

Identifying the common environmental information shortfalls
encountered during the Appropriate Assessments of shellfish farm
developments in UK European marine sites.

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September 2007



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Executive Summary

Recent environmental legislation, specifically the EU Habitats Directive and the EU Birds Directive which are translated into UK law in the Conservation (Natural Habitats &c) Regulations 1994, has had significant implications for the shellfish culturing industry. A recent Seafish report highlighted that one of the key implications has been the requirement for Appropriate Assessment of new operations occurring within any European Marine Site and that some assessments were taking a considerable length of time (Lake, 2006). Discussions with industry operators, local fishery managers and national nature conservation agency staff revealed that very often a lack of specific environmental information is constraining and sometimes preventing the Appropriate Assessment process from taking place.

The shellfish cultivation industry has within it a wide skill base of technically proficient and competent operators. It is likely that these workers will be able to gather basic environmental information that would enable the Appropriate Assessment process to proceed. In order to enable the shellfish cultivation sector to address these information shortfalls Sea Fish Industry Authority have commissioned a project to provide guidance in the form of Standard Operating Procedures (SOP) that will provide step-by-step instructions on how to carryout basic surveys to provide key environmental information.

With the purpose of identifying the most common environmental shortfalls, experiences and views were sought from a wide stakeholder group including regulatory authorities and industry operators. This consultation revealed that the most commonly encountered information shortfalls were:

- Detailed information on the distribution of **intertidal** habitats and communities
- Detailed information on the distribution of **sublittoral** habitats and communities
- Information on the site use by wildlife including birds, seals and otters
- Concerns about the potential spread of non-native species such as slipper limpets (*Crepidula fornicata*) were highlighted as future issues of crucial importance for some sectors of the shellfish culture industry

Industry operators are incurring significant time delays in gaining consents and in some cases consents were unable to be given due to Appropriate Assessments being unable to proceed as a consequence of these environmental information shortfalls. Other burdens were found to be directly financial with the industry operators incurring the costs of further survey and scientific work.

This project will proceed in the production of a series of Standard Operating Procedures to enable industry to address the most common environmental shortfalls and concerns highlighted in the consultation.

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1. Introduction

Recent environmental legislation, specifically the EU Habitats Directive and the EU Birds Directive which are translated into UK law in the Conservation (Natural Habitats &c) Regulations 1994, has had significant implications for the shellfish culturing industry. The key burden has been the requirement for Appropriate Assessment of new operations or changes to current activities occurring within any European Marine Site (EMS) (Lake, 2006). Any new shellfish culturing development in an EMS will most likely require an Appropriate Assessment.

A recent Seafish study on the difficulties that the capture and aquaculture industry encountered with the Appropriate Assessment process reported that the some assessments were taking a considerable length of time (Lake, 2006). Further discussions with industry operators, local fishery managers and national nature conservation agency staff revealed that very often a lack of specific environmental information that is constraining and sometimes preventing the Appropriate Assessment process from taking place. These environmental information shortfalls are having the effect of preventing the consenting of shellfish farm developments in Natura 2000 sites throughout the UK. The Lake (2006) report also highlighted that environmental and biological information requested by fishery managers and nature conservation agencies from the industry as a problem; the industry was often unable to supply it.

The shellfish cultivation industry has in it a wide skill base of technically proficient and competent operators. It may be the case that these workers will be able to gather basic environmental information that would enable the Appropriate Assessment to proceed. The challenge is to provide clear and straightforward advice that would enable the industry to meet the environmental information shortfalls.

To meet this challenge the current study takes a two phase approach:

Phase 1 is to accurately assess the nature of these information shortfalls and their effects on the development process through a consultation.

Phase 2 is to produce advice in the form of a series Standard Operating Procedures (SOP) to enable the industry to gather the most common information shortfalls.

The approach being taken in Phase 2 is to seek agreement with the NCAs on the methodologies developed and adopted. By taking this approach it is hoped that the SOPs will be recognised as valid methodologies and that all stakeholders can be confident that the environmental information provided by the industry operators is accurate. To facilitate this aim the NCAs and key experts will be consulted throughout the SOP development. This collaborative approach will culminate in a workshop on the SOP's to which NCAs and key experts will be invited to attend and have input into the final versions. This will give these organisations the opportunity to address specific issues or make suggestions to improve the final SOPs.

2. Information Sources and Methods

A brief literature review of documents made available from previous Appropriate Assessments of shellfish farm proposals and other relevant documents provided contextual information.

