Attachment XV

Marine Cage Fish Farm CAR Licence Review

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Update Summary

Version	Description
v1.0	First issue for Water Use reference.
v2.0	Review to include residue failures

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1 Introduction

SEPA issues licences for marine cage fish farms (MCFF) with conditions designed to ensure that the water environment outwith the immediate vicinity of the licensed site is protected. The primary conditions that provide environmental protection are those that limit the biomass i.e. the weight of fish held on site, those limiting medicine or chemical releases and the requirement for fallowing i.e. a period where no fish production occurs on site. The process for determining a sustainable biomass for any licensed site is complex. The licensed biomass limit for fish farms is normally determined using a modelling package, AutoDEPOMOD. The model uses the responsible person's predicted production cycle to produce an estimate of the likely effects of licensed activities on the water environment. Environment protection is calibrated against a series of clearly defined standards set out in Annex A of the MCFF Manual. The responsible person for each licence is required to submit returns describing their activities and undertake monitoring to assess the scale of impacts that their operation has had upon the water environment.

Various pieces of documentation (MCFF Manual, WAT-RM-09, SEPA Enforcement Policy (Policy 5)) set out the range of sanctions that SEPA might consider when a licensed activity has had an unsatisfactory degree of adverse impact upon the water environment. This document aims to provide sector specific guidance relating directly to the fish farming industry for SEPA staff which will ensure a proportionate, risk-based approach to environmental protection and the regulation of marine cage fish farms in Scotland. This approach will also assist in achieving the objectives set out in the River Basin Management Plan for Scotland.

It is important to note that the actions detailed in this document do not negate the need to carry out enforcement action in accordance with SEPA's Enforcement Policy.

2 Defining Impacts

Marine cage fish farms are inspected by SEPA staff 1-3 times per annum and seabed monitoring is carried out at most sites on a biennial basis. Responsible persons undertake surveys, known as self monitoring surveys, as defined in the Monitoring Protocol Specification (MPS). In addition to this, SEPA undertakes a small number of audit surveys to assess additional parameters and to verify and validate surveys undertaken by or on behalf of responsible persons.

Both self monitoring and audit surveys generally consist of a number of grab samples being taken along a pre-defined transect running away from the cages, from cage edge to the edge of the Allowable Zone of Effects (AZE). This is the area within which SEPA permits some degradation of seabed conditions. Analysis of the samples from audit surveys is undertaken by SEPA Marine Science Aquaculture staff to establish the biological, physical and chemical conditions that exist at the seabed within the vicinity of the farm. The results of both self monitoring and audit surveys are compared to pre-defined environmental standards and the impacts of the licensed fish farming activities are judged to be Satisfactory, Borderline or Unsatisfactory. Both Satisfactory and Borderline are known as "passing" classifications.

3 Actions following assessment of surveys

3.1 Satisfactory and borderline classifications

In the case of a “Satisfactory” assessment, no further action is likely other than notifying the responsible person and noting the outcome as part of the Compliance Assessment for the licensed site.

A “Borderline” classification is a passing classification, however it does indicate that a site is close to having an unsustainable impact on the environment and the attention of the responsible person should be drawn to this. In response to such a classification, the responsible person should consider taking further action to ensure continued compliance with standards. Such action may include a review of the management of the site to improve efficiency of feed use or an extension to the fallowing period to allow recovery of the seabed. Where there has been a breach of licence conditions, enforcement action may be taken to ensure that further remedial action is undertaken by the responsible person. The classification should be noted as part of the Compliance Assessment for the site.

3.2 Unsatisfactory classifications

“Unsatisfactory” classifications present a more significant challenge both to SEPA and responsible persons. They are an indication that the emissions arising from the site in question are of a scale that is beyond the assimilative capacity of the local environment. This classification may relate to impacts on benthic fauna or sediment chemistry, unacceptable in-feed medicine residues concentrations, or a combination of these parameters.

Unsatisfactory classifications cannot be ignored and they should be raised with the responsible person without delay and always within 14 days of receipt from Marine Science Aquaculture. This provides the responsible person the opportunity to discuss the possible reasons for the observed impacts and the steps that may be taken to mitigate the immediate seabed effects. A single unsatisfactory result, whilst serious and indicative of significant environmental stress, will not always lead to immediate action being taken by SEPA. Where appropriate, and unless immediate action is required, the responsible person will be given the opportunity to adopt mitigation measures that will lead to an improvement in conditions before further action is taken.

