Audit Guidance for Friend of the Sea Aqua Inland-Marine Standard

FOS – Aqua Inland-Marine

Friend of the Sea
www.friendofthesea.org

REV	DATE	REASON	APPROVED	VALIDATED	RATIFIED
1	xxx	Guidance to the FOS aqua Inland-Marine standard			

Valid from: xxx

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1. Introduction

1.1. Friend of the Sea

Founded in 2008, Friend of the Sea (FOS) is a non-governmental organisation committed to improving the global sustainability of seafood by developing international certification schemes for sustainable fisheries and aquaculture products. The mission of FOS is to safeguard the marine environment and its resources by incentivising a sustainable market and implementing specific conservation projects. The present document is a guideline for auditors that are operating with the FOS standards for wild catch, aquaculture, fish oil and chain of custody.

1.2. Purpose of the document

The purpose of this document is to provide guidance on the FOS standards for Certification Bodies (CBs) for auditors, to ensure consistent interpretation and application across countries and CBs, hence improving the efficiency of the assessment process.

This Audit Guidance document provides this guidance through:

1- Description of how to interpret the principles and criteria from the FOS standards.

2- Audit instructions to verify compliance through indicators.

3- Information relating to exceptional situations.

4- Objective criteria for critical limits.

5- Instructions to complete the audit report.

A brief explanation is given for each criterion, together with the description of indicators and list of documentation to collect and attach to the report.

1.3. References

(1) GSSI Glossary. https://www.ourgssi.org/assets/GSSI-Benchmarking-Tool/GSSI-Global-Benchmark-Tool-V.1-October-2015.pdf

(2) FAO Term Portal. http://www.fao.org/faoterm/en/?defaultCollId=21

(3) FAO Technical Guidelines on Aquaculture Certification, Rome. 2011. http://www.fao.org/3/a-i2296t.pdf

(4) Codex Alimentarius, Principles for Food Import and Export Certification and Inspection, CAC/GL 20. http://www.fao.org/3/y6396e/Y6396E01.htm

(5) Codex Alimentarius Commission (2004) Code of Practice for Fish and Fishery Products. Aquaculture. CAC/RCP 52-2003. http://www.fao.org/3/a1553e/a1553e00.pdf

(6) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.

(7) FAO World fisheries and aquaculture atlas. Rome, 2003.

(8) OIE Aquatic Animal Health Code (2019) https://www.oie.int/en/standard-setting/aquatic-code/access-online/

(9) Ottolenghi, F., Silvestri, C., Giordano, P., Lovatelli, A. & New, M.B. (2004) Capture-based aquaculture. The fattening of eels, groupers, tunas and yellowtails. Rome, FAO. 308p.

(10) FAO Technical guidelines for Responsible Fisheries: Aquaculture Development. 4. Ecosystem approach to aquaculture. Rome, 2010. http://www.fao.org/3/a-i1750e.pdf

(11) Tacon, A.G.J., Metian, M. & Hasan, M.R. 2009. Feed ingredients and fertilizers for farmed aquatic animals: sources and composition. FAO Fisheries and Aquaculture Technical Paper. No. 540. Rome, FAO. 209p.

(12) Noble, C., Gismervik, K., Iversen, M. H., Kolarevic, J., Nilsson, J., Stien, L. H. & Turnbull, J. F. (Eds.) (2018). Welfare Indicators for farmed Atlantic salmon: tools for assessing fish welfare. 351pp.

(13) FAO Technical Guidelines for Responsible Fisheries, Aquaculture Development. 5. Use of wild fish as feed in aquaculture. Rome, 2011 http://www.fao.org/3/a-i1917e.pdf

(14) EUR-Lex Commission Recommendation of 18 June 2007 on guidelines for the accommodation and care of animals used for experimental and other scientific purposes (notified under document number C (2007) 2525) (Text with EEA relevance) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32007H0526

(15) RSPCA Welfare standards for Farmed Atlantic Salmon https://www.berspcaassured.org.uk/media/1290/rspca-welfare-standards-for-salmon-february-2018.pdf

(16) BAP Farm Standard Best Aquaculture Practices Certification Standards, Implementation Guidelines. Aquaculture Facility Certification. (2020) https://www.bapcertification.org/Downloadables/pdf/standards/BAP%20Farm%20Standard%20Issue%203.0%20-%20Public%20Commentary%20Draft.pdf

(17) FAO. 2020. The State of World Fisheries and Aquaculture (SOFIA). Sustainability in action. Rome. https://doi.org/10.4060/ca9229en

(18) ICES (2004) Code of Practice on the Introductions and Transfers of marine Organisms. https://www.nobanis.org/globalassets/ices-code-of-practice.pdf

(19) GFSI. 2013. Guidance Document Version 6.3 Part IV: Glossary of Terms. https://www.mccain.com/media/1407/gfsi-guidance-document.pdf

(20) FAO. 2007. Aquaculture development. 2. Health management for responsible movement of live aquatic animals. FAO Technical Guidelines for Responsible Fisheries No. 5, Suppl. 2, Rome, FAO, 31 pp. http://www.fao.org/3/a1108e/a1108e00.pdf

(21) Bondad-Reantaso, M.G., McGladdery, S.E., East, I. & Subasinghe, R.P. 2001. Asia diagnostic guide to aquatic animal diseases. FAO Fisheries Technical Paper, (402/2): 237p. http://www.fao.org/3/a-y1679e.pdf

(22) National Sea Grant College Program (2003) Aquaculture Network Information Network Center (AquaNIC). Aquaculture course 448, glossary (5 pages). http://aquanic.org/courses/aq448/glossary.html

1.4. Definitions and Abbreviations

(6) Animal protein: complex, naturally occurring polymers comprised of amino acids joined by peptide linkages derived from an animal source.

(3) & (17) Aquaculture: the farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, *etc*. Farming also implies individual or corporate ownership of the stock being cultivated, the planning, development and operation of aquaculture systems, sites, facilities and practices and the production and transport.

(Modified from (2) & (17)) Aquaculture system: any systems for the production of aquatic animals *i.e.* fish or shellfish intended for human consumption, including the supporting inner infrastructure and surroundings under the control of the same management. Broadly speaking, production systems can be divided into inland (freshwater) and coastal (marine and brackish water) habitats and production systems can vary according to the intensity of stocking densities, type of cultured species and amount of feed input.

(16) Aquatic animal health management plan: an active management tool aimed at promoting the health and welfare of farmed animals through good practice. Also known as a Farm Health Management Plan (FHMP).

(12) Biosecurity: a strategic and integrated approach that encompasses both policy and regulatory frameworks aimed at analysing and managing the risks of the sectors dealing with food safety, animal life and health, plant life and health and the environment.

(3) Certification: the procedure by which official certification bodies or officially recognized certification bodies provide written or equivalent assurance that foods or food control systems conform to requirements. Certification of food may be, as appropriate,

based on a range of inspection activities which may include continuous on-line inspection, auditing of quality assurance systems, and examination of finished products.

(3) Certification body or entity: a competent and recognised body, governmental or non-governmental, that conducts certification and audit activities. A certification body may oversee certification activities carried out on its behalf by other bodies.

(5) Chemicals: in an aquaculture context, any substance either natural or synthetic, which can affect live fish, its pathogens, water, equipment used for production or at land within the aquaculture establishment. Includes antifoulant treatments used on nets in marine cage aquaculture.

(5) Chemical compounds (see Chemicals): in an aquaculture context, any substances, either natural or synthetic, which can affect live fish, its pathogens, water, equipment used for production or the land within the aquaculture establishment.

(Modified from (2)) Contamination: direct or indirect transmission of objectionable matters to the feed.

(1) Containment infrastructure: an individual tank, cage, or pond holding a single batch of aquatic animals. Also known as Production unit.

(10) Ecosystem: an organizational unit consisting of an aggregation of plants, animals (including humans) and microorganisms, along with non-living components of the environment.

(2) Environmental Impact: A result of activity which has influence upon or changes the environment.

(2) Environmental Impact Assessment (EIA): A set of activities designed to identify and predict the impacts of a proposed action on the biogeophysical environment and on man's health and wellbeing, and to interpret and communicate information about the impacts,

including mitigation measures that are likely to eliminate the risks. In many countries, organizations planning new projects are required by law to conduct EIA. Usually it is carried out by three parties, the developer, the public authorities and the planning authorities.

