marinescotland science

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Our ref: FFP-19-051
Your ref: 19/00609/PPM

13/09/2019

Dear Mr Davies,

Installation and operation of an Atlantic Salmon Fish Farm comprising 20 x 120m circumference fish pens and an accompanying feed barge. At East of Millstone Point, Isle of Arran by The Scottish Salmon Company.

We have reviewed the application submitted and offer the following comment:

Environmental Impacts

Benthic impacts

The applicants proposal for 20 x 120m cages and a combined biomass across 2 cage groups, would if permitted, represent one of the largest sites currently in Scotland. Modelling reports have been submitted for the 2 cage groups, North Arran A and North Arran B, which indicate that a benthic pass was obtained for the proposed biomass of 2500 tonnes per cage group. SEPA as the regulator will make the final decision with regard to biomass and the validation of the modelling submitted.

Water column impacts

The proposed site sits within an area currently not included in the Locational Guidelines. The applicant has included a nutrient assessment which indicates that the degree of enhancement likely to result from the proposed biomass should not be unacceptable. It has been indicated that no cumulative assessment has been included due to the development being in open water and the large distance between the proposal and the nearest developments.

Aquaculture Animal Health

Site Location

There are currently no sites registered with Marine Scotland Science within 1000m of the proposed new site (see attached map).

However, there are several other proposed sites in the area which could impact this site if they were developed, see 'Disease Management Area' for further information.

It should be noted that all measurements are taken from the mid point of site coordinates.

Site Access

The location of the proposed site appears to be relatively exposed to the east. Environmental data for the proposed location and details on the assessment made on its suitability were requested at the screening and scoping stage and are considered in the 'Containment' section.

Information has been provided regarding how access to the site will be maintained. The site will be serviced from the applicant's Lamlash shorebase by work boat. Remote monitoring equipment is proposed for use on the site, including cameras below the surface to remotely monitor fish behaviour and above the surface to monitor feed operations and environmental conditions, with this information being relayed to the shorebase. The applicant state they have experience of operating other remote sites successfully with this technology. The ability to remotely operate barge treatment systems is also being investigated, should this be required.

Authorisation
The Scottish Salmon Company already possess authorisation to farm at their existing sites. However, an amendment to this authorisation must be sought to include any newly approved or acquired site, prior to the commencement of farming operations at the new site. Please contact the FHI at Marine Scotland to request this amendment should permission for the new site be granted.

Disease Management Area
The proposed location of the site is out with current disease management area (DMA) boundaries as currently defined in Marine Scotland DMA maps, available online http://www.scotland.gov.uk/topics/marine/fish-shellfish/FHI/managementagreement/maps and would therefore create a new disease management area. **However,** there are several other proposed new sites in the vicinity, currently in the screening and scoping process, that could further impact the designation of DMAs and their boundaries should these applications be progressed. To date none of the other proposed sites have progressed from screening and scoping.

It should be noted that the order in which proposed sites are developed will also have bearing on the advice given as the applications progress, as The National Marine Plan states new aquaculture sites should not bridge DMA's, therefore locations which join DMA's would not be supported by MSS. The nearest proposed site to the East of Millstone Point site is positioned south east of the Island of Bute, East of Hawk's Nib, and would result in separation distances from these sites overlapping and therefore the joining of DMA's. **Both sites cannot exist concurrently as they would lead to joining of DMA's. This would be particularly substantial as it potentially involves DMA's 19a, 19b and 19c due to the position of proposed sites and their separation distances closing off water bodies and increasing epidemiological risk factors.**

Further information on proposed sites in this area and potential impacts on DMA foreseen:

- Separation distances from all 3 proposed Dawnfresh sites at Cumbrae touch land on both sides, together or independently, therefore activation of any one or all sites will effectively close the water body in the Firth of Clyde north of West Kilbride and expand DMA 19b north in a single DMA, backfilling the water body to include Loch Goil, Loch Long, Gare Loch and west towards the River Clyde due to epidemiological risk factors (see map).
- With development at the East of Hawks Nib proposed site the enlarged 19b would expand to include East of Millstone Point, which would subsequently result in the joining of 19b with 19a and 19c due to epidemiological risk factors which would not be supported by MSS as detailed above.

Stocking Density
From the information given in the application, the operation of the sites will be at an acceptable stocking density level of below 22kg/m^3.