The primary source of information used in this study was a consultation of stakeholders identified as having direct and relevant experience of the consenting and environmental assessment of shellfish farm developments. These stakeholders included the competent authorities with statutory responsibilities for issuing consents and carrying out associated Appropriate Assessments, the nature conservation agencies and, shellfish farmers and representative bodies.

Table 1. Categories of Consultee

Consenting organisations and local fisheries managers	Organisation
	Crown Estates
	Environment Agency (EA)
	Department of Environment, Food and Rural Affairs (DEFRA)
	Department of Agriculture and Rural Development of N. Ireland (DARD).
	Local Authorities
	Sea Fisheries Committees (SFCs)
	Scottish Executive (SE)
	Welsh Assembly Government (WAG)
Nature Conservation Agencies (NCA)	
	Countryside Council for Wales (CCW)
	Environment and Heritage Service Northern Ireland (EHS)
	Natural England (NE)
	Scottish Natural Heritage (SNH)
Shellfish farm operators and representative bodies	
	Association of Scottish Shellfish Growers
	Shellfish Association of Great Britain
	Shellfish Farmers

The consultation took the form of a structured MS Word document questionnaire that was emailed to key contacts in each organization and individual shellfish farmers. This questionnaire was structured to supply the key facts and information required by Seafish and allow some quantification in order to assist in identifying the common information shortfalls (see Appendix I). This emailed questionnaire was followed up with a telephone call to individual contacts in order to answer any queries and encourage a timely response.

3. Results

3.1 Consultee Response

The consultation elicited responses from 30 individuals of the 65 approached. These responses came from of the organizations approached including 9 fishing industry operators. Of these 30 responses 20 dealt with specific casework and a number responded with general issues but were of value providing contextual information. The remainder could not provide specific examples but advised further contacts. It was apparent from the follow-up communications that the consultation document was being dealt with by key individuals within organisations and therefore a single response would refer to a number of cases.

3.2 Species and methods of proposed cultivation

By far the most common species that was proposed for cultivation was the blue mussel *Mytilus edulis*, followed by the pacific oyster *Crassostrea gigas*. King scallops *Pecten maximus* and the abalone *Haliotis tuberculata* were cited in single cases.

Two approaches were reported as proposed culture methods for mussels, the most common, bottom culture that involves laying seed mussel directly on the seabed to grow to a marketable size and rope suspension that involves the growing of mussels on ropes suspended from rafts or floats.

Two methods were cited as being proposed for pacific oyster cultivation, growing in mesh bags suspended from trestles or similar structures and the BST Long Line System in which the oysters are grown in tubular cages with a triangular cross-section suspended lengthways on long lines suspended from posts on the foreshore.

Scallops were to be grown in mesh bags suspended from rafts or floats and the abalone proposal referred to suspended cage culture.

Table 2. Species referred to in consultation and associated cultivation methods

Species	Times Cited	Cultivation methods
Mussels	14	Bottom Culture (9), Rope Suspension (5),
Pacific Oysters	5	Mesh Bag (3), BST Long Line System (2),
Scallops	1	Mesh Bag
Abalone	1	Suspended Cage System

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Each method of cultivation, with the exception of mussel bottom culture was associated with some type of infrastructure such as an anchor block or intertidal structure, Table 3. The need for anchor blocks and surface floats associated with suspended rope or mesh bag/cage systems were the most common type of infrastructure.

Table 3. Infrastructure associated with culture methods.

Cultivation methods	Infrastructure
Bottom Culture	None
Rope Suspension	Anchor blocks, surface floats and rafts
Mesh Bag (Suspended)	Anchor blocks, surface floats and rafts
Mesh Bag (Trestle)	Trestles or frames
BST Long Line System	Posts and long lines
Suspended Cage System	Anchor blocks and surface floats

There were three main sources of juvenile shellfish for on growing cited in the consultation; wild seed collection of mussels for bottom culture; natural mussel spat settlement on ropes and; hatchery reared spat of pacific oyster and abalone.

3.3 Size of development and access methods

The size range of proposed development was very wide 0.4 – 604 ha. The largest developments were all mussel bottom cultivation operations and the smaller proposals were for mussel rope cultivation.

Table 4. Size range of shellfish cultivation proposals where information was provided.

Development Size (ha)	Cases
< 1	3
1 – 5	3
5 – 10	0
10 – 20	2
20 – 50	1
50 - 100	2
100 - 200	1
200 - 500	3
> 500	1

The use of vessels was the most common access method for accessing and servicing the shellfish cultivation projects (18 cases), and vehicles such as a quad bikes (3 cases) or simple foot access (3 cases) were also cited.