(2) Escapee: A term used to describe specimens of cultured species which escape from the rearing system into the ambient environment. There are potential impacts through interbreeding with wild conspecifics and through disease transfer. Also known as Escapes.

Euthanisation: the act of putting an animal to death in order to prevent pain and distress.

(2) Exotic: a species not native to a particular area, which may pose a risk to endemic species.

(1) Feed: fodder intended for the aquatic animal in aquaculture establishments, in any form and of any composition.

(4) Feed Additives: chemicals or substances, other than nutrients for fish, that are approved for addition to their feed.

(8) Feed Ingredients: a component, part or constituent of any combination or mixture making up a feed, including feed additives, whether or not it has a nutritional value in the animal's diet. Ingredients may be of terrestrial or aquatic, plant or animal origin and may be organic or inorganic substances.

(Modified from (11)) Fertilisers: may include chemical fertilizers or organic manure providing indirect source of dietary nutrient for farmed aquatic species.

(6) Grow out: the process of raising of organisms after the initial larval/juvenile stages to a marketable size.

(Modified from (1)) Infrastructure: in an aquaculture context, any structure, *i.e.* tank, cage, or pond used to maintain a population of cultured aquatic animals.

(Modified from (1)) Marine feed ingredients: any feed to be used in aquaculture that is sourced from marine species.

(**19) Monitoring:** a planned sequence of observations or measurements to assess compliance with requirements.

(19) Monitoring system: a system that allows a planned sequence of observations or measurements to assess compliance with requirements.

(15) Moribund: A term used to describe an individual in a dying state or near death.

(15) Mortality: The number of deaths in a given area or period, or from a particular cause.

(20) Pathogen: infectious agents capable of causing disease.

(2) Predator: An organism that derives elements essential for its existence from organisms of other species, which it consumes and destroys.

(2) Residue: for food products, any foreign substances including their metabolites, which remain in fish prior to harvesting as a result of either application or accidental exposure.

(2) Seed: Meaning eggs, spawn, offspring, progeny or brood of the aquatic organism being cultured. During these early life stages, seed may also be referred to or known as fry, larvae, post-larvae, spat, and fingerlings. They may originate from two principal sources: from captive breeding programmes, *e.g.* hatchery, or caught from the wild.

(2) Species: All life stages (including eggs and gametes) of fish, molluscs, crustaceans and amphibians originating from aquaculture establishments or removed from the wild, for

farming purposes, for release into the environment, for human consumption or for ornamental purposes.

(1) Standard: A document approved by a recognized organization or arrangement, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is not mandatory under international trade rules. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method.

(17) Sustainable: an approach that conserves (land), water, plants and (animal) genetic resources, and is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable.

(17) Sustainability (see Sustainable).

(21) Transmission: in pathology; the transfer of an infectious agent from one organism to another.

(2) Unit of certification (Aquaculture): the scale or extent of the aquaculture operation(s) assessed and monitored for compliance. The unit of certification could consist of a single farm, production unit or other aquaculture facility. The certification unit could also consist of a group or cluster of farms that should be assessed and monitored collectively.

(3) Vaccine: a substance used to stimulate the production of antibodies and provide immunity against one or several diseases, prepared from the causative agent of a disease, its products, or a synthetic substitute, treated to act as an antigen without inducing the disease.

(8) Veterinarian: A person who, for the purposes of the Aquatic Code, is authorised by the Competent Authority to carry out the actions identified in Prudent Use of Antibiotics section of the OIE Aquatic Animal Health Code 2014 (or latest version) including

identifying, preventing and treating aquatic animal diseases, as well as the promotion of sound animal husbandry methods, hygiene procedures, vaccination and other alternative strategies to minimise the need for antimicrobial use in aquatic animals.

(1) Veterinary drugs: definitions of veterinary drugs vary from source-to source; they may be considered to include antimicrobials, anti-bacterials, therapeutants, antibiotics, and veterinary medicinal products, and, if misused, can result in food safety implications, including residues, as well environmental implications, such as the spread of resistance to treatments in pathogenic organisms.

(14) Water quality (criteria): specific levels of water quality desired for identified uses, including drinking, recreation, farming, aquaculture production, propagation of other aquatic life, and agricultural and industrial processes.

AB: Accreditation Body;

AU: Auditor;

CA: Corrective action;

CAR: Corrective action report;

CB: Certification Body;

CO: Unit of certification (owner or manager) requesting the certification;

CoC: Chain of Custody;

FOS: Friend of the Sea

FOS-Aqua: Certification criteria for sustainable freshwater aquaculture;

FOS-FF: Certification criteria for sustainable fish feed;

FOS-FM: Certification criteria for sustainable fishmeal;

FOS-FO: Certification criteria for sustainable fish oil;

FOS-O3: Certification criteria for sustainable fish-based nutraceutical products (Omega3);

FOS-Wild: Certification criteria for sustainable seafood from wild fisheries;

NC: Non-conformity.

1.5. Friend of the Sea Certification System

The Friend of the Sea certification program allows for the assessment of fisheries and aquaculture products according to sustainability criteria and requirements.

The Friend of the Sea certification system is defined by the following documents:

1. **Certification procedure (FOS 0001):** description of procedures and regulation of the certification and accreditation process for COs and CBs. This includes 1) rules and regulations for the accreditation of CBs; 2) rules and regulations for the certification of COs against FOS standards; 3) minimum qualifications of auditing staff.
2. **Standards:** documents that contain criteria and indicators in the form of a checklist for ensuring sustainable seafood production and seafood traceability. A complete list of standards can be found in Section 1.6.
3. **Audit Guidance:** guidance document to provide clarification and training to auditors, enabling CBs to operate in a consistent manner.

Therefore, the present Audit Guidance Document is an integral part of the FOS - Aqua Inland and Marine Standards and shall be applied together with the Standard and the FOS 0001 procedure to all inland and marine aquaculture FOS audits (with the exclusion of the FOS Aqua Shellfish and FOS Aqua Prawns audits).

The procedure to follow for the certification of FOS standards, from the assessment to the issue of certificates, is described in detail in Chapter 3 of FOS 0001. The assessments shall be carried out following the standard's documents, appropriate for the production type, provided by FOS. The auditor shall complete all parts of the standard document during the assessment and provide corrective action reports (CARs) when non-compliances (NCs) are detected.

1.6. Friend of the Sea standards

Summary of FOS seafood standards, versions, scope and validity.

Standard	Current version	Scope	Valid from	Compulsory from
FOS Aqua Marine	Rev. 2 03/11/14	Marine aquaculture	03/11/2014	03/11/2015
FOS Aqua Inland	Rev. 3 18/10/16	Inland (pond and tanks) aquaculture	18/10/2016	18/10/2017
FOS Aqua Shellfish	Rev. 3 16/06/2016	Shellfish aquaculture	16/06/2016	16/06/2017
FOS CoC, FO, FF, FM, O3	Rev. 5 24/10/16	Chain of Custody, Fish oil, fish feed, fishmeal, omega 3	15/02/2017	15/02/2018
FOS Wild	Rev 3.1	Wild catch fisheries	18/10/2017	18/10/2018
FOS Wild	Rev. 4	Wild catch fisheries	18/03/2020	18/03/2023

2. Audit guidance

2.1. General requirements for the audit process

The auditor shall contact the unit of certification well before the on-site inspections to collect and review all the documentation necessary to assess compliance to FOS standards. Details of how to prepare and implement this first part of the audit process are given in chapter 3 of FOS 0001. All audits shall be carried out in compliance with ISO 19011. Prior to the audit date, an auditor shall review all the relevant documentation possible to reduce the onsite visit duration, including corrective actions and past audit findings. During an audit, the auditor needs to see evidence that the processes are implemented in accordance to the standard's requirements.

To be recommended for certification by the CB, the unit of certification shall not have any pending major NCs. In addition, the unit of certification shall elaborate a corrective action plan to come into compliance with all minor NCs, which are verified in the surveillance audit. An exception is only made for those requirements that are not applicable due to a specific type of activity (*e.g.* requirements for tuna fisheries are not applicable to fisheries targeting species other than tuna). The auditor decides independently whether the unit of certification is fully compliant based on the evidence collected before and during the audit. Recommended indicators are not compulsory to achieve the certification. Nonetheless, all the aspects related to these indicators shall be reviewed and any NCs detected shall be highlighted in the audit report as a "recommendation". The auditor is responsible for assessing and reporting the implementation of recommendations during the subsequent audit. **Downgrading the level of any requirement**, *e.g.* changing classification of an important requirement to a recommendation, **is not permitted under any circumstance.**

- Only Y, N and N.A. (not applicable) are considered acceptable answers to the requirement followed by respective comments.
- The CB shall submit to FOS all information and data that are part of the assessment and surveillance process, together with the audit report.