Husbandry
It is stated that the SeaSpine will automatically collect mortalities from pens using a lift up system to the pen side; however, sensors on the camera systems will trigger the liftup technology to begin and carry morts to the barge via self contained pipes. Clarification is required as to the operation of the mort removal system. It is stated that the barge will allow for full containment of fish material, and after dewatering further processing of the waste may be undertaken e.g. oil extraction. Specific details of mortality processing taking place on the barge and how it will be used, along with mitigation to ensure containment is not breached during transfer to the barge is not provided. Waste products will be transferred in sealed harvest bins to a shorebase before transfer to Dundas biogas plant for further processing.

Details of the considerations and mitigation measures that have been made to ensure full containment of mortalities during the lift up and transfer process through the SeaSpine to the barge in an exposed environment should be provided. The applicant states that the system will be fully valved to ensure only the open lines are operating – further details of this system and contingencies in place in the case of equipment failure during the transfer process should be provided. Details of how mortalities are processed at the barge, including how accurate mortality records will be kept with 20 units automatically uplifting mortalities to the barge should also be provided.

This concept husbandry system is innovative and to our knowledge has not been trialled at a Scottish aquaculture site nor on a 5000t active site in an exposed location. Further information on the proof of concept under the working conditions of this site in relation to fish health and containment should be provided – further information is requested in 'Containment'.

Sea Lice

The site is located out-with currently designated farm management areas (FMA) as defined in the CoGP. The nearest FMA's are located ~14-15km north (M-42), west (M-47) and south (M-48) of the proposed development. The applicant proposes that a new FMA is formed for this site. Other proposed sites may influence this, however these have yet to be developed so cannot be considered at this time.

Information on strategies proposed for the management of sea lice on site have been provided in the EIA and the submitted draft Environmental Management Plan (EMP).

The applicant list biological control with cleaner fish as a proactive step to managing sea lice and actively reduce the use of medicinal products on site. It is planned that cleaner fish will be stocked on site during the first grading (approximately 12 months post stocking). The applicant states that 90% of the cleanerfish used are now from farmed sources; however MSS are aware of difficulties with supply of cleanerfish in the industry due to operational changes at some of the potential source sites. Therefore, information should be provided on the proposed sources of cleanerfish, and confidence they can continue to be supplied in the necessary numbers to ensure cleanerfish remain a viable part of the sea lice management strategy on this large site.

Freshwater treatments will be conducted on the barge treatment facility facilitated by a swim through system removing fish from pens, and a rainwater collection system on the feed barge to provide the freshwater. The applicant also have a freshwater storage facility at Ardyne being built, and this will also service Arran. Further details of the swim through system for transferring fish and the barge treatment facilities should be submitted to assess any impacts on fish health, biosecurity and containment. The applicant states that the system will be fully valved to ensure only the open lines are operating and prevent mixing of stocks between cages – further details of this system and contingencies in place in the case of equipment failure during the transfer process should be provided. Furthermore, as this site proposes to stock cleaner fish; extended freshwater treatments may not be suitable or may create additional logistic challenges in administering treatments. Research suggests that lumpfish appear tolerant to freshwater exposure in bath treatments for 3-5 hours (Powell et al 2017[1]), however longer treatment times or use of wrasse may require the cleaner fish to be removed prior to the treatment being conducted. Further information is sought on considerations to cleaner fish health and welfare and details of proposed procedures for removing cleaner fish prior to freshwater treatment should be provided.

Non-chemical physical removal methods with hydrolicers or thermolicers are also proposed for use. There is one hydrolicer dedicated to the southern sites operated by the applicant which includes this proposed site. Timeframes for conducting hydrolicer treatments are 2-3 days per cage group, therefore overall treatment time for the whole site would equate to up to 6 days for all 20 cages, with inclement weather or boat availability potentially increasing this further. The applicant do not own a thermolicer but could loan one if required.

At a proposed maximum biomass of 5000t the site proposed is double the size of the majority of existing farms. Further information on the proposed approach to treating the two groups of 10x 120m cages was requested at the screening and scoping stage. The applicant state that the site will operate under two separate CAR consents of 2500t, therefore with regards to medicinal consents each group will be licenced separately. Should the CAR consent reflect the modelling undertaken, the efficacy statement suggests that treatments with alphamax could be undertaken in 2 days at each cage group. If all cages are to be treated sequentially, practical treatment time will likely be 4 days, however inclement weather or boat availability could potentially increases this further. Bath treatments with chemotherapeutants are undertaken primarily in fully enclosed tarpaulins but may also be conducted on a wellboat. No further information is provided in relation to chemotherapeutant treatments on the barge treatment facility; clarification should be provided on whether the on barge treatments facilities will be used for medicinal treatments and if so, further information should be provided on procedures and timescales.

