BASELINE SURVEY, VISUAL - STANDARD

Introduction

As stated in SEPA's policy and in the Fish Farm Manual (1998), scientific data are required by SEPA in order to assess the existing condition on the site or leased area.

SEPA reserves the right to request more detailed information and further work if required. The information asked for by SEPA may be subject to change and any requirements should be checked prior to any fieldwork and laboratory analysis.

The protocols below shall be followed. The completed survey report using the data templates obtainable from the SEPA website shall be returned in duplicate to the local SEPA office.

SCOPE OF SURVEY

To provide survey data prior to submission of a CAR application for a new site or a modified site - as per the Decision tree in Annex F of the fish farm manual.

Strategy and Protocol

1. Timing

The responsible person shall carry out the following survey programme prior to completion and submission of the SEPA Controlled Activities Regulations (CAR) licence application. The time of year for this survey may be dictated by the business requirements of the operator but if it is possible it is recommended that the survey be carried out during summer months, May to October.

2. Survey location and strategy

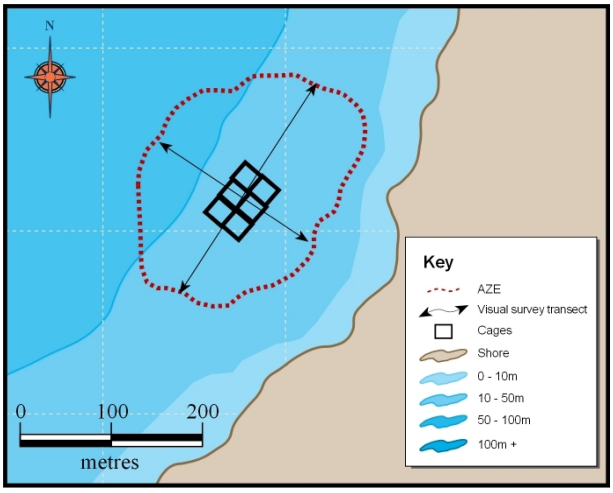
New sites with no cages

The transect should occur along the centre line of the longest axis of the proposed cage grid and shall also be of sufficient length to extend to the limits of the longest modelled AZE boundary on either end of the cage group. This can be determined from the data gathered in support of the autoDEPOMOD modelling process. If the greatest width of the AZE is >200m then a second transect must be surveyed at the widest point of the AZE, from one boundary to the other.

Modified sites

The transect should occur along the line of the longest AZE transect distance, running from the edge of the modified cage group (or where this is proposed to be) to the edge of the AZE boundary. If the greatest width of the modified AZE is >200m then a second transect must be surveyed at the widest point of the AZE, from one boundary to the other

A typical example of this survey type is illustrated below:



If there are queries about this process contact the local SEPA office or the Marine Science team based in Dingwall for advice.

3. Survey protocol

3.1 Video

The following details should appear at the start of each survey recording:

- name of site and receiving water (loch, voe, coastline),
- name of fish farm company,
- date of survey,
- the two end co-ordinates of the transect rope, either in decimal lat-long or 8-figure NGR, and
- direction of transect and starting station tag number.

3.1.1 Diver or remotely operated system

A weighted transect rope of sufficient length, is laid on the seabed and shall be marked at 5m intervals by plastic tags on which the station number is clearly and indelibly marked. The survey shall start at one end of the transect rope and progress towards the end of the rope, after which the view should pan up to the surface to show the surrounding land topography. It should follow the course of the transect line, at a moderate speed and should pause at each tag so the station number can be read. It should also be taken at a suitable height off the seabed, such that the illumination and focus are sufficient for features on the sea bed, including epifauna and habitat type to be discerned. Both distance views and close ups of seabed habitats and epifauna should be obtained. Where habitats or species of natural heritage interest are observed, visual sampling should be modified to determine the extent of such features to help assessment.

3.1.2 Drop down/towed video

Drop down or towed video systems are acceptable provided the following are adhered to;

The pre-determined 'notional' transect route should be planned using mapping techniques (preferably using Geographic information Systems - GIS) such that the skipper can identify the route to be followed using an onboard Global Positioning System (GPS). Vessels will drift (unless in very light winds and current free) and it will be almost impossible to follow the proposed route precisely (see Figure below).

Where conditions (tidal, weather etc.) prevent the capture of continuous footage it is acceptable to collect a series of discrete video samples along the transect route (this alternative approach is also shown in the figure below). Whether a single 'power' assisted drop/tow or multiple drops are

completed it is essential that the transect area is surveyed in full. Continuous positional information of the camera position or boat (provided umbilical is relatively vertical) is necessary for assessment.

