Proposed use of acoustic deterrents (ADDs) at fish farms affecting the Inner Hebrides and the Minches SAC

This advice relates to any proposed use of ADDs at new fish farms and amendments to existing fish farms. It provides guidance for EIA scoping and HRA and advises on the information required from an applicant on ADD use. The focus is on applications within the SAC, but also offers advice for applications outside the boundary.

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Background

1. This note should be read together with Marine Aquaculture Casework: Acoustic Deterrent Devices (ADDs) Information Note. Also useful is the Natura Casework Guidance – Instruction Notice (B62674)

2. Harbour porpoise are the most commonly sighted cetacean in Scottish waters and high numbers have been consistently recorded in the Inner Hebrides and the Minches SAC.

3. The Conservation Objectives[1] for the site seek to maintain the integrity of the SAC by ensuring that, among other things, there is no significant disturbance of the species. Harbour porpoise are sensitive to noise disturbance, and therefore the use of Acoustic Deterrent Devices (ADDs) potentially affecting the SAC is highlighted as a concern.

4. In order to assess the spatial influence of noise related to ADD use in the SAC, including potential for cumulative or barrier effects, the extent of potential noise disturbance has been investigated in-house by modelling (A1897856) the disturbance zone from active

[1] In draft at time of guidance preparation (March 2018)

ADDs, and by comparison to available literature This exercise suggested a 3km indicative disturbance radius[2] for a typical ADD deployment.

5. However, acoustic signals from ADDs in Scotland have been detected above background at significant distances from source, in the order of 15 km (but could be much further depending on the environmental conditions). It is clear that ADD signals from fin fish farms are a pervasive anthropogenic noise source in the marine environment.

6. In addition, frequent exposure to ADD signals has the potential to cause temporary or even permanent hearing damage to harbour porpoise, thereby affecting biological fitness and / or survival. Modelling indicates that cumulative exposure to multiple devices will reduce the time span required before injury thresholds are breached.

7. Internationally, there is a growing concern about rising levels of underwater noise from all anthropogenic sources[3]. We therefore consider it important to work towards minimising additional noise input into the marine environment and to that end we are working with industry to review ADD usage in order to develop good practice guidelines.

8. The Habitats Regulations Appraisal is a robust procedure which protects Europe's most important natural heritage areas from the damaging effects of plans and projects. Regulation (48(2)) make clear that the onus is on the proposer of a project to provide information to the competent authority to allow them to conduct the HRA and to come to a conclusion on whether there is no AESI. The practical experience of this situation, is set out in EU Commission guidance (original highlighting) , "***Experience has shown that many of the delays or problems encountered during the Appropriate Assessment are caused by the fact that the information gathered for the Appropriate Assessment is incomplete or deficient***. *As a result, the authorities are unable to confirm that there be no adverse effects on the integrity of the site and the whole assessment process has to be put on hold whilst the missing information is being gathered*."

Consideration of potential impacts to harbour porpoise

9. ADD deployment and use, in itself, is not currently subject to a specific consenting or licensing process but, rather, forms one component within an overall fish-farm application, and associated Predator Control Plan, assessed by Local Authorities, under Town and Country Planning legislation, and associated EIA and HRA requirements. Additionally, If ADD use disturbs cetaceans at a particular site, then its use without an EPS licence could constitute an offence. EPS licenses in these circumstances are regulated and issued by Marine Scotland (Licensing Operations Team). For proposed deployments potentially

[2] This is an indicative radius as the actual disturbance zone may be smaller in some cases and larger in others depending on the device used and the acoustic propagations of the site.
[3] Marine Strategy Framework Directive – Indicator 11 – Underwater Noise - http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-11/index_en.htm (accessed 11/04/2017)

affecting the SAC SNH may therefore expect to advise upon potential impacts and mitigation under EIA, HRA and EPS legislation[4]. Amendments to use of existing ADD deployments are also assessed by Local Authorities. Though not addressed specifically in this note, the same principles of assessment, good practice, and mitigation and monitoring as are set out for new deployments, apply.

10. Our view at this time is that because there is a clear risk of disturbance, particularly in areas where there may be cumulative impact, there is a requirement to manage ADD use[5].

