NatureScot

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Scotland's Nature Agency
Buidheann Nàdair na h-Alba

Memo / Meòrachan

To / Gu	[redacted] (Marine Scotland)
cc	[redacted] (Marine Scotland)
From / Bho	[redacted]
Date / Latha	9th December 2022
Subject / Cuspair	**Loch Duart – Licence to disturb EPS as a result of ADD use at an aquaculture site – Clashnessie Bay**

Thank you for consulting us on this application. Please fine below our responses to your questions posed

Licence to disturb EPS – standard questions

1. Is the proposal capable of having an adverse impact on the favourable conservation status of the European Protected Species Concerned?

Based on the information and modelling supplied, we conclude this proposal is not capable of having an adverse impact on FCS for any EPS potentially present in the area.

2. Have all the species capable of being disturbed by the activity have been correctly identified by the applicant?

The application focuses on harbour porpoise and minke whale. Most likely because these are the species with density estimates in the SCANS III information. However, based on https://whaletrack.hwdt.org/sightings-map/ there are also sightings of short beaked common dolphin and killer whales in the area, plus sightings of unidentified dolphin species, which could be bottlenose dolphin or Risso's dolphin. The application predicts less than 3 HP and less than one minke whale using the methodology advised. Should the EPS licence be issued, we recommend that the all species noted here are included with 3 harbour porpoise, and one for all other species.

The number predicted is based on the disturbance radii calculated from the source level of the system, and is a snapshot representation of the predicted disturbed area, together with the SCANS III density estimate. Whilst this is common practice for EPS licence applications, we highlight this does method of prediction does not reflect the number of possible disturbed animals over the 22 month period.

***3. Is the activity likely to have a significant effect on the qualifying interests of any European site or is capable of affecting, other than insignificantly, the protected features of any MPA*.**

The closest European site is the Inner Hebrides and the Minches SAC, with harbour porpoise as the protected feature. The application site is approximately 9km from the SAC boundary and therefore there is no pressure overlap, and therefore we conclude no likely significant effect. Other MPA sites in the Minch considered are at considerable distances from this application site and therefore our view is that there is no impact pathway from this activity that might affect the conservation objectives of any MPA in the region (Box 1). We advise that this activity is not capable of affecting, other than insignificantly, the protected features of any MPA.

Box 1

North East Lewis	35 km	(Risso's dolphin/sandeels)
Shiant East Bank	48 km	(benthic features)
Wester Ross	28 km	(benthic features)
Sea of Hebrides	130 km	(minke whale/basking shark)
Loch Laxford	21 km	(reef/ shallow inlet, bay)

Licence to disturb EPS – additional questions

4. Do they follow the guidance provided to applicants?
faq_adds_and_eps_including_annex_1_and_annex_2_-_version_5_-october_2021_-_final.pdf (marine.gov.scot)

Yes, they have predominantly followed the Marine Scotland guidance. Details of the ADD systems are suitably disclosed. The noise modelling methodology follows the guidance using the spreadsheet approach developed by J Lines, and our understanding is that this spreadsheet has been checked and approved by Marine Scotland Science. The disturbance zones and PTS ranges appear to be consistent based on the sound levels, frequency content disclosed.

However, we note that the two types of ADD system (US3 and RT1) have been assessed independently, and it is not clear if both systems (8 US3s and all 6 RT1s) will be activated concurrently. There is no discussion of this scenario, nor assessment of the whole. We assume as the number of devices are included in the spreadsheet, the calculation incorporates the array. We highlight that the maximum duty cycle of 5% is used in the assessment, but because the transducers are not synchronised, the soundings could be one after the other with the result that the system duty cycle is greater than 5%. We recommend that this is checked (with the applicant and MSS) to ensure the modelling is predicting on a realistic worst case scenario.

As noted above, the applicant has only referred to the SCANS III information and does not appear to have looked for other more local sources (e.g. Hebridean Whale and Dolphin Trust sightings website).

5. If not, is the applicant using an appropriate method for assessment?

(See response above)

6. Has the applicant provided sufficient information to allow an understanding of the impact of the devices? If not, what further information is required?

