a production efficiency improvement project. This change will result in an overall reduction in the number of pen units across Mowi Scotland's fish farming portfolio and will also mean a consolidation of farms in some locations.

2. Small Isles Fish Farms

In addition to the Mowi Rum farm which began operating in 2018, Mowi has also successfully operated the Muck farm which was established in 2014. Both sites are similar with regards to infrastructure, employee numbers and open water environmental conditions which leads to excellent water quality with strongly dispersive tidal flows minimising environmental interactions and promoting fish health and welfare resulting in superior quality fish. A planning application and EIA report to upgrade the Muck site from twelve 120m pens to eight 160m pens, also as part of the continuous improvement plan has been submitted in 2022. The proposal also seeks to sustainably increase the biomass at Muck to 4069T. An EIA Report has also been produced by Mowi in support of a potential planning application, not yet submitted, to establish a new fin fish farm off Canna. The proposals for Muck and Canna have been considered and referenced throughout the Rum EIA process where relevant.

Mowi has made significant investment in infrastructure with the development of constructed shorebases on Muck and Rum. New pontoons were installed at each shorebase and made available on a shared basis for non Mowi vessels. Additional 10 community moorings for visiting yachts were installed by Mowi on behalf of the Rum community. Shorebase development on Muck also included supporting harbour access and road improvements.

Place related developments on Muck included significant investment in the construction of three new houses for staff accommodation. On Rum financial support for a local housing

development has provided office and accommodation for Mowi staff as well as rental properties for the Isle of Rum Development Trust in collaboration with The Highlands Small Communities Housing Trust.

To support economic activity and infrastructure improvements on both islands annual financial contributions are made to community development funds with Mowi commitments to secure services locally to maximise the economic benefit of the business to the islands. Further indirect spend benefiting the community including local accommodation, rent, amenity payments and other local services is also significant.

Mowi employees are active members of the communities, and the company also supports provision of lifeline assistance to the island communities, especially in wintertime, with travel, transport and haulage when ferry services are disrupted or cancelled.

3. Community Consultation

Mowi has consulted closely with the community throughout the planning process via the Isle of Rum Community Trust (IRCT). In May 2019 Mowi visited Rum to hold an open day to discuss the now superseded proposal to add two 120m circumference pens to the farm site. Some residents took up the invitation to visit the farm and this was followed by a drop in session held in the café in Kinloch which was open to all on the island. Due to the Covid pandemic, visiting the island to consult with the community on the updated proposal to replace the existing 120m circumference pens with 160m circumference pens was not possible in 2020, consequently an online event was held to present the proposal. This gave the community the opportunity to ask questions and raise any concerns. Questions were followed up by Mowi to supply additional information and the presentation and a document with the questions and answers was made available to the community via the IRCT.

4. Summary of Receptors Assessed

Benthic Environment

A baseline assessment of the benthos was undertaken on the basis of a video transect and grab sampling survey undertaken in 2016. Video footage from the 2016 survey showed that the seabed consisted nearly entirely of biotope circalittoral fine mud (SS.SMu.CFiMu). Areas identifiable as habitat priority marine feature (PMF) - Burrowed Mud; Sea pens and burrowing megafauna in circalittoral fine mud (SS.SMu.CFiMu.SpMmeg) based upon the presence of the phosphorescent sea pen (*Pennatula phosphorea*) were identified in the survey. This species does not however occur in high densities and therefore the overall quality of this component is assessed as low. Circalittoral fine mud covers extensive areas of the Scottish west coast inland seas and can be seen in higher qualities in many other areas. This habitat is not listed as being sensitive to fish farm development in a recent position paper published by SEPA. However due to the classification of Burrowed Mud as a PMF, the habitat directly beneath the site is assessed to be of **regional** geographic importance.

The existing configuration of the Rum farm has been operational since 2018. Sampling was undertaken at Rum prior to stocking in 2018 and mid cycle in 2019 to support a strategic study to better understanding the impacts of Aquaculture. SEPA compliance sampling was planned for 16th March 2020 but due to a government announcement regarding guidelines relating to Covid, all Mowi (Scotland) Ltd personnel travel and access to facilities had to be immediately suspended and urgently reviewed. A Notification to temporarily operate under the conditions of the COVID-19 Position Statement was submitted to SEPA on 3rd April 2020. A method and programme of work involving a third party vessel and contractors was evaluated and actioned as quickly as logistically possible and sampling was completed on 12th April 2020. The formal SEPA compliance assessment is pending, but the seabed sample IQI values

acquired in 2020 show that the site is operating within the environmental quality standards set out in SEPA's new framework (see Section 8.8.3 and Annex 8.5).