3.2.1 Types of Monitoring

There are two types of monitoring survey carried out at marine cage fish farm sites which may result in an unsatisfactory classification. The first is termed Benthic Monitoring and establishes the condition of the biological communities and sediment chemistry at a fish farm. The second is termed Sea Louse Medicine Residues monitoring and is carried out following the use of sea lice chemicals at a fish farm. This is to ensure that any residues detected in the sediment are within predefined standards. A different approach is outlined for dealing with failures of each.

3.2.2 Benthic Monitoring Failure

Where a site has failed its benthic monitoring the first question to ask is if the model is able to accurately predict the potential impacts of the fish farm on the receiving environment. In a limited number of cases, where the hydrographic conditions at a site are complex, the model may not be able to do this and the site would be considered one which does not "fit" the model. In the first instance, contact should be made with Marine Science Aquaculture who will be able to advise on this matter. If it is confirmed that the site in question does not “fit” the model, aquaculture specialist staff will advise on a course of action.

For sites which do "fit" the model, there are two types of failure which may result in an unsatisfactory classification. It is important to understand which type of failure has occurred in order to ensure that appropriate action is taken.

Intensity Failures
The first type of failure is a failure is at the cage edge. The failure of a sample taken here is termed an intensity failure.

A first intensity failure will require a reduction in biomass of between 25% and 50%. Advice should be sought from Marine Science Aquaculture to determine the most appropriate degree of biomass reduction within this range. There will also be a requirement for the responsible person to carry out an additional monitoring survey before the site reaches peak biomass. Samples for the additional monitoring survey should be taken from the locations specified in the site MPS, at a biomass determined in consultation with Marine Science Aquaculture.

Should a second intensity failure be recorded at a site, suspension of the licence should be considered in order to allow recovery of the seabed. The period of suspension should be determined in consultation with Marine Science Aquaculture. Benthic monitoring should be carried out by the responsible person and submitted to SEPA to demonstrate that the seabed has recovered before the site is restocked. In addition to this, the licensed biomass at the site should be further reduced using the information from the additional monitoring to determine a more appropriate biomass. SEPA operations staff should also request SEPA audit monitoring.

Extent Failure
The second type of failure is a failure to meet the standards set at the edge of the AZE. This type of failure is termed extent failure.

Following a first extent failure if the site is not operating on a site specific AZE then the responsible person should apply to vary their licence to include a site specific AZE. If the site is already operating to a site specific AZE then an improvement plan should be requested from the responsible person. Examples of appropriate actions which may be taken by a responsible person in response to a first failure would include an extension of the fallowing period, introduction of an automated feeding system with feedback loops to avoid overfeeding and training of site staff in efficient feeding practices. The responsible person should also be required to carry out an additional monitoring survey before the site reaches peak biomass. Samples should be taken from the locations specified in the site MPS while the biomass at which this additional monitoring is to be carried out should be determined in consultation with Marine Science Aquaculture. Enhanced monitoring may also be required and may include additional transects and sampling beyond the standard AZE ±10m to determine the extent of the impact of the fish farm on the environment. The additional transects can be used by SEPA in isolation or

in combination with the standard site monitoring to assess the impacts at a site and determine its classification. The details of this monitoring will be determined in consultation with Marine Science Aquaculture. A variation notice should be issued at the time of the first failure stating that biomass at the site will be reduced by 25% to 50% at the beginning of the next production cycle if there is a second consecutive extent failure at the site. Advice should be sought from Marine Science Aquaculture to determine the most appropriate degree of biomass reduction within this range. The variation notice should also contain a requirement that the site shall not be restocked until the seabed survey for the site has been assessed. Section 3.3 of this document provides example variation conditions.

A second consecutive extent failure will result in the variation notice served following the first failure coming into effect. In addition to this, a second variation notice should be served to further reduce the biomass at the site should the next monitoring survey prove to be unsatisfactory. The information gathered from the additional and extended monitoring carried out following the first failure will be used to determine an appropriate biomass for the site. Again, additional monitoring and extended monitoring will be required at the site and Marine Science Aquaculture should be consulted on this. SEPA audit monitoring should also be requested at the site.