The proposed limits for emamectin benzoate consent is 0.7 times the maximum biomass at A group and 1.4 times maximum biomass at B group. However, due to recent changes made to SEPA's interim position statement on the use of emamectin benzoate, the amount of the in feed treatment Slice actually consented may be lower than that modelled. The applicant have stated smaller consents will be utilised at the start of the production cycle when biomass is lower, and other intervention tools are available to ensure sea lice control; including earlier stocking of cleanerfish, mechanical treatments and medicinal or freshwater bath treatments.

The applicant has provided details of how interventions are chosen in response to escalation of a sea lice infestation with several scenarios given as examples including reference to how status of fish health, size of fish, environmental factors or logistical issues on site are incorporated into the decision making process. Some

[1] Adam Powell, Jim W. Treasurer, Craig L. Pooley, Alex J.Keay, Richard Lloyd, Albert K. Imsland, Carlos Garcia de Leaniz (2017) Use of lumpfish for sea-lice control in salmon farming: challenges and opportunities Review in Aquaculture 10.3 683-702

scenarios in the submitted EMP document refer to the fish being protected by Slice in the first year of sea; this may not be specifically relevant to this site given the likely reduced Slice consent, however further information has been provided in the efficacy statement on how satisfactory measures will remain in place with reduced Slice consent.

Containment
The proposed contingency plan for dealing with an escape or suspected escape event is satisfactory.

The information provided on equipment and strategies in place to minimise predator interactions at the site in question is satisfactory as far as can reasonably be foreseen.

The net attestation from Knox states that nets will be capable of withstanding environmental conditions at the site. The attestation provided from Gael Force Marine Equipment Ltd. states that they have designed and specified a SeaQure farm design that, if purchased in full from them, will be suitable for purpose at the proposed location based on environmental data supplied by the applicant; this includes the cages, moorings, feed barge, barge for treatment and mortality plant, and pump back spine system.

This concept husbandry system is innovative and to our knowledge has not been trialled in any Scottish aquaculture site and particularly not a 5000t active site in an exposed location. Full details of the novel equipment and operations relating to their use have not been provided to a point where an assessment can be made on the ability of the proposal to ensure full containment of the aquaculture animals during these processes in the proposed location. In order for this assessment to take place more specific details on the processes proposed are required.

For information: Operations and records on site with regard to sea lice control and containment, must meet the requirements of the Aquaculture and Fisheries (Scotland) Act 2007, The Fish Farming Businesses (Record Keeping) (Scotland) Order 2008 and 'A Code of Good Practice for Scottish Finfish Aquaculture'. Compliance with this will be inspected during routine visits.