Preliminary modelling undertaken by SEPA generated a low intensity carbon footprint with the modelled influence from Rum being considered very low, likely due to the moderate capacity for erosion of material on the seabed. This indicates that compliance standards should be met during operation of the proposed site. These results are also backed up by subsequent modelling that assessed the potential impacts of carbon deposition based on the depositional footprint generated by NewDepomod modelling, coupled with a hydrodynamic model calibrated and validated by 2016 and 2018 current meter data acquired close to the Rum site. Results indicated that deposition at Rum will be minimal, with a maximum deposition of 791.1 g m⁻². The footprint area, where the deposition exceeded the critical deposition rate of 250 g m⁻², was 0.16 km². The intensity of deposition, 378.1 g m⁻² was less than the critical value of 2,000 g m⁻². These results indicate that the proposed new layout at Rum and biomass increase will comfortably meet pertinent Environmental Quality Standards for salmon farm waste solids.

The FEAST Tool assesses that Burrowed mud has **medium** sensitivity to organic enrichment, although it is not considered by SEPA to be sensitive to fish farm developments (SEPA, 2021) and the Burrowed mud habitat in this area is of poor quality. Modelling shows deposition is limited with no predicted significant effect on PMFs identified in the area (see Section 12 for more detail on sensitivities of and predicted impacts on species and habitats of conservation importance). The location of the proposed pens is within a highly dispersive environment. A range of operational mitigations are intended to minimise feed wastage (monitoring, feed composition) and facilitate site recovery (fallowing). However, should the site be unable to comply with EQS, the regulatory regime can enforce biomass cuts. Faunal community alterations arising from accumulation of benthic carbon during the growing cycle are expected to be temporary and reversible, and the magnitude of the impact is assessed as **low**, resulting in a **minor (negative)** significance impact which is **not significant**.

Water Column

Assessment of the water column considered nutrient inputs generated by the site, and impacts associated with the consented bath treatments, deltamethrin and azamethiphos.

The proposed fish farm is to be located in an area of open water, outside of any Marine Scotland Locational Guidance waterbody, a classification which defines specific waterbodies depending on their sensitivity to nutrient enhancement. Nutrient inputs arising from the proposed operations were calculated on the basis of both the individual Rum site, and cumulatively to include the proposed development at the Muck farm and the proposed new Canna farm, also located in the Small Isles. These sites are located 22.7 km and 12.7 km from Rum (direct measurement) respectively.

The Marine Protected Area for the Sea of the Hebrides is of **national** importance and is relevant for water column impacts because of its designated features of fronts and carbonate production areas, both intrinsically linked with the primary productivity of the surface ocean and natural nutrient loads. The MPA was assessed to have **very low** sensitivity to change.

Background levels of dissolved inorganic nitrogen within the area correspond to a mean of 12 µmol/L (168 µg/L). The UKTAG threshold for 'slight' disturbance is defined as background level, increased by 50%. Results of ECE modelling showed that nutrient contributions from the Rum fish farm contribute 1.73% of the background nutrient levels, and therefore is assessed to have a **very low** magnitude and a **negligible (not significant)** significance of impact on the water column. Nutrient contributions from Rum, Muck and Canna farms cumulatively represent 4.56% of the background nutrient level, where the threshold for 'slight' disturbance is at 50% of background levels. The magnitude of this impact is considered **very low** with overall significance of impact being **negligible (not significant)**.

The bath modelling has generated levels of acceptable use of topical treatments that degrade rapidly to environmentally safe concentrations and/or comply with environmental

quality standards (EQS). The release of bath medicines following treatment is anticipated to have a **very low** magnitude and a **negligible (not significant)** significance of impact on the water column.

Interactions with Predators

Interactions between the fish farm and predator species can have negative impacts both on the species and the farm development. Entrapment or entanglement in netting by predators attracted to the farm to forage or scavenge, disturbance from vessel traffic can displace predators from habitats used and direct habitat loss (e.g. foraging grounds) from the presence of the farm. Predators can have negative impacts on the farm itself by compromising netting and risking site security and containment or generate a stress response in farmed fish, which can negatively impact growth and fish welfare.

Mitigation measures will be in place to limit interaction and the potential for negative impacts on both predators and the fish farm. The Predator Mitigation Plan (Annex 10.1) details how the site will mitigate against predator interactions including the use of highly tensioned Dyneema netting, seal blinds, daily mortality retrieval and bird top nets. The Plan also describes the range of mitigation which is not available at the Rum site due to the sensitivity of the locality and recent legislation changes: ADDs, predator nets and lethal seal dispatch will not be authorised for use at the site.