A third consecutive extent failure will result in the variation notice served following the second failure coming into effect. At this stage a suspension of the licence in order to allow recovery of the seabed should normally be imposed, coming into effect at the end of the growth cycle. Additional monitoring and extended monitoring will be required at the site to assess compliance and recovery and Marine Science Aquaculture should be consulted on this. SEPA audit monitoring should also be requested.

3.2.3 Sea Louse Medicine Residue Failure

Samples for sea louse medicine residues are taken as three replicates and in determining compliance with standards at a site, a mean value of the three replicates should be considered. As with Benthic Monitoring, there are two potential areas where a Sea Louse Medicine failure may occur and result in an unsatisfactory classification.

Intensity Failure

The first type of failure occurs at the cage edge and is termed an intensity failure. In cases where an intensity failure is recorded the responsible person's attention should be drawn to the clear indication that the performance of the site is close to having an unsustainable impact on the environment and the responsible person should be required to consider taking further action to mitigate this impact. If the failure relates to SLICE, then a variation notice should be issued to remove the condition in the licence which allows exceedance of the MTQ where it is considered necessary by a Veterinary Surgeon (normally Condition A1.9(v)) and the responsible person should submit to SEPA a completed retreatment spreadsheet.

Extent Failure

The second type of failure is a failure to meet the standards set 100m from the cage edge. This type of failure is termed extent failure. There are two levels of extent failure which may occur.

Extent Failure >10 times EQS

The first is a failure of greater than ten times the EQS. For Slice this figure is 7.63 µg/kg and for Calicide is 20 µg/kg. Should residues of greater than these values be found in the sediment the use of the chemical should be suspended. The completed retreatment spreadsheet for the chemical should be requested from the responsible person and extended monitoring should be required. Audit monitoring by SEPA should also be requested.

Extent Failure 2 to 10 times EQS

The second type of extent failure is where residues in the sediment are at levels between 2 and 10 times the EQS (between 1.526 µg/kg and 7.63 µg/kg for Slice or between 4 µg/kg and 20 µg/kg for Calicide).

Following a first extent failure, the responsible person should be required to submit to SEPA a completed retreatment spreadsheet and improvement plans for the site. Extended monitoring should also be required. In addition, where the failure relates to SLICE, a variation notice should be issued to remove the condition in the licence which allows exceedance of the MTQ where it is considered necessary by a Veterinary Surgeon.

Following a second extent failure of between 2 and 10 times the EQS a variation notice should be issued to reduce the amount of chemical in the licence. The responsible person should submit to SEPA an updated retreatment spreadsheet and carry out extended monitoring. Operations staff should also request SEPA audit monitoring at the site.

Following a third extent failure of between 2 and 10 times the EQS, use of the chemical at the site should be suspended. A variation notice should be issued to further reduce the amount of chemical in the licence. The responsible person should submit to SEPA a completed retreatment spreadsheet and carry out extended monitoring. Operations staff should also request SEPA audit monitoring at the site.

3.3 Biomass Reduction

Where a reduction in biomass is required to improve conditions, a variation notice should be issued which comes into force as soon as possible, imposing conditions that will become effective at the beginning of the next growth cycle (or if this has already started, the end of that cycle) in terms of the wording set out in the example variation set out below.

Example variation of biomass condition:
Condition 3.2.1 shall be deleted and replaced with the following wording:

"3.2.1 Subject to Condition 3.2.3 below, the maximum weight of fish held at the premises at any time from which the discharge arises, shall not exceed <<X>> [insert existing licensed biomass] tonnes.

Condition 3.2.3 has been added after Condition 3.2.2 as follows:

"3.2.3 In the event that the results of the survey required in terms of Condition 5.1 and the Monitoring Protocol Specification for the stocking period which commenced after <<X>>

are assessed by SEPA to be 'Unsatisfactory', from and including 14 days after SEPA issues written notification to the responsible person of the results of the said survey, the maximum weight of fish held at the premises at any time from which the discharge arises shall not exceed <<X>> [insert reduced biomass figure] tonnes held in a minimum of <<X>> cages."

The variation notice should also contain a condition which states that the site shall not be restocked before the next scheduled seabed survey has been assessed by SEPA in terms of the wording set out in the example variation set out below.