- The auditor shall attach complete documents in PDF format. Clear reference of paragraph and page number shall be included in the report.

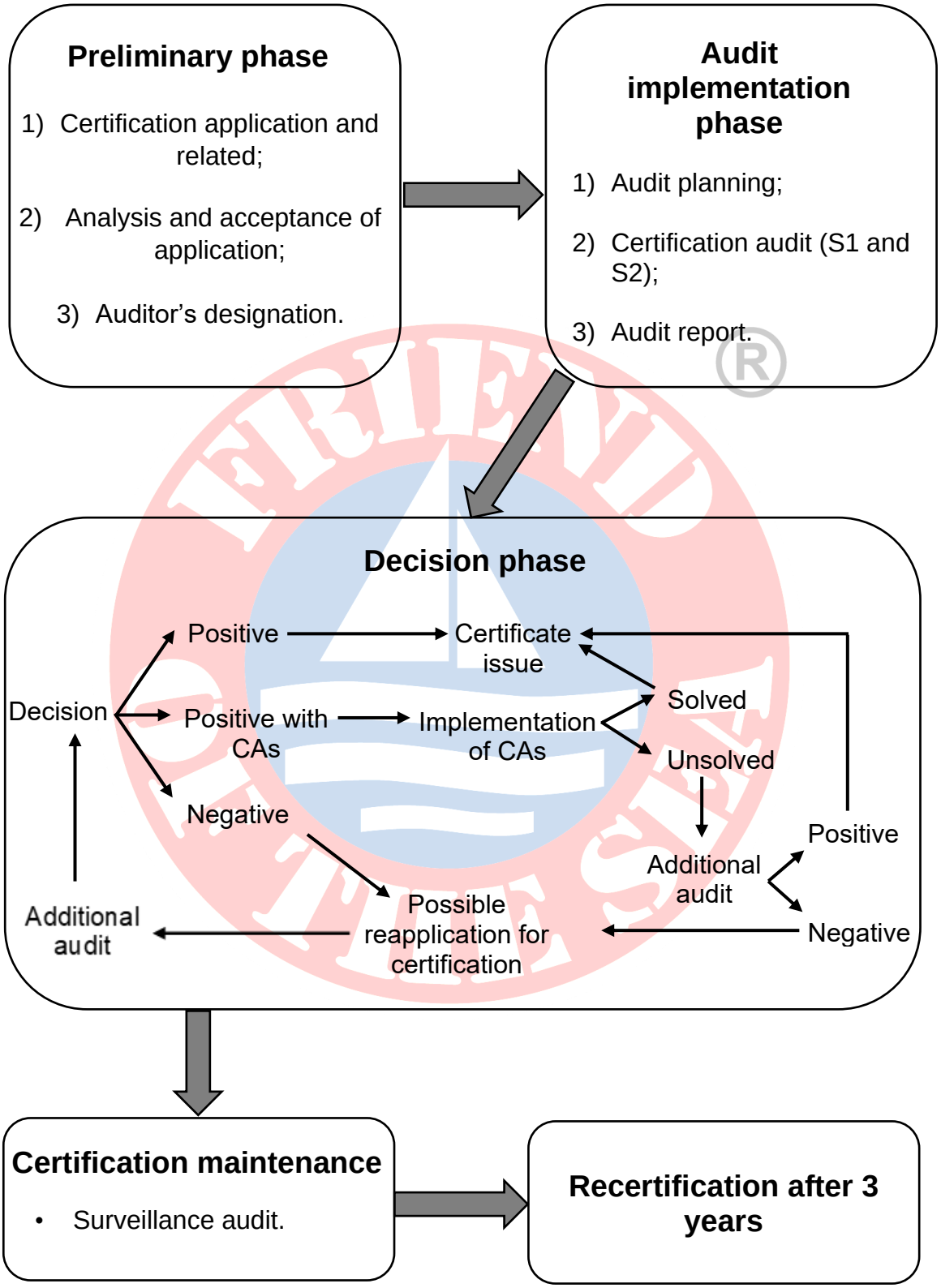

Figure 1. Steps for issuance and maintenance of certification.

Opening meeting, gathering information and closing meeting:

Opening meeting

All audits shall begin with an opening meeting, in which auditors shall confirm with the client at least:

- The audit plan, including how the audit activities will be undertaken and any visits to vessels, sites and/or sub-contractors;
- The access required and the type of information and documentation needed;
- The proposed scope of certification, including the complete list of vessels, farming sites, processing sites to be included in the certification;
- The list of certified suppliers and of any subcontractors that are or will be handling certified products, identifying which ones are independently certified.
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Gathering information

Methods for gathering evidence during the audit include:

- Interviewing relevant personnel;
- Inspection of records and written procedures;
- Observation of ongoing activities;
- Photos.

Types of documental evidence that shall be gathered and reported during the audit include:

- Procedures, including operational procedures, management review and other relevant reports;
- Internal audits, corrective and preventive action records;
- Quality and management objectives;
- Statements and meeting records;
- Audit records;
- Key Performance Indicators (KPIs) and process monitoring records;
- Purchasing records, sales receipts and supplier payment records;
- Employee training records.

Closing meeting

Auditors shall conduct a closing meeting at the conclusion of each audit with the applicant's representative(s), to verify that the applicant understands:

- Any actions the client may have to complete and their timeframes before certification can be awarded;
- That all CAs addressing major NCs shall be implemented and verified by the auditor before the certification can be awarded;
- That proposal(s) of implementation of any minor NC(s) shall be presented to the CB and approved by the auditor before the certification can be awarded;
- That until the certification process is concluded and the certificate is issued, the applicant is not certified and cannot make any claim concerning certification;
- That the client must inform the CB and FOS of any significant future changes that affect certification;
- That the scope, subcontractor and supplier list is correct and agreed upon.

2.2. FOS - Aqua Inland-Marine Requirements

2.2.1. Scope

FOS – Aqua Inland-Marine requirements outline criteria and indicators for CBs' use when assessing species-specific FOS Aqua Standards. This certification is required for all aquaculture operations that are engaged in the propagation and culture of aquatic animals with the aim to monitor aquaculture activities.

2.2.2. General Instructions for the auditor

This Audit guidance provides **complete guidance** for the requirements for **Sections 1-14 of the FOS Aqua Inland-Marine Standard.** Only aquaculture products/fish originating from producers positively assessed against FOS Aqua Marine and FOS Inland Standards may be eligible to be sold as FOS certified products.

The unit of certification needs to be contacted in time to confirm the scope of certification and agree on a date on which the aquaculture operation is to be inspected. Guidance for the preliminary audit phase is provided in Appendix A. The auditor shall review all the information available and take his/her certification decision independently, based on the objective facts and best scientific data available.

Data are facts that result from measurements and observations. Only data that is relevant, reliable and current shall be used as supporting evidence of conformity to FOS-Aqua Fish Welfare Standard requirements. Only data and/or other information that delivers the best scientific evidence available shall be considered and reported in the audit report. The currency of data and information is important because their capacity for supporting reliable assessment of current status and trends declines as they get older. Data sources shall always be reported.

Where limited information is available, the auditors should be more precautionary in their assessment of information adequacy. Remote audits shall assess applicants against the same criteria and requirements as an on-site audit. If the audit is remote, this may be carried out either on a call, video conference or through an initial email exchange.

2.2.3. Stakeholders consultation in aquaculture assessments

CBs assessing companies against FOS Aqua Inland-Marine Standard shall actively seek stakeholders' input during the certification process. CBs are requested to inform all the relevant stakeholders about the audit of all companies seeking FOS Aqua Inland-Marine certification and recommend their input. The list of all contacted stakeholders (name, role and organisation) shall be provided in the audit report in the section l) of the FOS Aqua Inland-Marine Standard checklist.

The stakeholders to be informed about the certification process shall include a minimum of:

i) Aquaculture industry association (*e.g.* ship owners or fishermen representatives, national or state seafood industry association);

ii) Local NGOs with a focus on ocean conservation or seafood sustainability.