3.4 Conservation designations and key habitat features

Of the 20 cases cited in the responses 16 were to be sited within SACs and 4 within SPAs. The 4 SPAs were also designated as Ramsar sites.

The most commonly site habitat features of concern at each site were intertidal mudflats and sandflats, sublittoral sandbanks and reefs. The latter can be rock or biogenic reefs although the biogenic reefs are usually specified in the site citation. Also commonly cited was the ‘Large shallow inlets and bays’ feature, estuaries and Atlantic salt meadows.

Table 5. Most common habitat features cited in responses.

Habitat Features	Times Cited
Mudflats and sandflats not covered by seawater at low tide	10
Sandbanks slightly covered by sea water all the time	10
Reefs	10
Large Shallow Inlets and Bays	6
Estuaries	5
Atlantic salt meadows	5
Coastal Lagoons	2
<i>Salicornia</i> and other annuals colonising mud and sand	1

3.5 Species of Concern

A total of 22 plant and animal species were cited as of concern in the responses from the consultation. These were species that may have been affected by the proposed development. There did not appear to be a particular species that was considered to be at risk of being affected by shellfish farm developments.

When categorised into species categories it was clear that the Waders and Wildfowl group of bird species was the group most commonly cited when there was thought to be a chance of an affect. Marine mammals (excluding citations) and plant species were the next most commonly cited closely followed by the biogenic reef/habitat builders and the cetaceans.

Table 6. Species Categories where there was a concern of an affect of a shellfish cultivation proposal

Species Grouping	Times Cited
Waders and Wildfowl	12
Marine Mammals (not including Cetaceans)	6
Plant Species (Eelgrass, macroalgae)	6
Biogenic reef/habitat builders (including maerl)	4
Cetaceans	4
Other Marine invertebrates	1

Table 7. Species where there was a concern of an affect of a shellfish cultivation proposal

Species of concern	Times Cited
Shore dock (<i>Rumex rupestris</i>)	3
Oystercatcher (<i>Haematopus ostralegus</i>)	3
Waterfowl assemblage (species unspecified)	3
Common Seal (<i>Phoca vitulina</i>)	3
Maerl (species unspecified)	2
Red Knot (<i>Calidris canutus</i>)	2
Otter (<i>Lutra lutra</i>)	2
Sealoch Egg-wrack <i>Ascophyllum nodosum ecad mackaii</i>	1
Tasselweed (<i>Ruppia maritime</i>)	1
Eelgrass (<i>Zostera</i>)	1
Ross worm (<i>Sabellaria spinulosa</i>)	1
Calcareous tube-worm (<i>Serpula vermiculari</i>)	1
Horse Mussel (<i>Modiolus modiolus</i>)	1
Holothurian (<i>Leptopentacta spp.</i>)	1
Bar-tailed godwit (<i>Limosa lapponica</i>)	1
Wigeon (<i>Anas penelope</i>)	1
Common Eider (<i>Somateria mollissima</i>)	1
Greylag goose (<i>Anser anser</i>)	1
Osprey (<i>Pandion haliaetus</i>)	1
Grey Seal (<i>Halichoerus grypus</i>)	1
Bottlenose dolphin (<i>Tursiops truncatus</i>)	1
Cetaceans (species unspecified)	1

3.7 Potential environmental impacts or concern associated with shellfish culture proposals

The most commonly cited environmental impact or concern that was cited in association to proposed shellfish culture operations were habitat loss and smothering of habitat, Table 8. Habitat loss related to the effect of laying shellfish on the current habitat or the loss of foraging habitat to species of concern. Sedimentation of mud and pseudofaeces, physical damage to habitats and the spread of non-native species were the next most commonly potential impacts cited. Disturbance was related to effects on other species such as birds and seals and was cited 3 times. The effects of shellfish culture on the carrying capacity of the site was highlighted as a concern on 3 occasions. The visual impact on a site of infrastructure was cited once.

When the potential effects for each species was examined it was apparent that for mussel cultivation operations the main environmental concerns were sedimentation by pseudofaeces or ‘mussel mud’ (5 citations) and habitat loss (5 citations). The issues of carrying capacity and the spreading of non-natives were also high on the concerns connected with mussel cultivation.

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The spreading of non-native species in mussel cultivation operations is a concern for those operations where seed mussel is sourced from areas of the UK where non-native species such as the slipper limpet *Crepidula fornicata*, have already become established.