11. Our overall aim is to reduce the use of ADDs by ensuring they are either not used or, where no alternatives are available, they are managed effectively, thereby ensuring the Conservation Objectives are met.

12. The Inner Hebrides and the Minches SAC was selected for designation based on persistent higher densities of harbour porpoise within the boundary in comparison to other locations. The entire site is considered sensitive for harbour porpoise (i.e. no hotspots have been identified). However, there are locations within the SAC where cumulative impacts from ADDs may be of concern, for example in straits and narrows where there are multiple fin fish farms using ADDs.

13. The proposed location for the use of ADDs must therefore be carefully considered. There is the potential for habitat exclusion as a result of ADD use, and should the proposed location be in constrained waters, such as straits or narrows, there is a risk of blocking the area for passage or for use.

14. There is also the potential for wider habitat exclusion due to the combined presence of ADDs. Therefore, ideally, other fish farms in the area should be considered in conjunction with any new proposal.

15. We have used our internal modelling exercise and available evidence to estimate a rule of thumb for the disturbance zone. However, evidence also highlights that the extent of the zone of disturbance/deterrence is variable. The variability is due to a number of factors. These include the ADD type (variable acoustic characteristics) and site specific sound propagation characteristics, both of which affect the sound level of the acoustic signal at distance. In addition, behavioural responses to an acoustic cue are also variable for a number of reasons including (but not limited to) activity of the animal at the time (e.g. travelling or feeding); biological value of the area, and age and experience of the individual.

16. It is worth noting that due to the variability in behavioural response, there is not an agreed threshold for assessing disturbance. In addition, it is important to understand which device type the fish farm proposes to use, as there are a variety of devices available with differing acoustic characteristics. This could make a difference as to how disturbing the acoustic signal may be to harbour porpoise.

[4] Marine Scotland. The protection of Marine European Protected Species from injury and disturbance. Guidance for Scottish Inshore Waters. http://www.gov.scot/resource/0044/00446679.pdf

[5] As of March 2018 – under discussion with Marine Scotland

17. New devices are being developed that have signals better tailored to seals rather than cetaceans. Once evidence is available on their efficacy, and depending on the outcome, we may be able to work with industry to move towards the use of such 'cetacean friendly devices'.

18. As a guide, we advise the use of a 3 km indicative disturbance distance when assessing applications. This distance is based on evidence in the scientific literature and on our internal modelling exercise, and should be used to assess the indicative spatial extent of disturbance and connectivity to the SAC.

19. Operational staff should contact CMEU advisers (see contact details at end of note) for advice when dealing with applications proposing to use ADDs in locations where there is potential for a cumulative issue, e.g. where there are multiple fin-fish farms in a topographically restricted area. Members of the Natura team in National Operations Unit should be contacted if in doubt about the procedural and technical aspects of any HRA.

Scoping advice for EIA/HRA

20. For all applications (new and amendments to existing) within or adjacent to the SAC where ADDs are proposed, advice regarding harbour porpoise should be included in section 5 of the EIA template.

21. The section should begin by clarifying the location of the proposal in relation to the SAC boundary and confirm whether there is a Likely Significant Effect. For example:

    'The proposal lies within/near to the Inner Hebrides and the Minches candidate Special Area of Conservation (SAC) selected for its harbour porpoise.

    Background information on the SAC can be found at:

    https://www.snh.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/international-designations/natura-sites/harbour-porpoise-candidate

    The site's status means that the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations") or, for reserved matters, the Conservation of Habitats and Species Regulations 2017 as amended apply. Consequently, […the local authority] is required to consider the effect of the proposal on the SAC before it can be consented (commonly known as Habitats Regulations Appraisal). The SNH website has a summary of the legislative requirements (http://www.snh.gov.uk/docs/A423286.pdf).

    The typical frequencies of ADDs are within the hearing range of harbour porpoise. A significant body of evidence exists to suggest that in some instances ADDs can result in the disturbance and displacement of harbour porpoise.'

'Should ADDs be in use / proposed at this site then in our view, this proposal is likely to have a significant effect on the harbour porpoise qualifying interest of the Inner Hebrides and the Minches SAC. Consequently, […the local authority], as competent authority, is required to carry out an appropriate assessment in view of the site's conservation objectives for its qualifying interest.