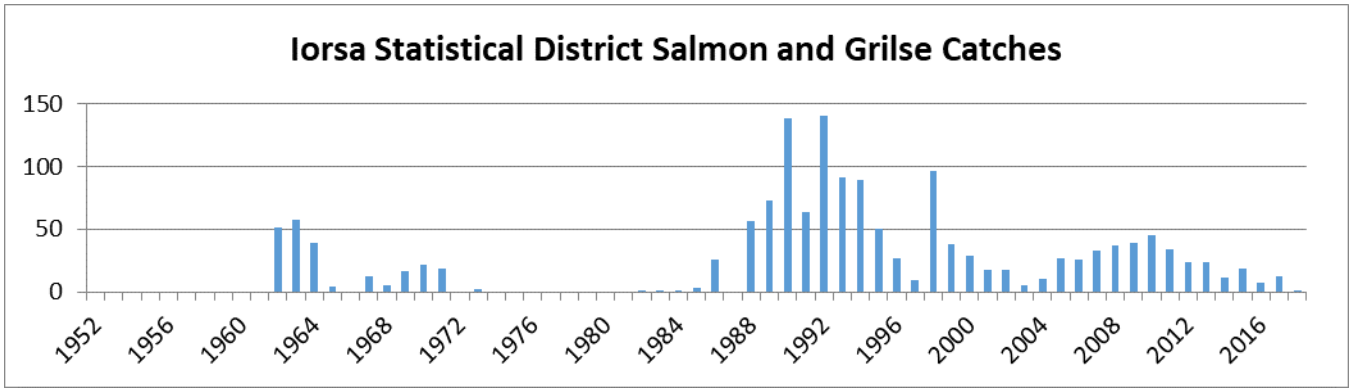
Wild Fisheries

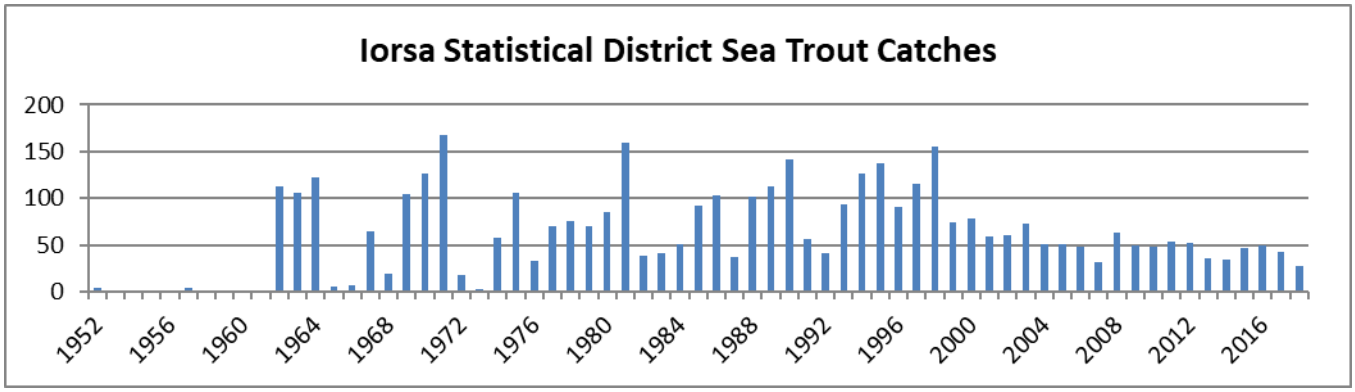
The following should be read in conjunction with the latest summary of information relating to impacts of sea lice from fish farms on Scottish sea trout and salmon, available on the Marine Scotland webpages:

http://www.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/Aqint/troutandlice

There are no other finfish aquaculture sites within the immediate area although it is noted that the aquaculture sites at the mouth of Loch Fyne are approximately 20 km away from the proposed site.

The Isle of Arran is known to have fisheries for salmon and sea trout. The following graphs plot the catches for Atlantic salmon and sea trout from 1952 – 2018 in the Iorsa Statistical District within which the site will be located. As the Iorsa district covers the entirety of Arran these figures may not be representative of the catches in the immediate area and are only provided to give an indication of catch trends in the area.





Scientific evidence from Norway and Ireland indicates a detrimental effect of sea lice on sea trout and salmon populations. Salmon aquaculture results in elevated numbers of sea lice in open water and hence is likely to have an adverse effect on populations of wild salmonids in some circumstances. The magnitude of any such impact in relation to overall mortality levels is not known. However, concerns that there may be a significant impact of aquaculture have been raised due to declines in catches of both salmon and sea trout on the Scottish west coast. The appended summary webpages provide a more detailed summary of the latest scientific knowledge in this area.

Information from the west coast of Scotland suggests lice from fish farming can cause a risk to local salmon and sea trout. This information can be used to give an idea of the relative risk to salmon and sea trout which is governed, and can be mitigated, by a number of factors, in particular the siting of the farm and its ability to effectively control sea lice. The greater the number of lice on the farm the greater the risk to wild salmon and sea trout. While it is not possible to accurately predict the future lice levels on a farm the performance of existing farms within the area could act as a guide for future performance.

The Scottish Salmon Producers Organisation (SSPO) publishes Fish Health Management Reports providing average lice counts for an area, more recent reports include monthly lice counts for each farm. The reports can be found at the following web address: http://scottishsalmon.co.uk/category/farming/fish-health/

This development has the potential to increase the risks to wild salmonids.

The applicant appears to be aware of the potential impacts on salmon and sea trout and has indicated that they intend to manage the site as part of a new management area. They undertake to follow the practices recommended in the industry CoGP regarding containment and sea lice control. However the applicant adopts lower treatment levels than the CoGP, with treatment being considered at 0.2 adult female lice in the spring and 0.5 adult female lice in the rest of the year. The applicant has outlined various methods of lice control within the attached EMP, such control methods include medicinal control, biological control as well as mechanical control (hydrolicer and thermolicer).