For operations proposing to culture pacific oysters the most common environmental concerns were disturbance, habitat loss and the spread of non-natives, including that of escapees. The culture of scallops prompted concerns of smothering, physical damage and the effects on carrying capacity of the site. Abalone cultivation raised the issue of the effects of the introduction of non-native species to a site.

Table 8. Potential environmental impacts cited in Appropriate Assessments

Environmental Impact/Concern	Times cited
Habitat Loss	7
Smothering	8
Sedimentation (mud)	5
Spread of Non-Natives	5
Disturbance	3
Carrying Capacity	3
Visual Impact	1
Eutrophication	1
Changes in Hydrography	1

Table 9. Potential environmental impact or concern associated with each shellfish culture species.

Shellfish species	Environmental Impact/Concern (Times cited)
Mussels	Sedimentation (mud) (5), Habitat loss (6), Carrying capacity (2), Spread of non-natives (2), Visual impact (1), Physical damage (1), Eutrophication (1), Disturbance (1), Changes in Hydrography (1)
Pacific Oysters	Disturbance (2), Spread of non-natives (2), Habitat loss (2), Smothering (1), Physical damage (1)
Scallops	Smothering (1), Physical damage (1), Carrying capacity (1)
Abalone	Spread of non-natives

3.8 Key environmental information shortfalls delaying or preventing Appropriate Assessments

The key information shortfalls which have delayed or prevented Appropriate Assessments and therefore consenting of shellfish cultivations are presented in Table 10.

The most commonly cited type of information shortfall was a lack of detailed site survey information to describe the distribution of habitats and communities. This information gap was cited in both intertidal and subtidal cases, and did not appear to be shellfish species specific. There was an obvious lack of even the most basic habitat survey information at most of the sites cited. More specific distributional data was required in 2 cases to inform the consenting authority of the likely effects on specific species such as eel grass and horse mussel reefs.

Information Shortfalls Encountered in Shellfish Farm Appropriate Assessments

The lack of knowledge of the wider ecological effects of a shellfish cultivation operation was cited on 8 occasions. This catchall shortfall encompassed non-specific effects such as the effect of sediment plumes from a harvest operation on widely dispersed communities.

Information gaps concerning the distribution and site use by specific species such as seal and otters were often cited as were information on bird distributions and their site use for foraging and roosting.

The lack of information and understanding on the effects of a particular shellfish cultivation operation on the carrying capacity of a site was cited 3 times.

Serious concerns were raised about the risks of the introduction of non-native species. It was highlighted that the non-native issue will be a key factor when consents have to be renewed or reviewed.

Table 10. Key information shortfalls

Environmental Information Shortfall	Times Cited
Habitat and community distribution	10
Ecological effect of shellfish cultivation operation	8
Bird distribution and site use data	3
Risk of non-native introduction	3
Effect of shellfish cultivation on carrying capacity	3
Seal distribution and site use data	3
Hydrographic information such as current flow	2
Distribution of specific seabed species such as eel grass and horse mussels	2
Otter distribution and site use data	1

3.9 Implications of information shortfalls for the shellfish cultivation proposals

The most common implication for shellfish cultivation operation proposals was the requirement for further scientific or survey work. This was usually undertaken at the cost of the developer. In the majority of cases the requirement for further work caused significant delays in consenting and in cases where this work was not yet undertaken the Appropriate Assessment was unable to proceed.

In 4 cases the development was unable to proceed. In 2 cases although there were environmental shortfalls the developments were able to proceed on the condition that certain practices were undertaken to prevent possible impacts to sensitive site features.

Table 11. The implication to the shellfish cultivation proposal of the environmental information shortfall

Result of shortfall	Times Cited
Further scientific/survey work	10
Significant delay in consenting	6
Appropriate Assessment unable to proceed	4
Development unable to proceed	4
Conditions and constraints imposed on developer	2

Table 12. Time delays incurred due to environmental information shortfall delaying the consenting process

Time delay	Times Cited
No delay above usual process time	2
Up to 12 months	2
Up to 24 months	2
Up to 36 months	1
Up to 48 months	1
Up to 60 months	1
Over 60 months	1
Cases where there are predicted delays	5

4. Discussion

The consultation elicited a very good response with close to 50% of those individuals approached responding with completed questionnaires, useful comments or contextual information. A number of the original consultees were working in the same organisations and therefore their views and experiences were pooled into a single response. The geographical coverage was good encompassing all of the devolved administrations, their NCAs and official bodies with consenting responsibilities.