We do not require further survey or modelling data to be presented, because sufficient data are available in the SAC designation documents (available on the SNH website via the above weblink) to demonstrate that the whole SAC is an important area for harbour porpoise.'

22. In the first instance the applicant should consider if it is possible for the site to be operated without the use of ADDs. This should include consideration of the alternatives and should be presented in the planning application / environmental report (ER). Alternatives include:
    a. Consideration of alternative locations
    b. Use of tensioned cage nets (including the consideration of alternative net materials).
    c. Use of predator nets / double-bottomed nets / seal blinds.

23. If ADDs are proposed then the applicant should provide an ADD deployment plan with their final planning application / ER. The plan should include the following details;

    a. Details of the ADD model to be used, including
        i. The device name (and version if appropriate)
        ii. The indicative source level
        iii. The typical frequency content of the chosen device
        iv. Details of any triggering method
        v. Details of the duty cycle to be used (or the settings available), and
        vi. The number and locations of device(s) to be deployed
    b. How ADD use will be managed, including
        i. Detail of the cues/triggers and decision process to activate ADDs. The cues/triggers should be specific and measureable and relate to predation events by seals rather than presence of seals in the area.
        ii. How their use would be reviewed
        iii. Criteria for deactivation or removal of ADDs (including if they do not appear to be effective).
    c. Undertaking on reporting
        i. confirmation that a log will be kept recording
            1. the exact dates when the device was operated, how often it was operated on that date, for what duration and what the cue for its manual or auto-sensor operation was
            2. details of any predation events by seals and any predation measures (including ADD deployment) in use at that time should be logged
            3. details of the person or persons responsible for maintaining the logs.

ii. an undertaking that all logs will be maintained for review by the Planning Authority and/or SNH if deemed necessary by the Planning Authority.

24. In addition to the ADD deployment plan the final planning application / ER should include an assessment of how the development could combine with existing activities to increase the potential for cumulative impacts upon harbour porpoise.

25. Lastly, we should include reference to other cetaceans. For example 'Other species of cetacean have also been recorded in this area. The assessment process and measures to mitigate impacts on harbour porpoise would also be expected to benefit other species.'

HRA advice

26. The Conservation Objectives[6] for the Inner Hebrides and the Minches SAC are:

1. To ensure that the Inner Hebrides and the Minches SAC continues to make an appropriate contribution to harbour porpoise remaining at favourable conservation status.

2. To ensure for harbour porpoise within the context of environmental changes, that the integrity of the Inner Hebrides and the Minches SAC is maintained through 2a, 2b and 2c:

2a. Harbour porpoise within the Inner Hebrides and the Minches are not at significant risk from injury or killing.
2b. The distribution of harbour porpoise throughout the site is maintained by avoiding significant disturbance.
2c. The condition of supporting habitats and the availability of prey for harbour porpoise are maintained.

27. Harbour porpoise could be affected by a number of aspects of aquaculture in addition to ADDs such as entanglement with anti-predator nets, entanglement with set nets used for recapturing escaped farmed fish, or toxic effects of chemicals. However, entanglement with anti-predator nets is not considered to be a significant risk. Use of nets to recapture escaped fish requires prior consultation with Marine Scotland and use of chemicals requires a CAR license from SEPA: in both cases there is another competent authority so the impacts do not need to be considered under planning.

28. In our view the use of ADDs anywhere within, or up to ~3km from the SAC is likely to have a significant effect on the harbour porpoise qualifying feature, due to the potential for disturbance, and possible consequent displacement occurring which might prevent Conservation Objectives 1, 2b and 2c from being met. Therefore an Appropriate Assessment needs to be undertaken. Where more distant (> ~6km) from other ADDs, and not located within narrow passages or sounds, this need not be onerous and we may be able to advise No Adverse Effect on Site Integrity (NAESI) based on the information supplied in the ADD Deployment Plan (see decision tree below).

[6] In draft at time of guidance preparation (March 2018)

29. These general guidelines should be applied to both new applications and to amendments to existing consents.

30. In our view, we **do not consider the continuous[7] use of ADDs as acceptable**. The devices should only be activated when there is a predation threat, and deactivated when the threat has passed.