FOS does not provide requirements for the CBs to follow during the process of information and consultation of stakeholders, as this process varies according to the circumstances and context of each farm. The CBs can therefore use their preferred method to inform the relevant stakeholders, as long as the process is reported in the audit report. The information and consultation of stakeholders shall be considered an integral part of the preliminary audit phase.

2.2.4. FOS - Aqua Inland-Marine Certification Requirements

2.2.4.1. MANAGEMENT OF THE AQUACULTURE SYSTEM

The rapid growth of the aquaculture industry in the past decades has highlighted the need for careful management of aquaculture operations in order to continue to grow sustainably. To these ends, the aquaculture industry must have a proactive approach towards developing and implementing systems of environmental management for the prevention and mitigation of adverse environmental impacts. Management of the aquaculture system requires a number of key actions that combine institutional and legal requirements and adjustments in order to support the implementation and maintenance of better management and are outlined below. The following requirements are for the Certification Bodies' (CBs') use when assessing the management of the aquaculture system targeted by the Unit of Certification (UoC).

The terms 'Aquaculture system', 'Unit of Certification' and 'Certification Body' are defined in the Section 1.4 – Definitions and Abbreviations.

Requirement		**Level**
1.1.	**A sustainable aquaculture system shall implement management procedures for the following aspects:**	

The following requirements specifically refer to the proactive management of the aquaculture system under audit to ensure its sustainability.

The terms 'Aquaculture system' and 'Sustainable' are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
1.1.1	**Responsibility and authority of the environmental management of the company**	**Important**

The auditor shall verify that the organisation under audit (*i.e.* Unit of Certification (UoC)) takes full authority over and responsibility for the environmental management of the company and that there is appointed within the organisation at least one employee who is responsible for the overseeing and implementation of better management practices.

Requirement		Level
1.1.2	**Control of documents and registers (including the update of the environmental laws to be complied with)**	**Important**

The auditor shall ensure that the organisation keeps account of all documents and registers relating to the environmental management of the company and that these documents and resisters are kept for at least six years. The auditor must also check that the company carries out at least annually a thorough check of the environmental laws relating to the environmental management of the company and updates their management practices if and as necessary.

Requirement		Level
1.1.3	**Control of monitoring systems and measurement of Environmental Impact Assessment (EIA)**	**Important**

The development of an Environmental Impact Assessment (EIA) may be defined as the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals in order to eliminate the potential risks of environmental impact (FAO, 2009). The assessment of an EIA is of fundamental importance in effective environmental management therefore the auditor must verify that appropriate checks are made at least every six months to ensure that the set of activities defined under the EIA are carried out.

The terms ‘Environmental Impact Assessment (EIA)’ and ‘Monitoring system’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
1.1.4	**Control and maintenance of infrastructures**	**Important**

The auditor shall verify that the appropriate checks are made of infrastructure or production unit integrity, *i.e.* tanks, cages, raceways, ponds *etc*., ensuring that there is no damage leading to containment breaches and escapes of aquatic animals and that any required maintenance is carried out to ensure the integrity of the structures and equipment. The auditor must verify that these checks should be carried out at least every six months

The term ‘Infrastructure’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
1.1.5	**Readiness for environmental emergencies and capability to address to them.**	**Important**

Responses to environmental emergencies require fast action to prevent environmental damage. Environmental emergencies can vary depending on the environment in which the aquaculture operation exists, *i.e.* inland freshwater, coastal, land-based, brackish-water and marine areas, and the types of production systems and containment mechanisms used in production, *i.e.* earthen ponds, floating cages, pens, raceways, tanks, recirculating closed and semi-closed systems, integrated with crop and/or livestock, enclosures in open water, or simply open water with ownership claim on the product (FAO, 2014). The auditor must ensure that the UoC displays a readiness and that it has in place a set of contingency plans to mitigate environmental damage should an environmental emergency occur. There is a requirement that the UoC carries out a full simulation of an environmental emergency and appropriate corrective responses at least once a year.

Requirement		Level
1.1.6	**Management of corrective measures (due to non-conformities and recommendations)**	**Important**

Recommendations and corrective measures are required by the UoC if the Auditor finds non-conformities during the Audit process. These issues must be addressed within at least six months of detection or notification.

2.2.4.2. LOCATION OF THE SITE

The following requirements are for the Certification Bodies' (CBs') use when assessing the location of the site targeted by the Unit of Certification (UoC).

The terms 'Unit of Certification' and 'Certification Body' are defined in the Section 1.4 – Definitions and Abbreviations.

Requirement		Level
2.1	**The unit of certification obtained a licence or permit for the development of the site, if required by the national regulation.**	**Essential**

The proposed development of an aquaculture site requires a licence or permit, taking into account the proposed location. Siting or location is a critical factor determining the environmental impact of the aquaculture development and assesses a number of factors that may vary according to the proposed environment, *i.e.* inland freshwater, coastal, land-based, brackish-water and marine areas, and the types of production systems and containment mechanisms used, *i.e.* earthen ponds, floating cages, pens, raceways, tanks, recirculating closed and semi-closed systems or open water. The auditor must verify that the UoC provides evidence of a valid and up-to-date permit or licence for the unit under assessment.

Requirement		Level
2.2	**An Environmental Impact Assessment (EIA) was carried out with a positive outcome, if required by the national regulation.**	**Essential**

In most countries EIA is required for activities or projects likely to have a significant impact on the environment. The UoC must provide evidence of a positive outcome of the relevant EIA, if this is required under National regulations appropriate to their country.

The term 'Environmental Impact Assessment (EIA)' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
2.3	**In case the national regulations do not require an Environmental Impact Assessment, the unit of certification shall arrange a EIA carried out by a third party and such study shall verify that critical ecosystems, such mangroves, rivers, lakes, bays, estuaries, wet areas, swamps and morasses, seabed, coast, have not been altered.**	**Essential**

Third party auditors are independent service providers, accredited by the appropriate government agency and engaged by an establishment to conduct an environmental audit. If the country in which the UoC is located do not have a national requirement for an EIA, then a third party assessment must have been carried out.

Please refer to the guidelines in FAO. 2009. Environmental impact assessment and monitoring in aquaculture. FAO Fisheries and Aquaculture Technical Paper. No. 527. Rome, FAO. 57p. Includes a CD-ROM containing the full document (648 pages). www.fao.org/3/i0970e/i0970e.pdf.

The term ‘Environmental Impact Assessment (EIA)’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
2.4	**The aquatic animals are kept under farming conditions suitable for the species being raised.**	**Essential**

Aquaculture animals should be kept under farming conditions suitable for the species concerned, taking into account, in particular, water temperature and quality. These parameters will vary according to species being cultured, life stage and production system, *i.e.* marine/sea-based or inland environment, *i.e.* freshwater, brackish water or marine. The auditor must ensure that the UoC provides evidence of a valid and up-to-date permit or licence for the species being cultured.

2.2.4.3. INFRASTRUCTURES

The following requirements refer to the assessment of infrastructures of the site targeted by the UoC.

Requirement		Level
3.1	**The unit of certification has measures to prevent escapes according to species-specific severity potential, rearing conditions and life stages:**	

Integrity of production units is vital, and the following requirements refer to the measures in place to prevent escapes of cultured species in the UoC.

The term ‘Escapes’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.1.1	**A structural integrity plan is in place to prevent escapes and risk of injuries to the reared species, covering daily and emergency procedures. This plan is established in accordance with the risk assessment and reviewed in case corrective actions are needed.**	**Essential**

A 'Structural Integrity Plan' can be defined as a series of measures in place to prevent escapes of the cultured species from the production units. It should ensure production unit integrity, verifying that there is no damage leading to containment breaches and escapes of aquatic animals, *e.g.* netting for cages and pens, anchoring systems, rings *etc*. as well as equipment, *i.e.* crowding nets and that they are maintained in good order. This plan is also in place to reduce the risk of mechanical injury by the use of suitable materials used to construct the production units, *i.e.* tanks and raceways are constructed of non-toxic and durable materials with a smooth internal surface to prevent abrasions to the fish, cages and pens use knotless nets *etc*. This plan may include preventive measures for predator control (See below Section 3.2. Predators).