The impact in terms of time delays and monetary cost of the 9 most common environmental information shortfalls (Table 10) on the shellfish cultivation industry varied in severity. The most often cited implication was the requirement for further scientific or survey work to address the environmental information shortfall. In cases where site surveys were required it was often the case that this requirement could be addressed and a variety of approaches were taken; the operator undertook to employ environmental consultants and incurred the financial burden; a collaborative approach was adopted with technical experts from local fishery management organisation and a local University providing technical advice and equipment, and the operator providing vessels and staff, and; a survey was undertaken by the competent authority responsible for the Appropriate Assessment.

On occasion the scientific or survey work required to address the information shortfall or environmental concern was beyond the scope any of parties involved in the Appropriate Assessment could undertake either alone or in collaboration. These were usually the less specific potential environmental effects such as the effect of sediment plumes on widely dispersed communities or, commonly cited, the effect of additional filter or suspension feeders on the carrying capacity of a site. Such studies are notoriously complex and costly often running into hundreds of thousands of pounds.

With exception to the obvious financial burden of undertaking further scientific or survey work the delay or stalling of the consenting process was serious consequence. In the worse cases the proposed shellfish cultivation operations failed to gain consent because an Appropriate Assessment was unable to proceed due to a lack of detailed environmental information. In these cases the information shortfalls were varied including seal distribution and habitat use information, hydrographic data and the effects of the operation on the ecology of the site. In the cases where there were significant delays in consenting, and a number are ongoing, the most important single information shortfall was a lack of site specific habitat distribution information. In the majority of cases there were combinations of environmental information shortfalls which often conspire to confound the consenting process.

A consequence of the consultation was that it provided stakeholders the opportunity to highlight potential issues that will have direct effects on future Appropriate Assessments and consents. The issue of the spread of non-native species was highlighted as being very important particularly in relation to the movement of shellfish, particularly mussel seed for relaying. There are currently concerns in some regions that slipper limpets (*Crepidula fornicata*) may be introduced to mussel lays in European Marine Sites where they are not currently recorded.

It is clear that the industry is going to be unable to address a number of the commonly cited environmental shortfalls such as the carrying capacity issue due to their complex nature and the need for extensive specialist involvement. Nevertheless there is certainly scope for the industry to collect and provide the requisite data themselves given sufficient guidance.

4.1 Environmental information shortfalls to be addressed by the development of Standard Operating Procedures

The second stage to the current project is to develop Standard Operating Procedures (SOP) describing methods and procedures in a systematic and clear manner that will enable the industry operators to implement to address the information shortfalls in a standardized and verifiable manner. As stated above, a number of the common information shortfalls are beyond the scope of non-experts to address but a number have been identified that can be addressed by a sufficiently informed operator.

4.1.1 Habitat distribution (intertidal)

Intertidal habitat distribution information is likely to be the most straightforward information to collect. It is suggested that methods developed for intertidal biotope surveys used by NCAs be reviewed and where possible adapted for use by industry operators to gather more basic environmental information.

Information to be collected may include physical environmental information such as substratum type and, height and position on shore. In addition to the physical habitat information it may be possible to collect basic biological community information such as presence of algal communities, key species such as eelgrass or bird prey species such as existing populations of shellfish.

It is suggested that basic survey techniques should be described such as position fixing using GPS equipment, the use of photography for recording and verification purposes and the presentation of the information for submission.

4.1.2 Habitat distribution (subtidal)

Gathering information on subtidal habitat distribution presents a number of logistical and procedural challenges making subtidal seabed survey notoriously expensive and technically difficult. That subtidal habitat distribution was the most commonly cited environmental shortfall in the consultation is a consequence of these logistical issues. It may be possible however that this is an information shortfall that the shellfish cultivation industry may be well placed to address given their access to vessels and expertise in working offshore.

It is suggested that current survey techniques are reviewed paying particular attention to underwater video techniques and standardized protocols are developed for their use by industry operators. It is important that procedures and techniques of position fixing using GPS equipment are also addressed.

4.1.3 Species specific habitat use and distribution (birds, seals and otters)

Species specific information especially at the resolution of a proposed shellfish cultivation site is very often unavailable. Information on bird distributions and numbers may be held by

certain nongovernmental organisations such as the British Trust for Ornithology and information on birds, seals and otters may be held by wildlife groups recording and operating locally.