31. Key considerations for HRA will be to ascertain no adverse effect on site integrity with or without mitigation. Consideration should be given to how the use of ADDs may affect:
    a. Distribution and therefore displacement of harbour porpoise within the SAC, particularly in the area of the fish farm. Both individually and cumulatively with other fish farms, and other noisy activities. This will inform assessment against COs 1 and 2b above.
    b. Deterioration of acoustic habitat due to noise pollution. This will inform assessment against CO 2c above.

32. Methods to minimise noise disturbance[8] from ADDs include:
    a. No continuous use of ADDs
    b. ADDs activated only in response to a predation threat
        i. automatic triggered mechanism
        ii. manually activated and deactivated
    c. The use of low power ADDs to reduce the zone of disturbance
    d. The use of devices that have frequency content targeted at seal hearing, with minimal overlap for cetacean hearing (note this is a developing field – care will be needed in respect of any potential overlap with minke whale hearing, which is at lower frequencies than that of harbour porpoise)

33. Where it is evident that ADD use at a specific site is not preventing seal predation from occurring, it would seem reasonable to conclude that in that instance the ADD in use is not providing an effective deterrent. In such cases the site should deploy alternative defences rather than continue to use the same type of ADDs. Re-consider location if a more powerful ADD is suggested.

34. Where it is evident that a site cannot be operated without the continuous use of ADDs (i.e. seal mortalities occur as soon as ADDs are deactivated) then alternative defences must be deployed to ensure the continuous use of ADDs is avoided.

35. In addition, the use of ADDs in constrained areas within the SAC such as straits and narrows may result in cumulative impact, especially where there are a number of fish farms within approximately 6 km of each other. Therefore, detail on ADD use in the vicinity is also required and/or recommendation for a strategic deployment plan with adjacent farms.

36. Any/all mitigation measures required to ensure NAESI should be conditioned within the consent. This should include requirements to adhere to the agreed ADD Deployment Plan (and any monitoring, reporting and review mechanisms therein). Nb If other conditions are

[7] By continuous – we mean indiscriminate use i.e. being turned on and left on regardless of risk/threat
[8] Which will help reach the key test of no adverse effect on site integrity

applied that do not specifically relate to avoiding an AESI then they should be kept separate from the response text relating to the HRA, in order to avoid confusion between EIA and HRA processes.

37. A suitable condition for a fish farm application would be:
    a. No deployment or use of any ADD on the site shall take place unless it is in strict accordance with the provisions of the agreed ADD Deployment Plan.

ADD use at fin fish farms outside the SAC

37. New applications or amendments to existing consents for ADD use up to 3km outside of the SAC boundary should be treated in the same manner as those within the SAC, based on the modelled indicative disturbance radius discussed earlier. In any location beyond that, the use of ADDs must still be weighed against the range of possible effects on the natural heritage including cumulative ones, and should incorporate consideration of all other alternative anti-predation strategies. ADDs that operate in the hearing range of cetaceans could cause disturbance. Outside the SAC we advise that fin fish farms adhere to good practice guidelines for ADD deployment, which are currently the focus of our work with industry.

General principles

38. In the meantime, we advise for sites both within and outside the SAC:
    a. The location is considered as above in relation to cumulative impacts
    b. The applicant should, in the first instance, consider if it is possible for the site to be operated without the use of ADDs.
    c. There should not be continuous use of ADDs; these should be triggered in response to a predation threat.
    d. An ADD Deployment Plan should be supplied as detailed in point 21.

Decision tree for ADD applications

Within, and up to ~3km outside of, the SAC

CMEU contacts

The CMEU leads, and first points of contact, for provision of advice on aquaculture are:

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For aspects specifically relating to underwater noise, as outlined in this guidance, the contact is:

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Document Control

Author	Caroline Carter, Liam Wright, George Lees
Unit	Coastal and Marine
Activity	Coastal and Marine
Published / revised date	28/03/2018
Review date	28/03/2019
Mandatory Read for staff *(Select Yes or No)*	**No**
Keywords	Marine Aquaculture, Acoustic Deterrent Devices, ADD, harbour porpoise
Audience	☐ **All Units.** Or, for targeted Notices, select Units below…

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