The terms 'escapes' and 'predator' are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.1.2	**Regular underwater monitoring system (daily inspection by divers, installation of an underwater camera, biomass estimation technologies or similar).**	**Important**

Underwater monitoring systems allow husbandry staff to observe fish behaviour and use this an indicator of stock health and welfare in a cage or pen system. In addition, accurate estimation of unit biomass is vital for properly maintaining an adequate feeding regime, preventing overfeeding and resulting environmental impacts and keeping stocking density within acceptable limits. The auditor shall safeguard that the unit of certification employs

routine underwater monitoring that will allow identification of indicators of stress or welfare concerns. These behavioural observations may include any abnormalities in normal swimming and schooling behaviour, *i.e.* panic, aggressive events, isolated individuals *etc*.

The term 'Monitoring system' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.1.3	**Regular inspection and maintenance of containment infrastructures (screens, nets, counting technology or similar).**	**Essential**

The auditor must ensure that all containment infrastructures are inspected on a regular basis to ensure integrity (See Section 3.1.1. Structural Integrity Plan.

The term 'Infrastructure' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.1.4	**Readiness for escape emergencies and evidence that escape incidents have been reported to the authorities in a timely manner.**	**Essential**

The auditor must ensure that the UoC has in place protocols for dealing with escapes from production units (See Section 1.1.5. Readiness for environmental emergencies and capability to address to them) and that any such incidents are duly reported to the authorities in a timely manner.

The term 'Escape' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.1.5	**Record keeping of escapes to evaluate the effectiveness of the structural integrity plan.**	**Essential**

The auditor must ensure that the UoC keeps records of any escape incidents and reviews them and adjusts the Structural Integrity Plan accordingly.

The term ‘Escape’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.2	**The unit of certification has measures for predator control:**	

The following requirements refer to predator control.

The terms ‘predator’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.2.1	**A predator control plan that cover daily and emergency procedures is in place to mitigate impacts to predators by prohibiting the use of any lethal techniques on endangered species. This plan is established in accordance with the risk assessment and reviewed in case corrective actions are needed.**	**Essential**

A Predator Control Plan based on the identification of the type(s) of potential predators should be developed on a site by site basis. It may depend on the production system, *i.e.* cultured species within marine cages and pens may be threatened by sea birds, crabs, sea stars and marine mammals whereas inland aquaculture operations may be at risk from birds, land mammals, snails etc. This plan may be part of the Structural Integrity Plan (See above Section 3.1.1.) or may be developed on its own - at the discretion of the certification unit.

The risks to protected wildlife must be taken into full account and any predator control methods must consider information on protected species (See IUCN Red List: https://www.iucnredlist.org/ for list of species). Note there are exceptions for worker safety or where euthanisation of a predator is an act of mercy are acceptable.
The auditor must ensure that a Predator Control plan is in place according to the relevant risk assessment and that it is reviewed on a regular basis and any corrective actions are taken if required.

The terms 'Euthanisation' and 'Predator' are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.2.2	**Regular inspection and maintenance of exclusory and/or frightening techniques (screens, nets, equipment for visual stimuli or similar).**	**Essential**

The auditor must ensure that all predator control equipment is inspected on a regular basis and that adequate maintenance is carried out.

Requirement		Level
3.2.3	**Record keeping of mortalities and physical damage of predators to minimize the interaction between predators and farmed stocks that results in mortality of wild animals.**	**Essential**

The auditor must verify that the UoC keeps records of any physical damage or mortalities caused to predators to minimise interactions between predators and cultured stock.

The terms 'Predator' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
3.3	**Adequate training on escape and predator prevention is provided for all workers employed in related activities to mitigate environmental impacts.**	**Essential**

The auditor must ensure that training is provided to all husbandry staff on predator prevention methods and prevention of escapes.
The terms ‘Escapes’ and ‘Predator’ is defined in Section 1.4 – Definitions and Abbreviations.

2.2.4.4. SEEDS

Requirement		Level
4.1	**The unit of certification has measures to ensure reliable and sustainable sources of seeds:**	

The following requirements refer to the sustainability of the source of seed.

The term ‘Seed’ and ‘Sustainable’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
4.1.1	**Where hatchery-raised seeds are used, the unit of certification has measures to ensure the absence of relevant/important pathogens before stocking for grow-out.**	**Essential**

Hatchery raised seed originate from a facility used for the artificial and controlled breeding, hatching and rearing of aquatic organisms, on a commercial or experimental basis, through their early life stages. A hatchery is usually closely associated with a nursery facility where the cultured organism is grown to the appropriate size before being released to the wild or an on-growing structure. The auditor must ensure that all hatchery raised

seed are free from pathogens before they are moved to the on-growing structures, according to the UoCs' existing Aquatic Animal Health Plan (See Section 7.1. Disease Prevention and use of veterinary drugs and chemicals).

The terms 'Seed' and 'Aquatic animal health management plan' are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
4.1.2	**Where wild seeds are used for capture-based aquaculture operations, the unit of certification is able to demonstrate that these seeds come from activities certified by Friend of the Sea or other similar schemes recognized by GSSI. In this case, the use of wild seed is justified in the risk assessment.**	**Essential**

Capture based aquaculture is the practice of collecting 'seed' material from the wild, and its subsequent on-growing in captivity to marketable size, using aquaculture techniques (FAO, 2011). The auditor must ensure that all wild sourced seed come from activities certified by Friend of the Sea (See http://friendofthesea.org/approved-fisheries/) or similar schemes as recognized by GSSI (See https://www.ourgssi.org/gssi-recognized-certifcation/) and that the use of wild seed is fully justified according to the relevant risk assessment.

The term "Seed" is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
4.1.3	**Record keeping for all seeds intentionally stocked up to the current production cycle.**	**Essential**

The auditor must verify that adequate record keeping is in place for all seed that forms part of current production cycle and that the UoC holds a database of a minimum of the prior twelve months in order to comply.

The term “seed” is defined in Section 1.4 – Definitions and Abbreviations.

2.2.4.5. FEEDING

The following requirements specifically refer to the feed and feeding requirements of the cultured species in the unit of production.

Requirement		Level
5.1	**The unit of certification uses animal feed sourced from Friend of the Sea[1] certified suppliers or other similar schemes recognized by GSSI[2].**	**Essential**

The Auditor must ensure that the UoC uses only animal feed sourced from certified suppliers, *e.g.* Friend of the Sea updated Approved Customers & Suppliers and Retailer [1] - https://friendofthesea.org/wp-content/uploads/FOS-approved-customers-suppliers-retailers.pdf
Or any other GSSI approved certification scheme [2] - https://www.ourgssi.org/gssi-recognized-certifcation/

Requirement		Level
5.2	**The unit of certification uses animal feed sourced from IFFO RS certified suppliers.**	**Essential**

The Auditor must ensure that the UoC uses only animal feed sourced from IFFO RS certified suppliers. Please see https://www.iffors.com/iffo-rs-certified-sites

Requirement		Level
5.3	**The unit of certification does not use whole fish as direct feed throughout the production cycle.**	**Essential**

Whole fish are marine feed ingredients, *e.g.* algae, crustaceans, and fish, that have been harvested specifically for rendering into fishmeal and fish oil (as opposed to those primarily destined for human consumption). The term does not include aquaculture or fishery by-products. The auditor must ensure that the UoC does not use whole fish as direct feed throughout the production cycle.

Requirement		Level
5.4	**The unit of certification does not use animal protein from the same species and genus to feed the species being farmed.**	**Essential**

The auditor must ensure that the UoC does not feed using animal protein from the same species and genus to the animals being cultured.

The term ‘Protein’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
5.5	**The unit of certification buys feed from a manufacturer that:**	

The following requirements refer to the status of the feed manufacturer from which the UoC buys feed.

The term ‘Feed’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
5.5.1	**Is able to demonstrate a written policy on responsible sourcing of marine ingredients with fishery assessment status and ongoing commitments with a timeline.**	**Essential**

The auditor must verify that the UoC sources its marine ingredients from only suppliers with fishery assessment status and an ongoing commitment to a timeline.

Requirement		Level
5.5.2	**Is able to demonstrate the traceability of marine feed ingredients, considering species and country of origin. Only applicable to feed with more than 1% fishmeal and fish oil.**	**Essential**

Traceability can be defined as the ability to follow the movement of a product of fisheries or aquaculture, or inputs such as feed and seed, through specified stage(s) of production, processing, transport and distribution. For marine feeds (containing > 1% fish meal and fish oil), the auditor must ensure that the UoC is able to demonstrate the traceability of both fish meal, a protein-rich meal derived from processing (boiling, pressing, drying, grinding), whole fish (usually small pelagic fish or bycatch) as well as residues and by-products from fish processing plants (fish offal), and fish oil, oil extracted from total fish body or from fish waste.