No. The applicant has provided all the key information used in the assessment, however an appropriate level of independent supporting evidence is missing. This is not a short term noise input into the marine environment (22 months). The applicant has states that the mode of operation will be continuously active, whilst the farm is stocked, albeit at different sounding rates (Box 2). The information supplied enables the conclusion that this operation is unlikely to result in a detrimental impact on FCS due to the scale of the predicted noise output, but appropriate supporting evidence is required to provide confidence in this conclusion.

Box 2

Phase 1: 3 days at 144 soundings per hour

Phase 2: 14 days at 72 sounding events per hour Phase 3: 28 days at 12 soundings per hour after which the device is muted

There is no independent verification of the sound levels and operational patterns of sound emission. This falls short of the evidence required in the guidance. It is stated that the noise emitted results in a 'startle' response, however, there is no information supplied that supports this effect.

If MS LOT is minded to allow an EPS licence and thus enable the use of the AA ADD systems we would advise that there is operational noise monitoring and reporting as part of the licence conditions. Ideally for the full 22 month deployment period, with an interim report after the first cycle of the phases (Box 2). To be submitted within a specified time following the completion of phase 3. Monitoring for the full 22 months, would enable assessment of the entire system noise output, and the degree that the system is muted.

We are not sighted on the full details provided to MS by AceAquatec. We assume this relates to the acoustic characteristics of the system. Our understanding is that this was provided by Ace Aquatec themselves and not from an independent assessment. Therefore, we are not in a position to comment. We have only been provided with AceAquatec produced specification sheets.

The application cites K Whyte MSc Thesis when detailing efficacy. The full reference is not included, and a search through the St Andrews thesis repository does not find the thesis. It may not be publically available, we therefore cannot review the claim that the use of AA systems reduces predation by ~ 70%. We also cannot assess if the system reviewed in 2015 is the same as the systems proposed here and therefore if the efficacy is transferrable.

7. The application only covers one site, but the applicant is also in possession of a licence from NS to deploy and test a TAST device at other sites they operate. They have given reasons for not undertaking a cumulative assessment. Is this justified and if not, what is required?

The reason given is that the predicted impact ranges do not overlap, from this activity, and from the other sites researching the TAST device. They conclude no likely interaction between the farms, and therefore there is no cumulative impact. In our view, it is not sufficient to simply consider if there is any overlap, but a CIA should also consider the accumulated impact for the cluster of fish farms (i.e. Clasmessie Bay, plus Loch a Chairn Bhain, Calbha, Badcall Bay & Laxford) in that region should multiple systems be used at the same time. A CIA should be presented that considers the total area where cetaceans are at risk of disturbance.

8. Does NatureScot have any relevant views or information in regard to the evidence provided to address test one – licensable purpose? The applicant has applied for a licence to prevent serious damage to property.

We note that the purpose is "*for preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber to any other form of property, or to fisheries*", and so we think this application fits within this purpose.

9. Does NatureScot have any relevant views or information in regard to the evidence provided to address test two – no satisfactory alternative?

The information provided is similar to that we have seen before. In that the information provided details the suite of mitigation the company undertakes, but that none of these methods are in itself 100% effective, and in their view there is no alternative to an acoustic deterrent to keep seals away from the cages.

There is no discussion regarding the use of a semi-enclosed containment system. Semi-enclosed containment pens have no need for ADD systems. We are aware of one such system currently undergoing the consenting process for installation in Loch Linnhe. This is clearly a potential alternative and we would recommend this should be considered as an option, going forward. For this application, the option of semi-closed containment is not discussed as a potential satisfactory alternative.

10. Does NatureScot have any additional views or information that would assist us? If you consider that the applicant has provided insufficient information in relation to this, do you have a view on what information it would be reasonable to expect the applicant to provide?

Most of the following is mentioned above, but in summary, we believe the following requirements are in keeping with the Marine Scotland guidance.