Example variation of the monitoring requirement condition:

Condition 4.6.3 has been added after Condition 4.6.2 as follows:

"4.6.3 Following the removal of stock from the premises at the end of the stocking period which commenced <<X>>, the premises shall not be re-stocked with fish until the monitoring survey, as required in terms of Condition 5.1 and the Monitoring Protocol Specification, for that stocking period has been received by SEPA and either (a) the responsible person has received written notification from SEPA as to the results of that survey; or (b) 8 weeks have elapsed since the data on which the said monitoring survey was received by SEPA, whichever is earlier."

Following a reduction in biomass, the permitted amounts of in-feed sea lice medicine should also be reviewed to match the new biomass limit, and the associated relevant conditions in the licence should be varied. If the biomass is reduced as part of an operator initiated variation the responsible person should submit the modelling data, however if biomass is reduced as part of a SEPA initiated variation, SEPA will reduce sea lice medicine limits in proportion to the biomass reduction. Please contact aquaculture specialists who will be able to provide this information.

Example variation of emamectin benzoate conditions:

In Appendix 1 (Limitations on the Use and Discharge of Medicines and Chemicals from the Premises) Condition A1.9(iii) has been deleted and replaced with new Condition A1.9(iii) as follows:

"**Condition A1.9**

(iii) Subject to Condition A1.9(vi), the emamectin benzoate discharged from the premises as a result of the first 7-day treatment of Atlantic Salmon held on the premises shall arise as a result of the administration in the first 7-day treatment of an amount of emamectin benzoate not exceeding <<X>> [insert existing emamectin amount] (this is equivalent to <<X>> grams of the veterinary medicine SLICE® and **QUINAFISH®)."

In Appendix 1 (Limitations on the Use and Discharge of Medicines and Chemicals from the Premises) Condition A1.9(iv) has been deleted and replaced with new Condition A1.9(iv) as follows:

"**Condition A1.9**
(iv) Subject to Condition A1.9(vii), the emamectin benzoate discharged from the premises as a result of each subsequent 7-day treatment after the first treatment of Atlantic Salmon held on the premises shall arise as a result of the administration of an amount of emamectin benzoate not exceeding the Maximum Allowable Re-treatment Quantity (MARQ) determined in accordance with the "Protocol on the Calculation of the Maximum Permitted Quantities in Repeated Treatments of Emamectin Benzoate" attached as Appendix 3 to this Licence.

In Appendix 1 (Limitations on the Use and Discharge of Medicines and Chemicals from the Premises) Condition A1.9(vi) has been added after Condition A1.9(v) as follows:

"**Condition A1.9**
(vi) In the event that the results of the survey required in terms of Condition 5.1 and the Monitoring Protocol Specification for the stocking period which commenced after <<X>> are assessed by SEPA to be 'Unsatisfactory', and after SEPA issues written notification to the responsible person of the results of the said survey, the emamectin benzoate discharged from the premises as a result of the first 7-day treatment of Atlantic Salmon held on the premises shall arise as a result of the administration in the first 2-day treatment of an amount of emamectin benzoate not exceeding <<X>> [insert reduced emamectin amount] grams (this is equivalent to <<X>> grams of the veterinary medicine SLICE® and QUINAFISH®)."

In Appendix 1 (Limitations on the Use and Discharge of Medicines and Chemicals from the Premises) Condition A1.9(vii) has been added after Condition A1.9(vi) as follows:

"**Condition A1.9**

(vii) In the event that the results of the survey required in terms of Condition 5.1 and the Monitoring Protocol Specification for the stocking period which commenced after <<X>> are assessed by SEPA to be 'Unsatisfactory', and after SEPA issues written notification to the responsible person of the results of the said survey, Appendix 3 (Protocol on the Calculation of the Maximum Permitted Quantities in Repeated Treatments of Emamectin Benzoate) will be deleted and replaced with new Appendix 3 (Protocol on the Calculation of the Maximum Permitted Quantities in Repeated Treatments of Emamectin Benzoate) as attached to this schedule.

** Please note, QUINAFISH should only appear in this condition if the operator has applied for a variation to include QUINAFISH in the licence.