Methodologies for data collection to address these information shortfalls may be relatively specialised requiring expert assistance but it is suggested that these are reviewed and assessed for suitability for adoption by industry operators. Although the development of novel techniques are outside the scope of this project it is suggested that the use of photographic techniques could be investigated as they may provide a verifiable method of both distributional information and quantification of the level of habitat use of a site by a number of key species.

4.1.4 Likelihood of introduction of non-natives

Due to the potential delays in consenting that may result from the issue of the transport of non-native species with shellfish for relaying it is suggested that agreed operational procedures are developed to prevent such transport. These procedures should enable operators to screen shellfish at the supply site, such as mussel seed extraction sites, prior to transport. Other areas to investigate may be the instigation of screening of the harvested seed shellfish prior to relaying in other areas. These methodologies should include sources of good clear identification material to assist industry operators provide an accurate assessment.

4.2 Suggested Further Studies

1. It is believed that the 4 SOPs suggested for development in this study may be successful in enabling shellfish cultivation operators to gather the necessary environmental information to address the shortfalls highlighted in the consultation. It may be necessary however to undertake field trials of the SOPs to provide evidence or confirmation that the methodologies can be implemented by industry workers. It is suggested that where an operator is considering using an SOP that expert assistance is provided in order to assess the methodology and to produce an exemplar report for use as a reference to the procedure.
2. Development of novel methodologies is outside the scope of the current study but it is likely that during the course of the SOP development the need for such work will be highlighted. It is recommended that studies with the aim of developing new methods and procedures of environmental information collection by industry workers are supported by funding bodies and industry. These studies should adopt a collaborative approach with the NCAs to ensure that there is agreement and confidence in data quality.
3. It was clear from discussions with the consultees that there is scope for the development of a similar suite of SOPs to address environmental information shortfalls in the shellfish harvest sector. It is suggested that where the procedures and methodologies developed in the current project do not address the issues in the harvest sector that a series of SOPs be developed for them.
4. The issue of non-natives warrants particular attention as it appears from some responses as an area of growing concern to NCAs and Regulators with serious potential consequences for the shellfish culture sector.

Information Shortfalls Encountered in Shellfish Farm Appropriate Assessments

Appendix I

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On behalf of The Sea Fish Industry Authority

Seafish Standard Sampling Operating Procedures Project Questionnaire

The objective of this brief questionnaire is to determine the most common information shortfalls in past environmental impact assessments of shellfish farming in UK European marine sites which have delayed or prevented the consenting process.

The boxes will automatically expand to your text.

Your Name	
Your Organisation	
UK marine site name	
Site designation	

1) Section 1 – Nature of shellfish farming development proposed:

1.1 Which species was to be farmed? <i>(Common or Latin names)</i>
1.2 What were the methods of farming proposed? <i>(e.g. bottom culture, mesh bag culture, rope cultivation etc.)</i>
1.3 Was the building of infrastructure proposed? <i>(e.g. cages or other structures such as anchored rafts)</i> • • •
1.4 What were the proposed methods of access: <i>(e.g. by boat or motorized vehicle etc.)</i> • •
1.6 What was to be the primary stock husbandry methods e.g. was the farm to be stocked from wild seed or hatchery reared sources (local brood stock or otherwise) <i>(e.g. was the farm to be stocked from wild seed or hatchery reared sources (local brood stock or otherwise)?)</i>
1.7 What was the size of the proposed farm? Area: Stocking Area:

Section 2 – Environmental Concerns

2.1 What are the key habitat features and sub-features of concern at the site?

(e.g. Coastal lagoons, Estuaries / Zostera beds, Sabellaria reef etc.)

2.2 What are the key species of concern at the site?

(Common or Latin names)

2.3 What was the key environmental impact/concern of this proposed development:

(e.g. smothering, disturbance, damage to foreshore habitats etc.)

-
-
-

Section 3 – Environmental information shortfall

3.1 What was the nature of the key information shortfall that delayed or prevented assessment?

(e.g. extent of habitats/sub-features, usage of site by key species)

-
-
-

3.2 What was the significance of this information shortfall on the proposal?

(e.g. did it lead to a time delay / specific restrictions / comprehensive site investigation / refusal of consent?)

3.2.1 If there was a time delay in consenting or assessment how long was it?

Section 4 – Comments and Suggestions

4.1 We would appreciate any further comments and suggestions that would help direct the next stage of this project which aims to develop methodologies to enable developers address the common information shortfalls before the assessment and consenting stage.

(e.g. suggestions of methods which could be employed in gathering the information)