- The provision of supporting evidence relating to the noise characteristics from the system, which should include:
    - Received levels along a transect away from a fish farm.
    - Long-time average spectrogram, to show the frequency content and pattern.
    - Evidence of the startle response claim, including evidence to show that even though short the signal emitted is not impulsive (to ensure that the correct impact thresholds have been used).
- Supporting evidence for efficacy.
- Satisfactory alternative discussion to include semi-enclosed contained system consideration.

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13 December 2022

LOCH DUART EPS APPLICATION FOR ADD USE

Marine Scotland Science (MSS) have reviewed the request from MS-LOT and provide the following advice.

Marine Mammals

Marine Scotland Licensing Operations Team (MS-LOT) asked Marine Scotland Science (MSS) specific questions in relation to this European Protected Species (EPS) licence application. MSS have reviewed the supporting documentation for the Clashnessie Bay EPS license application and responses are provided below each of the MS-LOT questions.

Do they follow the guidance provided to applicants?
faq_adds_and_eps_including_annex_1_and_annex_2_-_version_5_-october_2021_-_final.pdf (marine.gov.scot)

MSS have reviewed the EPS Risk Assessment and Calculation Spreadsheet provided by the applicant. MSS advise that the applicant has followed the guidance provided in the Marine Scotland FAQ document.

If not, is the applicant using an appropriate method for assessment?

As stated above, MSS advise the applicant has followed the guidance provided to applicants.

Has the applicant provided sufficient information to allow an understanding of the impact of the devices? If not, what further information is required?

MSS advise that no, the applicant has not provided sufficient information to allow understanding of the impact of devices. Separate versions of the calculations have been carried out for each model of ADD proposed (i.e., RT1 and US3), when the models will be used simultaneously at the site. MSS recommend that a single revised risk assessment is submitted that considers all devices expected to be used at the site, rather than separate risk assessments for each model of device.

The applicant states that the ADDs have asynchronous controls to prevent multiple units from sounding simultaneously. MSS advise that it is highly unlikely in reality, with 14 ADDs, that an applicant can ensure there will be no overlap in signals from the different units. We note in the calculation spreadsheet provided by the applicant there is the option to model the impact of the devices firing simultaneously. MSS recommend that a revised risk assessment is undertaken that includes a realistic scenario, along with an example (we suggest over a duration of an hour) of the

activation schedule, including information on the duration of signals. MSS recommend that this should include a proportion of the devices firing simultaneously, based on pulse durations and duty cycles of the devices proposed. A more straightforward but highly precautionary option would be to model a 'worst case scenario' whereby all devices fire simultaneously. Information on pulse duration, what constitutes a firing event and planned duty cycles should be provided, along with further information on firing schedule and how the applicant will ensure there is no overlap in signals between devices spaced widely across a site.

The application only covers one site, but the applicant is also in possession of a licence from NS to deploy and test a TAST device at other sites they operate. They have given reasons for not undertaking a cumulative assessment. Is this justified and if not, what is required?

MSS advise that the reasons given for not undertaking a cumulative impact assessment are not justified. The applicant states in the EPS risk assessment document that that there is no likely interaction between sites (due to no overlap in predicted impact distances), therefore cumulative impact is not considered further. However, as laid out in the Marine Scotland guidance document, cumulative impact assessments (CIAs) should be carried out for all sites using ADDs in the region (i.e., within the same SCANS block). There is no requirement for the impact distances to overlap to trigger a cumulative assessment. The cumulative assessment is intended to present the number of individuals predicted to be disturbed and / or injured within the same management unit (in this case, a SCANS block) together with other sites in that area. It is not an assessment of the cumulative impact of different sites on individual animals.

MSS advise that a cumulative impact assessment should be carried out to predict the total number of individuals expected to be impacted by ADDs in place at five of the applicants other sites (under Licence Number 210989), along with any other ADDs being used in the same SCANS block. The methodology for cumulative impact assessment laid out in the Marine Scotland guidance document should be followed.

MSS also recommend that the cumulative assessment should include other activities producing underwater noise levels capable of disturbing cetaceans in the area, either from ADD use at other aquaculture sites or from other industries, i.e. all activities capable of causing disturbance or injury. However, as noted in the MS (Marine Scotland) guidance document, currently only impacts from other fish farms using ADDs are required to be considered.