Please refer to:

• FAO. 2009. Feed Ingredients and Fertilizers for Farmed Aquatic Animals. http://www.fao.org/3/i1142e/i1142e.pdf

• FAO. 2011. Aquaculture Development. 5. Use of Wild Fish as Feed in Aquaculture. http://www.fao.org/3/i1917e/i1917e00.pdf

Requirement		Level
5.5.3	**Prohibits fishmeal and fish oil from species categorized as "endangered species", according to the IUCN Red List.**	**Essential**

The auditor must verify that fishmeal and fish oil are not sourced from marine species categorised as 'endangered species' according to the IUCN Red List https://www.iucnredlist.org/

Requirement		Level
5.5.4	**Prohibits fishmeal and fish oil from illegal, unreported and unregulated fishing (I.U.U.).**	**Essential**

Illegal, unreported and unregulated (IUU) fishing behaviours include activities referred to as serious violations in the Fish Stocks Agreement, such as fishing without a valid licence, misreporting catch data, falsifying or concealing the vessel's identity or itinerary, or obstructing the work of inspectors or enforcers. The auditor must verify that fishmeal and fish oil are not sourced from marine species from (IUU) fishing activities and that the UoC can provide evidence of conformity.

Requirement		Level
5.6	**The unit of certification has measures to use feed efficiently throughout the production cycle:**	

These requirements refer to measures employed by the UoC to ensure that feed is used efficiently throughout the production cycle. These measure can include routine monitoring of group feeding behaviour of the cultured species and routine calculation of stock biomass in order to allow feeding regimens to be adjusted to suit stock and avoid overfeeding and deterioration of water quality due to excess feed.

Requirement		Level
5.6.1	**A feed management plan is in place, covering at least a strategy for feed storage and a feeding protocol that considers species-specific needs, rearing conditions and life stages.**	**Important**

A ‘Feed Management Plan’ should be developed on a site by site basis. It must include a feeding protocol appropriate to the species, life stage and environmental conditions of the production unit. The auditor must ensure that there is strict adherence to the manufacturer’s feeding guidelines as well as routine monitoring of group feeding behaviour of the cultured species. These observations and routine calculation of stock biomass will allow feeding regimens to be adjusted to suit stock and avoid overfeeding and deterioration of water quality due to excess feed. A period of starvation is regarded as a sound practice in aquaculture prior to handling, transportation and harvest, to minimise impacts on welfare and ensure proper hygiene after harvest so, when applicable, the feeding protocol includes an appropriate starving protocol for harvests. The Feed management Plan must also include an appropriate strategy for feed storage: according to the Codex Alimentarius Commission (2009) Code of Practice for Fish and Fishery Products. Aquaculture. http://www.fao.org/3/a1553e/a1553e00.pdf

CAC/RCP 52-2003 compliance can include the following:

- Feed and fresh stocks should be purchased and rotated and used prior to the expiry of their shelf-life.
- Dry fish feeds should be stored in cool and dry areas to prevent spoilage, mould growth and contamination. Moist feed should be properly refrigerated according to manufacturer instructions.
- Fresh or frozen fish should reach the fish farm in an adequate state of freshness.
- Fish silage and offal from fish, if used, should be properly cooked or treated to eliminate potential hazards to human health.

- Storage and transportation conditions should conform to the specifications on the label.

Requirement		Level
5.6.2	**Monitoring of feeding efficiency through feed conversion ratio (FCR) measurements per production cycle.**	**Essential**

Feed conversion ratio (FCR) is a routinely used measurement of aquaculture production efficiency, expressed as a comparison of the amount of feed used per unit weight gain of the species being grown. The auditor must verify that the UoC monitors feed efficiency throughout the production cycles using FCR ratios.

Requirement		Level
5.6.3	**Record keeping for periodic reviews of the feed management plan according to the most recent complete production cycle.**	**Essential**

The auditor must verify that the UoC provides evidence of periodic reviews of the Feed Management Plan according the most recent complete production cycle.

Requirement		Level
5.6.4	**Adequate training on feed storage and handling is provided for all workers employed in related activities to prevent feed contamination and improve feed efficiency.**	**Essential**

The auditor must ensure that adequate training is provides to all husbandry staff employed in related activities in order to prevent feed contamination and improve feed efficiency.

2.2.4.6. GMO AND GROWTH HORMONES

The following requirements refer to the use of Genetically Modified Organisms and growth hormones in aquaculture.

Requirement		Level
6.1	**The use of GMO fish species is not allowed.**	**Essential**

Genetically Modified Organisms (GMOs) are organisms or microorganisms whose genetic material has been altered by means of genetic engineering in order to favour the expression of desired physiological traits, *i.e.* increased growth, increased resistance to disease, increased range of physiological tolerances. The use of GMOs in aquaculture has prompted serious concerns worldwide about the possible impact of escapes on wild populations. The auditor must verify that the UoC does not culture any GMO species.

The term 'Escapes' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
6.2	**The use of growth hormones is not allowed.**	**Essential**

Growth hormones are used for the stimulation of somatic growth, *i.e.* skeletal and soft tissues, through the production of growth factors (IGF-I and IGF-II). The treatment of cultured fish with exogenous growth hormones is practiced in order to stimulate growth of the animal. The auditor must verify that the UoC does not use growth hormones at any stage of the production cycle.

2.2.4.7. DISEASE PREVENTION AND USE OF VETERINARY DRUGS AND CHEMICALS

The following requirements refer to the prevention of disease and the use of veterinary drugs and chemicals.

The terms ‘Veterinary Drugs’ and ‘Chemicals’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.1	**An aquatic animal health management plan, approved by a veterinarian and periodically reviewed in accordance with the risk assessment, is in place to ensure that farming practices are consistent with the OIE Aquatic Animal Health Code. This plan includes the following:**	

The following requirements specifically refer to an aquatic animal health management plan, which have been used historically in many terrestrial animal production systems to provide a formal veterinary health planning strategy and can offer a useful basis not only for maintaining strict health and welfare standards within the industry but also a gauge for quality assurance or certification schemes within that sector. The auditor must ensure that the unit of production has a valid aquatic animal health management plan in place and that it is in full accordance with the OIE Aquatic Animal health Code; https://www.oie.int/en/standard-setting/aquatic-code/access-online/

The auditor must also verify that the aquatic animal health management plan has been approved by a veterinarian and is periodically reviewed in accordance with the existing risk assessment specific to each UoC.

The terms ‘Aquatic Animal Health Management Plan’ and ‘Veterinarian” are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.1.1	**Focus on disease prevention, with special consideration to the use of vaccines and the implementation of measures to reduce the likelihood of disease and the risk of transmission pathogenic agents within and between the aquaculture**	**Essential**

	facility and natural aquatic fauna.	

Maintaining the health of aquatic animals should focus on the prevention of disease at all phases of culture and reduce the likelihood of disease transmission outside the farm. Many disease outbreaks in aquatic animals are spread by horizontal transmission of a pathogen, *i.e.* direct or indirect contact, or via the aquatic environment. Biosecurity measures can minimize the risk of introduction of an infectious disease and prevent its spread within a facility or to other sites. Vaccination is an important procedure in modern aquaculture to protect and prevent disease outbreaks and the spread of pathogens between cultured animals and the natural aquatic fauna. The vaccination of farmed aquatic species has dramatically decreased the number of outbreaks of historically important bacterial diseases in farmed fish stocks. As a result, mortalities have decreased considerably, there has been a concomitant marked reduction in antibiotic use and animal welfare has improved. Although the vaccine and the vaccination process can potentially have negative impacts on welfare it is accepted that the vaccination of fish with current vaccines results in a net benefit for both fish health and welfare (Midtlyng, 1997; Berg et al., 2006; Evensen, 2009).

The Auditor must ensure that the UoC pays due attention to the prevention of disease by implementing vaccination strategies for farmed stock at the appropriate stage in the life cycle and has in place mitigation measures, *e.g.* quarantine and biosecurity procedures, in order to prevent horizontal disease transmission between animals.