Long tows with the camera dragging on seabed are not acceptable; rather the camera should be towed just above the seabed (still clearly visible) and set down periodically to give clear images. Effort should be taken (careful placement of camera etc.) to obtain good footage in particularly difficult habitats e.g. dense kelp, maerl, brittlestar beds, in order to assist assessment. If conditions are such that the camera cannot be controlled adequately, assess whether to abandon survey and return during slack water or when conditions improve.

Where habitats or species of natural heritage interest (e.g. Scottish Biodiversity List habitats/ species) are observed, visual sampling should be modified to determine the extent of such features to help assessment.

Still photographs from drop down video should all be geo-referenced.

3.2 Still Photographs

A weighted transect rope of sufficient length, is laid on the seabed and shall be marked at 5m intervals by plastic tags on which the station number is clearly and indelibly marked. Photographs should be taken at each station along the transect, with the number on the tag clearly visible in each photograph. The photographs must be in focus and be correctly illuminated (exposure by natural light is not adequate), such that features on the sea bed, including epifauna and habitat type can be clearly discerned.

Divers should make a written record of what is seen along the transect to supplement the video footage or photographs (see survey report below).

4. Survey Format

4.1 The video should be in colour and on DVD format.

4.2 Still photographs should be in colour and on CD/DVD format.

5. Survey Report

The video or photographic survey and accompanying text shall be reported in the Visual Monitoring Template. The details of this system can be found in Attachment XII. These are spreadsheet-based templates and are the preferred format for submission to SEPA shall be CD or DVD. If the operator has difficulties in completing this survey template then they should contact SEPA to seek advice. It is not recommended that operators submit paper records as an alternative without prior discussion.

The completed survey shall be submitted, in duplicate, to the local SEPA office, clearly stating the licence reference number and site name. The survey should be accompanied by a completed Survey Cover Sheet printed from the survey data template.

Visual surveys (video or photographic) shall be submitted to SEPA within 12 weeks of survey. If difficulty in achieving this is experienced, then the local SEPA team must be notified as soon as possible.

6. Evaluation of survey by SEPA

SEPA staff will assess the seabed by evaluating the video or photographs according to Marine Science quality work methods.

A note will also be made of any fauna that are listed on the UK Biodiversity Action Plan list, which may be found on JNCC's website (www.ukbap.org.uk).

Any surveys submitted that do not permit (particularly if of insufficient resolution, inadequately illuminated, or out of focus) a clear assessment of seabed conditions by SEPA staff, will have to be repeated by the company within 2 months of notification.

Auditing of Results

SEPA may require (at any time) evidence of quality assurance and control on any procedures or processes being undertaken by the responsible person, or their agents, or require independent audit of any resulting data.

Appendix 1

Notes to Aid Position Fixing

Position Fixing

The position of any point on a surface can be fixed using a two-dimensional co-ordinate system (X and Y). Two principle systems of X and Y co-ordinates are used within the UK:

- National Grid References (NGR). A full NGR consists of two six-digit numbers, an Easting and a Northing and is accurate to 1m. In practice many locations are not known (or required) this accurately and a position is more usually given by an alphanumeric, e.g. NS 300 710. Such an NGR is only accurate to 100m; where possible SEPA will record a 10-digit alphanumeric NGR that is accurate to 10m.
- Latitude/longitude position fixing is routinely used for navigational purposes and is usually invoked as a marine/coastal site descriptor once the location is identified by other means, e.g. GPS, Range Position Fixing. The angle west or east from the meridian is given in degrees, minutes and seconds.

There are several reference systems against which the three-dimensional position in space may be recorded. Although these may use the same reference units, i.e. degrees of latitude and longitude, there are differences between datums and the idealised reference shapes (geoids) used to approximate the surface of the earth. Thus any one location may have significantly different co-ordinates under different systems or conversely one co-ordinate pair may refer to positions that may be up to 1km apart when different datums are used. So, it is important to include the name of the reference datum or co-ordinate system when quoting positions.

GPS receivers are commonly set to WGS84 (equivalent to ETRS89) as a default. Positions on OS maps and Admiralty charts for British waters, and National Grid References are specified with respect to OSGB36, which is often provided as an alternative datum option on GPS receivers sold in the UK. A software tool for conversion between the WGS84 and OSGB36 and further information about geodesy is available from www.gps.gov.uk.
Methods of position fixing:

- GPS (Global Position System) and DGPS (Differential GPS) are satellite navigation systems. Transmissions from satellites are detected by a receiver and calculated into positional data. GPS accuracy is around 10m, depending on the receiver, the number of satellites in view and other factors. High accuracy (<1m) may be achieved by using a differential correction system. It is important to be aware of the datum against which a receiver is referencing the positions it produces (see above).
- Range Position Fixing Systems. These are normally microwave devices that display the distance from a master transmitter to a set of onshore ‘slaves‘ at precisely known locations. The accuracy depends on the accuracy of the position of these slaves. Accuracy of 25m - <1m can be achieved.