Does MSS have any relevant views or information in regard to the evidence provided to address test one – licensable purpose? The applicant has applied for a licence to prevent serious damage to property.

The applicant has applied for an EPS license for the purpose of *"preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber to any other form of property, or to fisheries*". The applicant states that damage to fish (both lethal and sublethal impacts) is currently being experienced at the site. The applicant wishes to deploy ADDs to prevent this damage. As such, MSS advise that the application is appropriate for this purpose. However, the evidence provided is only anecdotal, there is no provision of data to support the claims and consequently it is challenging to assess licensable purpose. For example, the applicant states "seal interaction (attacks and sub-lethal impacts) is a known occurrence at the site from fish input". MSS advise it would be more useful to explicitly state what these sub-lethal impacts are and provide support for them in the form of photographs, videos or data on the detectable impacts (such as stress hormone measurement or descriptions of seal inflicted lesions).

Sub-lethal effects on fish health from seal presence has been highlighted by the applicant as 'damage'. There remains a lack of evidence on the impacts of predators on fish welfare, but MSS advise following the conclusions and recommendations from the Scottish Animal Welfare Commission (SAWC) to Marine Scotland on this matter (https://www.gov.scot/publications/scottish-animal-welfare-commission-proximity-of-seals-to-farmed-fish-response-to-marine-scotland/pages/background/). In summary, this suggests that significant stress is caused to farmed fish contributing to reduced growth, feeding and increased incidence of disease. SAWC also

recommend that "issues related to the impact of seals on the welfare of farmed salmon should be regarded as a legitimate factor when MS-LOT are considering the licensable purpose test for applications for the use of ADDs in these situations….". As stated previously, MSS advise that additional information and/or data are presented by the applicant in order to effectively assess the "damage" inflicted by seals to fish at the site.

MSS wish to highlight that advice provided here has been generated by advisors working primarily on marine mammals and underwater noise. Farmed fish health and damage to livestock is outwith the usual remit and expertise of the REEA group. Advisors within the MSS Aquaculture and Fish Health Programme, or elsewhere in Marine Scotland, may be better placed to provide more insight into the damage that seals cause to aquaculture.

In particular, we are seeking views on the efficacy of ADDs. However, MSS provided advice in this regard to the application from Kames Fish Farming and it is assumed that this advice remains the same. Please advise if your wish to amend or add to your previous response.

MSS is not aware of any further evidence published on the efficacy of the model of ADDs proposed to be used in this application (Ace Aquatec RT1 and US3) since we issued our previous advice in relation to the Kames application. Consequently, our advice on the efficacy of ADDs has not changed and we do not need to amend or add to our previous advice.

Does MSS have any relevant views or information in regard to the evidence provided to address test two – no satisfactory alternative?

Regarding alternative locations of the farm or alternative dates / timings, MSS have no further comments.

Regarding the use of alternative methods, the applicant describes use of other predation-mitigation measures at the farm including the regular removal of fall / moribund stock, maintaining low stocking densities, and the use of tensioned HDPE pen-nets and top-nets. The applicant claims these measures are not effective without the complementary use of ADDs, i.e. are not a satisfactory alternative to use of ADDs.

MSS advise that, since no evidence of depredation rates with and without ADDs has been provided by the applicant, MSS cannot assess the efficacy of these alternative measures without ADDs. MSS acknowledge that at present it is not possible to gather this evidence, as the use of ADDs requires an EPS licence. We therefore recommend that should a licence be issued, conditions should be put in place to require ADD users to gather data on ADD use and corresponding depredation rates, to better understand the efficacy of these devices going forward (Coram et al. 2022).