3.4 Recovery Following an Unsatisfactory Survey

Benthic Monitoring
Where a subsequent seabed survey provided by the responsible person (and, if necessary, verified and validated by SEPA audit survey) indicates that the mitigation measures taken have

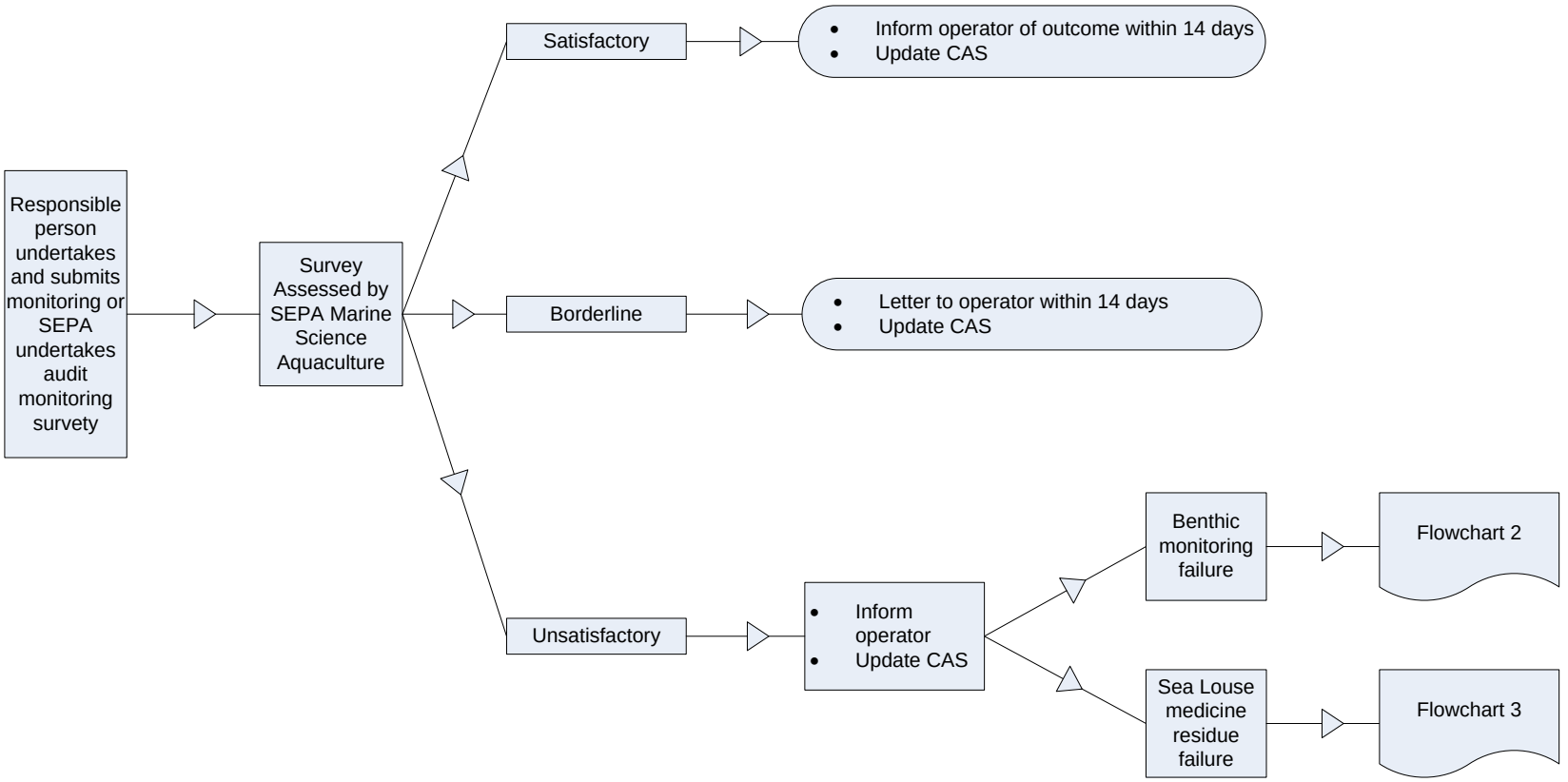
been successful, the responsible person may apply for an operator-initiated variation to increase biomass at the site. The level of increase will be determined using information from additional and enhanced monitoring surveys, however a return to the original licensed biomass will not be considered in the first instance. Instead an incremental approach to biomass increase will be favoured.