Key changes to traditional or existing fish farm configurations include the following:

- Acoustic Deterrent Devices: ADDs will not be used as mitigation for the deterrence of seal predators from the site. Impacts on marine mammals from the use of ADDs has been scoped out; and
- Seal Dispatch Licencing: as a result of recent regulatory changes, Marine Scotland no longer issue licences for the purposes for seal dispatch after 31 January 2021.
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Bird netting is installed over stocked pens to mitigate against predation by wild animals; primarily Gulls and diving birds. Nets will be well tensioned and of an appropriate mesh size to exclude birds from pens and prevent entanglement. NatureScot advise that where a fish farm is in proximity to a Special Protection Area with gannet, cormorant, shag, gull or skua features a top net mesh size of >200mm is likely to cause risk of entanglement. Therefore, at Rum, bird netting of 100 mm mesh size will be installed with sidewall panels from the bottom to 2 m high being 25 mm mesh size.

As discussed, taking into account the mitigation measures proposed, the overall significance of impact to receptors is assessed as **minor**.

Wild Salmonids

Scoping responses highlighted the favourable open water and dispersive location for the proposed development in terms of potential impacts to wild salmonids. However, responses also set out concerns around the potential transmission of farm-origin sea lice to wild salmonid populations and the potential impact of escapes.

The Atlantic salmon population is considered of **high** importance due its conservation status and declining populations. However, the historic absence of population in the immediate vicinity of the site, pre-dating fish farm development, suggests that there is no immediate recognised salmon fishery in the area. The closest river with any salmon records is approximately 2.9 km from the proposed site. Despite this, migrating salmon may be present in the environment and may subsequently be vulnerable to farm-origin sea lice

Due to the conservation value of sea trout and data showing clear populations within the Small Isles, the importance of the sea trout is assessed as **medium** sensitivity. Resident sea trout

populations, particularly associated with the Kilmory and Kinloch rivers within Rum, are considered to be more vulnerable to sea lice infestation, particularly given the preference for sea trout to remain within coastal waters, as opposed to immediate migration pathways out to sea. However, sea trout may better manage lice burdens via their tendency to return to fresh water after only short periods at sea. The sea lice modelling exercise also demonstrates that the farmed derived sea lice from the proposed development would be transported to the northwest of Canna (away from Rum).

Potential impacts include the potential lice transfer between farmed and wild salmonids; the potential for disease transfer between wild and farmed salmonids; and the potential for genetic mixing or competition with escaped farmed salmon. Baseline data, collected in order to support the evaluation of significance as part of EIA, is subject to high levels of uncertainty, particularly around the movement of salmonids and the impacts of fish farm on wild stocks. To address the inherent uncertainty, an updated Small Isles EMP has been developed, which provides a mechanism to monitor impacts through a comprehensive science strategy. The EMP also sets out a process to respond to outputs of the science strategy, in order to manage any potential impacts that may arise from the farm. This process also enables EMP stakeholders to request management measures in response to specific monitoring outcomes.

Sea lice modelling is a tool, based on a biological particle tracking model, that is used to assess the potential impacts of the site modifications on wild salmonids. The density of lice arising from the proposed fish farm at Rum was modelled on a 3D hydrodynamic model. The outputs illustrate a plume of lice to the northwest of Canna and off the west coast of Harris, however the modelled densities of lice generated by the model are assessed to be negligible. The modelled concentrations are much lower than recognised research on lice concentrations thought to result in high infestation pressure on wild salmonids. A cumulative modelling study analysed the density of sea lice generated from Rum along with other proposed aquaculture developments in the Small Isles. The contribution of the proposed Rum fish farm development to the overall cumulative lice load was assessed as **negligible** and **not significant**.

A range of mitigations to control lice are proposed, covering biological interventions (cleaner fish), medicinal treatments and non-medicinal options (including freshwater treatments, thermolicer, hydrolicer and sea lice skirts). The proposed mitigations also include the updated Small Isles EMP as a means to address some of the residual uncertainty, primarily through monitoring potential impacts. Processes are in place to respond to monitoring outcomes via adaptive management measures. These processes can also be triggered by stakeholders. Considering all of the proposed mitigations, including site location and design characteristics, the magnitude of potential impact on Atlantic salmon is assessed as **very low** and a **minor (negative)** impact is concluded.

Potential impacts on sea trout are assessed to be greater than those on Atlantic salmon given the presence of resident populations immediately within the Small Isles, although it is possible that sea trout can manage lice burdens by returning to freshwater annually. With mitigation, the magnitude of impact on sea trout is assessed as **low**, and a **minor (negative)** impact is concluded.