It should be noted that sea trout are present in these inshore waters all year round, and not just during the spring smolt migration period. We therefore suggest that strict control of sea lice should be practiced throughout the year. Additionally, it should be noted that adherence to the suggested criteria for treatment of sea lice stipulated in the industry CoGP may not necessarily prevent release of substantial numbers of lice from aquaculture installations.

The applicant has supplied an Environmental Management Pan (EMP) outlining how potential interactions of sea lice arising from the proposed development will be assessed with respect to wild salmonids. Marine Scotland expects that as a minimum any monitoring scheme will be able to report on the level of lice released into the environment (i.e. both farmed fish numbers and adult female lice numbers); identify the likely area(s) of sea lice dispersal from the farm; details how and what monitoring data will be collected to assess potential interaction with wild fish; and details how this monitoring information will feed back to management practice. This plan should also include a regular review process to ensure that it remains fit for purpose.

The applicant has indicated that they intend counting sea lice stages on wild salmonids. The collection of wild salmonids is a regulated procedure and the applicant needs to obtain necessary permissions to conduct this activity with a specific achievable objective. Sea lice on wild fish are likely to be obtained from multiple sources, including other nearby farms. The applicant appears to be aware that wild fish sampling will generate data that could only be used to inform on general environmental sea lice loads.

The included EMP does not include all of the criteria mentioned above, in particular it misses the following details:

- Information on how monitoring programs will integrate into management on the site.
- A suitable review process for the EMP to ensure it remains up to technical standards.

Sea lice efficacy

North Arran A

The submitted efficacy statement indicates that SLICE may be available in sufficient quantities to treat the maximum biomass upto 0.73 times, which is a relatively low amount for the proposed biomass. It should be noted that SEPA have recently updated their position statement with regard to emamectin benzoate and that the applicant has stated that if SEPA reduce the consented quantity to less than that which has been modelled, SSC will use other sea lice intervention tools at its disposal to ensure sea lice control.

The efficacy statement indicates that with respect to Cypermethrin and Deltamethrin 4 pens could be treated per 3hrs, however the modelling report indicates that 2.5 and 2.4 cages respectively could be treated with the predicted modelled quantities without breaching EQS. The applicant has indicated that practically, 2 pens per 3hrs could be treated. Predicted quantities of Azamethiphos would not allow for efficacious use of this medicine.

North Arran B

The submitted efficacy statement indicates that SLICE may be available in sufficient quantities to treat the maximum biomass upto 1.4 times, which is a relatively low amount for the proposed biomass. It should be noted that SEPA have recently updated their position statement with regard to emamectin benzoate and that the applicant has stated that if SEPA reduce the consented quantity to less than that which has been modelled, SSC will use other sea lice intervention tools at its disposal to ensure sea lice control.

The efficacy statement indicates that with respect to Cypermethrin and Deltamethrin 4 pens could be treated per 3hrs, however the modelling report indicates that 2.5 and 2.3 cages respectively could be treated with the predicted modelled quantities without breaching EQS. The applicant has indicated that practically, 2 pens per 3hrs could be treated. Predicted quantities of Azamethiphos would not allow for efficacious use of this medicine.

Summary of information required

- Considerations to cleaner fish health and welfare and details of proposed procedures for removing cleaner fish prior to freshwater treatment
- Further information on the novel equipment and operations as detailed above relating to:
    - Mortality removal
    - Freshwater treatments
    - Medicinal treatments
    - Containment

Notes to applicants:

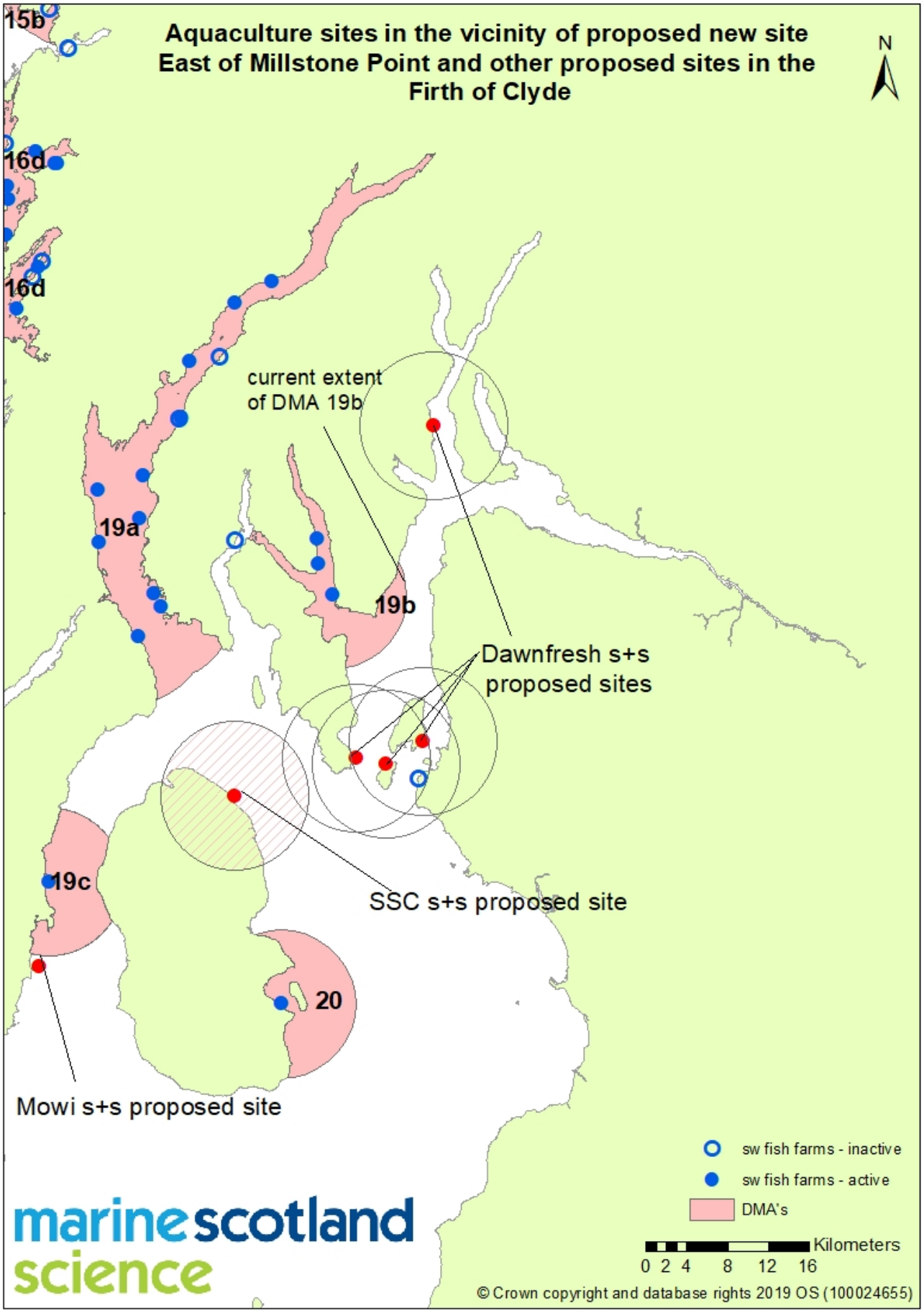
The Aquatic Animal Health (Scotland) Regulations 2009 requires the authorisation of all Aquaculture Production Businesses (APB's) in relation to animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals. The authorisation procedure is undertaken on behalf of the Scottish Ministers by the Fish Health Inspectorate (FHI) at Marine Scotland Marine Laboratory. To apply for authorisation for an APB or to amend details of an existing APB or any site that an APB is authorised to operate at, you are advised to contact the FHI as follows: Fish Health Inspectorate, Marine Scotland Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB. Tel: 0131 244 3498; Email: ms.fishhealth@gov.scot

All marine farms, whether finfish, shellfish or algal, are required to apply for a marine licence under Part 4 of the Marine (Scotland) Act 2010. To apply for a marine licence, or to amend details of an existing marine licence (formally Coast Protection Act 1949 – Section 34 consent), please visit the Scottish Government's website at http://www.gov.scot/Topics/marine/Licensing/marine/Applications where application forms and guidance can be found. Alternatively you can contact the Marine Scotland Licensing Operations Team (MS-LOT) by emailing MS.MarineLicensing@gov.scot; or calling 0300 244 5046.

Yours sincerely

Marine Scotland Science

Appended:
Map: Aquaculture sites in the vicinity of proposed new site East of Millstone Point and other proposed sites in the Firth of Clyde.



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