The terms ’Biosecurity’, ‘Transmission’ and ‘Vaccines’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		**Level**
7.1.2	**Procedures for early detection of aquatic animal health issues, including routine monitoring of stocks and the environment.**	**Essential**

The auditor shall verify that the UoC carries out regular and routine monitoring of stocks, *i.e.* health and behavioral inspections, and the environment, *i.e.* parameters that could

adversely affect the health of the aquatic animals, as prescribed in the aquatic animal health management plan.

The term 'Monitoring' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.1.3	**Procedures to respond to disease outbreaks, considering the implementation of quarantine zones where feasible.**	**Essential**

Quarantine is the maintenance of a group of aquatic animals in isolation with no direct or indirect contact with other aquatic animals, in order to undergo observation for a specified length of time and, if appropriate, testing and treatment, including proper treatment of the effluent waters. The auditor must prove evidence that the UoC has in place established protocols or procedures to respond to disease outbreaks and that they are complied with in the event of an outbreak. If applicable, the adoption of quarantine zones should be used to contain the pathogen and prevent spread by controlling the movement of animals within and from the affected facility. The auditor shall report evidence of compliance of the UoC when an outbreak occurs.

Requirement		Level
7.1.4	**Information on all allowed chemicals and veterinary drugs[1].**	**Essential**

The use of chemical and veterinary medicines is subject to a system of directives and regulations that are specific to each country. Please refer to FAO National Aquaculture Legislation Overview (NALO) Fact sheets[1] for relevant country;
http://www.fao.org/fishery/nalo/search/en

The auditor must verify that the UoC only uses chemicals and veterinary medicines that are allowed according to the legislation in the above link.

The terms ‘Chemical’ and ‘Veterinary Drug’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2	**The unit of certification implement the aquatic animal health management plan and uses chemicals and veterinary drugs responsibly:**	

These requirements refer to the responsible use of chemicals and veterinary drugs.

The terms “Aquatic animal health Plan’, ‘Chemical’ and ‘Veterinary Drugs’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2.1	**Veterinary drugs are not used for prophylactic measures.**	**Essential**

Prophylactic measures can be defined as actions or chemo-therapeutants administered to healthy animals in order to prevent the development or spread of disease. The auditor must ensure that veterinary drugs are only used for therapeutic purposes and in compliance with the OIE Aquatic Animal Health Code. 2019. Chapter 6.2. *Principles for responsible and prudent use of antimicrobial agents in aquatic animals* – Article 6.2.7. and Article 6.2.8.; https://www.oie.int/index.php?id=171&L=0&htmfile=chapitre_antibio_resp_prudent_use.htm

The term ‘Veterinary Drug’ is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2.2	**All veterinary drugs used are based on clinical assessments and in response to a diagnosed disease.**	**Essential**

The auditor must verify that all decisions to treat with veterinary drugs shall be made according to the guidance of the OIE (2019) and shall be consistent with the guidelines outlined in OIE Aquatic Animal Health Code. 2019. Chapter 6.2. *Principles for responsible and prudent use of antimicrobial agents in aquatic animals* – Article 6.2.7. and Article 6.2.8.;
https://www.oie.int/index.php?id=171&L=0&htmfile=chapitre_antibio_resp_prudent_use.htm

The term 'Veterinary Drug' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2.3	**All chemicals are used in accordance with the manufacturer's instructions and in compliance with safety regulations[1]. Toxic and persistent chemical compounds (*e.g.* TBT, Malachite green, DDT) are not used as they are prohibited.**	**Essential**

The auditor must prove evidence that all chemicals used for pathogen control or disinfection are in compliance with existing international regulations, as specified in FAO National Aquaculture Legislation Overview (NALO)[1] Fact sheets for international regulations; http://www.fao.org/fishery/nalo/search/en

The term 'Chemical' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2.4	**Anti-fouling treatments are used only if non-toxicity is evidenced by scientific assessments. Toxic anti-vegetative paints are not used as they are prohibited.**	**Essential**

Biofouling in aquaculture is the settlement and growth of unwanted aquatic species on farm infrastructure and can seriously impact health, welfare and productivity of cultured species. Heavy biofouling on net of cages and pens can restrict water flow and quality and increase the structures weight and stability, as well as potentially increasing the risk of

associated pathogens. Biofouling of tanks or raceways can similarly serve as reservoirs of pathogens. The use of biocidal anti-fouling agents, *i.e.* chemical substances that disrupt the assemblage of aquatic organisms attached to and growing upon underwater objects, and the use of anti-vegetative paints, *i.e.* that kill or cause adverse effects to assemblages of aquatic plants however, has raised a number of environmental concerns. The auditor must prove evidence that only non-toxic anti-fouling or anti-vegetative treatments are used.

Requirement		Level
7.2.5	**Records on the use of chemicals and veterinary drugs are maintained along with a rationale for their use.**	**Essential**

The auditor shall report evidence that the UoC maintains internal records and documentation of any chemicals or veterinary drugs that are used, with an adequate rationale for their usage.

The terms ‘Chemicals’ and ‘Veterinary drugs’ are defined in Section 1.4 – Definitions and Abbreviations.

Requirement		Level
7.2.6	**Adequate training on good aquatic animal health management practices is provided for all workers employed in husbandry activities so that they are aware of their roles and responsibilities.**	**Essential**

The auditor must prove evidence that adequate training is provided to all husbandry staff so as that they are fully aware of their roles and responsibilities.

Requirement		Level
7.2.7	**Routine collection of dead and moribund aquatic animals is in place using appropriate methods of disposal that prevent the spread of diseases.**	**Essential**

The auditor shall verify that the UoC maintains a routine programme of removal of dead and moribund fish and keeps adequate records of their numbers, and the causes. In addition, the auditor must ensure that the UoC undertakes adequate precautions when disposing of these animals in order to prevent spread of disease.

The terms 'Mortality' and 'Moribund' are defined in Section 1.4 – Definitions and Abbreviations.

2.2.4.8. MANAGEMENT OF WATERS AND WASTEWATERS

Requirement		Level
8.1	**The unit of certification has measures to reduce adverse impacts on water quality.** **A water sampling plan is in place to ensure that farming practices reduce adverse impacts on water quality. This plan is established in accordance with the risk assessment and includes at least the following key parameters:**	

The requirements listed in this section refer to the monitoring of water quality in the aquaculture production units. Aquaculture animals should be kept under farming conditions suitable for the species concerned. Water quality is key in maintaining fish welfare and in reducing stress and the risk of disease and water quality parameters should at all times be within the acceptable range that sustains normal activity and physiology for a given species. The definition of acceptable range is complicated as the requirements of individual species may vary between different life-stages, *e.g.* larvae, juveniles or adults

or, according to physiological status, *e.g.* metamorphosis, spawning, feeding, previous history of exposure *etc*.

The auditor must ensure that the UoC has in place a water sampling plan, established in accordance with the risk assessment, that defines which parameters should be checked and at what periodicity and that suitable and appropriate measures are taken to maintain those parameters within acceptable levels for the species and life stage being cultured in order to reduce any adverse impacts.

Below are listed a number of key water quality parameters.

The term 'Water quality' is defined in Section 1.4 – Definitions and Abbreviations.

Requirement		**Level**
8.1.1	**Total N**	**Essential**

Total Ammonia Nitrogen

Requirement		**Level**
8.1.2	**Ammonium**	**Essential**

Ammonium NH_4

Requirement		**Level**
8.1.3	**Nitrate**	**Essential**

Nitrate NO_2

Requirement		**Level**
8.1.4	**Total P**	**Essential**

Total phosphorus – contains all forms of phosphorus, *i.e.* orthophosphate, condensed phosphate and organic phosphate.

Requirement		Level
8.1.5	**Ortho-P**	**Essential**

Ortho-phosphorus is the chemically active dissolved form of soluble reactive form of phosphorus that is taken up directly by plants.

Requirement		Level
8.1.6	**Dissolved oxygen**	**Essential**

Dissolved oxygen

Requirement		Level
8.1.7	**Chlorophyll A**	**Essential**

The measurement of chlorophyll A is a good predictor for primary productivity and phytoplankton density.

Requirement		Level
8.1.8	**Record keeping for periodic reviews of the water sampling plan based on the most recent complete production cycle.**	**Essential**

The auditor must verify the UoC maintains the correct records of periodic reviews of the water sampling plan and that is it based on the most recent production cycle.