Sea Louse Medicine Monitoring

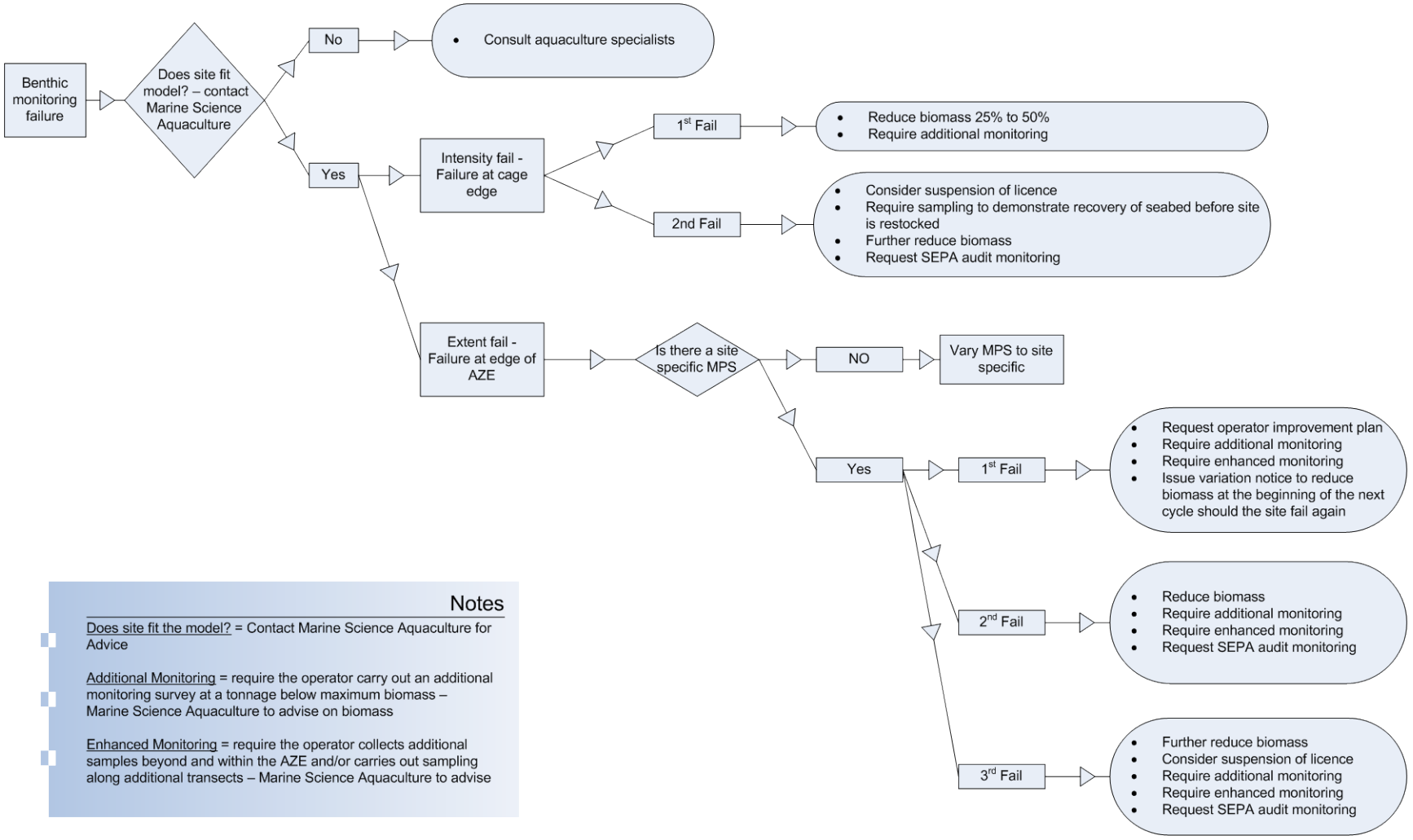
Where a subsequent seabed survey provided by the responsible person (and, if necessary, verified and validated by audit survey) indicates that mitigation measures have been successful, the responsible person may apply for an operator-initiated variation to increase the chemical limits at the site. The level of increase will be determined using information from additional and enhanced monitoring surveys however a return to the original licensed limits will not be considered in the first instance. Instead an incremental approach to chemical increase will be favoured.

4 Process Flowcharts

4.1 Flowchart 1 – Dealing with Monitoring Submissions



4.2 Flowchart 2 – Benthic Monitoring Failure Flowchart



4.3 Flowchart 3 – Sea Louse Medicines Failure Flowchart