A comprehensive evaluation of the full suite of currently available alternatives measures, some of which are currently employed by the applicant, can be found in Thompson et al. (2021). MSS recommend that the applicant provides information on other measures and presents a justification for why these would not be effective alternative to ADDs. Measures that have been shown to be successful at other fish farms in Scotland include Anti-Predator Netting (APN), seal blinds and false bottom cages. MSS note that APN refers to an additional layer of netting to provide physical separation, and not just the use of thicker single netting (e.g., HDPE). The use of APN at fish farms in Scotland has increased from around 20% in 2016 to over 40% in 2020 (Marine Scotland, 2020), and MSS recommend an explanation of why this method has not been implemented is provided by the applicant.

MSS acknowledge that whilst there are other alternative measures available (as outlined above) to deter seals from depredation in addition to those used at Loch Duart sites, the efficacy of many of these are even less well understood than ADDs.

Although it is for MS-LOT to determine if an applicant has met the requirements of the licensing tests, we would welcome any additional views or information that would assist us. If you consider that the

applicant has provided insufficient information in relation to this, do you have a view on what information it would be reasonable to expect the applicant to provide?

MSS advise that the applicant have provided sufficient information to assess the requirements of the licensing test. However, additional information would substantially aid assessment for both this and future applications.

MSS recommend requesting the applicant provides additional information on how they will assess effectiveness of ADDs. The applicant has committed to deactivating devices if no seal interactions are evident or if the devices show reduced efficacy over time. MSS advise that evidence should be collected to inform these decisions. MSS also advise that the applicant should provide information on the specific criteria used to determine when devices would be deactivated.

We note that seal predation and predation-mitigation measures are reviewed on a weekly and monthly basis, any fish mortalities due to predation are recorded daily and there are daily checks of ADD function. We also note that seal activity around the site is recorded on above-water cameras and stress behaviour in livestock is recorded on underwater cameras. MSS recommend the applicant continue to maintain these detailed logs, to evidence any decisions made and to provide information on seal presence and efficacy of the devices over time. Despite these recording schemes, no evidence of lost / damaged fish, seal activity or ADD efficacy has been presented with this application. We note this information is compiled at the end of every farming cycle, and MSS recommend that LOT requests the submission of this information for review.

MSS welcomes the commitment to deactivating the devices should a cetacean be present in the immediate area of the farm, but note that a threshold distance for this is not provided. MSS advise that the applicant provide a threshold distance and also that the applicant records any deactivations due to cetacean presence as part of the recording schemes discussed above.

In summary, MSS advise the following:

- MSS recommend more evidence is provided to justify why currently used alternative measures and those not trialled by the applicant (including Anti-Predator Netting (APN), seal blinds and false bottom cages) are, or would not be, effective without the use of ADDs;

- MSS advise the applicant should provide clarification on how close to the site a cetacean must be for the applicant to deactivate an ADD;

- MSS advises the applicant should provide information on what criteria / threshold of efficacy must be demonstrated in order for the devices to be deemed not effective and hence deactivated;.

- MSS recommend the applicant submit a revised EPS risk assessment that presents the number of individuals expected to be impacted in a 'worst case scenario', along with further information on pulse duration, duty cycles and firing schedules;

- MSS recommend the applicant submit a revised EPS risk assessment with a cumulative impact assessment that includes the Clashnessie site, together with any of the applicant's other sites known to be using ADDs (e.g., those using TAST under License Number 210989) and any other sites known to be using ADDs in the region.

- MSS advise more evidence is need on the lethal and sub-lethal effects of seals on fish at the site. Specifically, MSS advise supporting data is provided beyond anecdotal statements.

References

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Marine Scotland (2020). Second review of the operation of the seal licensing system under the Marine (Scotland) Act 2010. Available at https://www.gov.scot/publications/marine-european-protected-species-protectionfrom-injury-and-disturbance/

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Thompson, D., Coram, A.J., Harris, R.N. and Sparling, C.E. (2021). Review of non-lethal seal control options to limit seal predation on salmonids in rivers and at finfish farms. Scottish Marine and Freshwater Science Vol 12 No 6, 136pp. DOI: 10.7489/12369-1 https://data.marine.gov.scot/dataset/review-non-lethal-seal-control-options-limit-seal-predation-salmonids-rivers-and-finfish

Hopefully these comments are helpful to you.

Yours sincerely,

Renewable Energy Environmental Advice group
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