In terms of the potential for disease transfer between wild and farmed salmonids, general husbandry practices in line with the CoGP involves fish stock monitoring for signs of disease and changes in behaviour. The risk of an introduction of other parasites and diseases from farmed salmon to wild salmonids is managed through the Veterinary Health Plan. The magnitude of the impact is assessed to be **very low** for salmon and **low** for sea trout due to their greater presence. It is concluded that there will be **minor (negative)** residual effects which are **not significant**.

The final potential impact on wild salmonids assessed was genetic mixing or competition with escaped farmed salmon. Several recent escape events have resulted in the loss of large numbers of Atlantic salmon, potentially mixing with native genetic stock. A companywide

review on escapes was initiated in 2020, prompting a review of net specification, including the phasing out of nylon nets to be replaced by more robust specification with less potential for failure. Corrective actions also cover a review of third-party validation of equipment modelling to the Scottish Technical Standard for Scottish Finfish Aquaculture, improved inspection protocols and increased inspection frequency across Mowi farms. Escape events are infrequent in occurrence but have potential to have substantial long-term impacts once they occur. The proposed mitigation is anticipated to significantly reduce the potential likelihood and magnitude of escapes to **very low**, and the overall impact is **minor (negative)** and **not significant**.

Baseline data, collected in order to support the evaluation of significance as part of the EIA, is subject to high levels of uncertainty, particularly around the movement of salmonids and the impacts of fish farm on wild stocks. To address the inherent uncertainty, an agreed Small Isles EMP has been developed, which provides a mechanism to monitor impacts through a comprehensive science strategy. The EMP also sets out a process to respond to outputs of the science strategy, in order to manage any potential impacts that may arise from the farm. This process also enables EMP stakeholders to request management measures in response to specific monitoring outcomes. The EMP is in addition to a substantial range of available sea lice control methodologies.

Overall, the suite of operational mitigation measures in place to reduce potential interactions between wild and farm salmonids, the exposed location of the proposed development, the absence of significant or important Atlantic salmon populations in close proximity to proposed pens, the negligible contribution of the proposed Rum fish farm development to the overall cumulative lice load, and the **very low to low** magnitude for each of the potential impacts assessed, indicates that the overall significance of the impact on Atlantic salmon and sea trout is **minor (negative)** and **not significant**.

Species and Habitats of Conservation Importance

A baseline assessment of the environment was undertaken to identify relevant designated sites, protected habitats and species.

The following protected marine habitats and species were scoped into the assessment:

- Rum SPA
- Burrowed Mud
- Tall Sea pen
- Manx Shearwater
- Red-throated Diver

A baseline assessment was carried out to determine the importance and distribution of each feature in relation to the proposed development. Potential impacts arising from the development were identified and assessed against the relevant ecological receptor. Mitigation include embedded mitigations inherent in the location, design and operational parameters of the site.

An impact assessment was carried out to consider the effects arising from increased sediment deposition, the introduction of bath treatments and the physical removal of habitat from infrastructure installation. Impacts scoped out of the assessment include those associated with potential disturbance to cetaceans, basking sharks and seals. Following the introduction of new legislation in 2020, the killing of seals for the purposes of protecting the welfare of farmed fish is not licensable. The mortality of seals associated with humane dispatch is scoped out of the assessment. The commitment to not use ADDs at the site mitigates against potentially harmful disturbance to marine mammals including cetaceans so this potential impact has also been scoped out.

The key finding of the impact assessment relates to increased carbon deposition arising from the operation of the site. Sediment deposition was initially derived from a Modelling Screening Risk Assessment Report published by SEPA (Annex 8.1), which provided a high-level analysis of likely impacts and incorporates a conservative methodology to ensure it is fit for purpose as a preliminary screening tool. Findings of the SEPA report indicates that 0 km² (i.e. a negligible area) would be subject to a very low sediment deposition intensity of <1g/m². Further modelling by Mowi using a calibrated and validated hydrodynamic model indicates that a sediment deposition footprint (> 250 g/m²) with an area of 150,625 m² would be observed mainly in the vicinity of the pen grid and just to the northwest of the pen grid. Sediment deposition falls in an area classified from video analysis transects as the PMF: Burrowed Mud, with video evidence showing this is of poor quality based on species abundance. The footprint does not cover the tall seapen PMFs identified by SEPA in their Screening Modelling and Risk Report, so these are unlikely to be affected.

Mitigation measures including dispersive site location characteristics and low stocking density, associated with RSPCA certification requirements, are important factors in the low levels of deposition predicted by modelling. The magnitude of the impact was assessed as **very low** given the reduced quality of the PMF habitat, extensive distribution of the feature, ability to recover rapidly and inherent resilience to sediment deposition associated with this feature. As a **regionally** important ecological receptor the overall significance is assessed as **minor (negative)**.