Requirement		Level
8.2	**The unit of certification, with regard to cage production, has measures to prevent excessive impacts in benthic environments. The unit of certification shall consider biological, chemical and physical impacts and additional chemical residues resulting from culture practices.**	**Essential**

Infrastructures, *e.g.* cages, pens, have the potential to impact upon the benthic environment, defined as the environment of or relating to the bottom of a body of water. These impacts can include nutrient enrichment of the substrate with organic products, *i.e.* feces or uneaten feed, alteration of the biodiversity of the benthic environment and

accumulation of chemical therapeutants. The auditor must verify that the UoC has in place measures to prevent negative benthic impacts.

The term 'Feed' is defined in the Section 1.4 – Definitions and Abbreviations.

2.2.4.9. HAZARDOUS SUBSTANCES

Requirement		Level
9.1	**Using toxic and persistent chemical compounds including toxic antifouling paints (*e.g.* TBT, Malachite Green, DDT) is forbidden. The use of permissible substances shall be carried out in compliance with associated safety regulations.**	**Essential**

A hazardous substance can be defined as a material that has the potential to cause harm or loss. There are an inherent hazard associated with aquaculture production and include the risks associated with the use of toxic or persistent chemical compounds used for disinfection of equipment and holding unit, anti-fouling and anti-vegetative substances and pathogen control and treatment. The auditor must ensure that the UoC does not use toxic or persistent chemicals; please refer to FAO National Aquaculture Legislation Overview (NALO) Fact sheets for existing international regulations; http://www.fao.org/fishery/nalo/search/en

2.2.4.10 ENERGY MANAGEMENT

Requirement		Level
10.1	**The unit of certification has measures to improve energy efficiency:**	

The following requirements refer to the measures employed by the UoC to improve energy efficiency.

Requirement		Level
10.1.1.	**An energy efficiency plan is in place to identify all energy sources and their uses.**	**Important**

The Auditor must ensure that the UoC identifies all energy sources and their uses and that it has an 'Energy Efficiency Plan' in place. The energy efficiency plan should be established in accordance with the risk assessment and appropriate records should be kept of energy usage per production site and per production cycle. This plan should be reviewed and updated in case corrective measures are required.

Requirement		Level
10.1.2.	**Record keeping per production site and production cycle.**	**Important**

The Auditor must ensure that the UoC keeps appropriate records of energy usage per production site and per production cycle. The minimum records required are the following: incoming energy sources (distinguished between renewable or not) and energy consumption per process line (culture, processing, transport).

Requirement		Level
10.1.3	**Periodic reviews of the energy efficiency plan based on records for reducing energy consumption per production cycle.**	**Recommendation**

The auditor must verify that the UoC undertakes periodic reviews of the energy efficiency plan based on records and make changes accordingly, in order optimise energy consumption per production cycle.

2.2.4.11 SOCIAL ACCOUNTABILITY

Requirement		Level
11.1	**The unit of certification shall respect human rights, complying with the following requirements:**	

The following requirements refer to social accountability.

Requirement		Level
11.1.1	**Compliance with national regulations and ILO on child labour.**	**Essential**

The auditor shall report evidence that the UoC respects the International Labour Organsiation's (ILO); International Labour Standards on Child Labour https://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/child-labour/lang--en/index.htm#:~:text=The%20fundamental%20ILO%20standards%20on%20child%20labour%20are,work%20at%2018%20%2816%20under%20certain%20strict%20conditions%29.

The auditor must verify that the UoC is in compliance the Minimum Age Convention 1973 (No. 138), specifically "the general minimum age for admission to employment or work at 15 years (13 for light work) and the minimum age for hazardous work at 18 (16 under certain strict conditions). It provides for the possibility of initially setting the general minimum age at 14 (12 for light work) where the economy and educational facilities are insufficiently developed".
https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C138

Requirement		Level
11.1.2	**Pay the employees adequate salaries compliant at least with the minimum legal wages according to the international legal framework.**	**Essential**

The minimum wages vary depending on the country and the Auditor shall verify that the unit of certification is aware of the minimum wages of the countries in which it operates.

Requirement		Level
11.1.3	**Grant employees' access to health care.**	**Essential**

The unit of certification shall have workers' compensation insurance to cover their employees when an illness or injury happens at work. The auditor shall verify that the unit of certification provides, where necessary, measures to deal with emergencies and accidents, including adequate first-aid arrangements.

Requirement		Level
11.1.4	**Apply safety measures required by the law. Nonetheless, compliance with the minimum safety requirements are mandatory, even if not required by local law.**	**Essential**

To assess the minimum safety requirements, the auditor shall verify and collect evidence of hazards and risks in the work environment, dangers to life, safe drinking water, health and safety training and use of Personal Protective Equipment (PPE).

Requirement		Level
11.1.5	**Keep records of accidents or injuries.**	**Important**

The auditor must verify that the UoC keeps records of accidents or injuries and that these records are to take corrective measures and identify the causes of the incidents, preventing future occurrences.

Requirement		Level
11.1.6	**Freedom of association and collective bargaining.**	**Essential**

The auditor shall verify that workers are free to form organizations to bargain collectively, advocate for and protect their rights.

Requirement		Level
11.1.7	**No forced or compulsory labour.**	**Essential**

The auditor must verify that all work, including overtime, is voluntary and that the hours worked in excess of the normal working hours must be remunerated at the rates prevailing in the case of overtime for voluntary labour.

Requirement		Level
11.1.8	**No discrimination.**	**Essential**

The auditor must ensure that the UoC offers opportunities for recruitment, access to training, promotion, compensation, termination and retirement that are not based on race, colour, sex, religion, political opinion, national extraction or social origin. In addition, the auditor must ensure that any physical, verbal or sexual abuse, bullying or harassment are prohibited.

2.2.4.12 LEGAL COMPLIANCE

Requirement		Level
12.1	**The unit of certification operates in compliance with relevant national and local laws regarding:**	

The following requirements refer to the UoC's legal compliance with relevant national and local laws.

Requirement		Level
12.1.1	**Land use and ownership according to a license or permit for farm site and species.**	**Essential**

The auditor must verify that the UoC's land use and ownership is in compliance with the required licence or permit for both the location and species being cultured. See above Section 2 – Location of the site.

Requirement		Level
12.1.2	**Water use, water quality parameters and water discharge.**	**Essential**

The auditor must ensure that the UoC's water use, water quality parameters and discharge are in compliance with relevant national and local laws. See above Section 8 – Management of waters and wastewaters.

Requirement		Level
12.1.3	**Sediment quality parameters and, where applicable, vertical distance from the cages and sediment layer.**	**Essential**

The auditor must ensure that the UoC monitors benthic, sediment quality parameters underneath cage or pen structures and are in compliance with minimum distance of structure from the bottom. See above Section 8 – Management of waters and wastewaters, specifically Section 8.2.

Requirement		Level
12.1.4	**The use of feed, feed additives, feed ingredients and fertilizers.**	**Essential**

The auditor must ensure that the UoC is in compliance with their use of feed, feed additives, feed ingredients and fertilizers. See above Section 5 – Feeding.

Requirement		Level
12.1.5	**The application of chemicals and veterinary drugs and biosecurity aspects.**	**Essential**

The auditor must ensure that the UoC is in compliance with their usage of chemical and veterinary drugs and that they maintain appropriate biosecurity measures. See above Section 7 – Disease prevention and use of veterinary drugs and chemicals.

Requirement		Level
12.1.6	**The use and source of seeds, considering both source and destination laws.**	**Essential**

The auditor must ensure that the UoC is in compliance with their usage of seed, including both source and destination. See above Section 4 – Seeds.

Requirement		Level
12.1.7	**The use of exotic species.**	**Essential**

Exotic species are defined as species occurring outside of their natural range. The main risks of introduction of exotic species are predation or competition of the introduced species and the effect on indigenous biodiversity, which may result in the potential dominance of he introduced species, transmission of pathogens and contamination of the local genetic pool. The auditor must ensure that the UoC does not use exotic species.

Requirement		Level
12.1.8	**The storage of hazardous products and feed.**	**Essential**

The auditor must verify that the UoC has appropriate storage for hazardous products and feed. Even when not required by law, hazardous products, *e.g.* chemicals and fuel, shall be stored in a lockable, labeled facility, limited access by personnel, leakage prevention, and, even when not required by law, feed shall be stored separately from sources of contamination, accurately labeled, keeping medicated and non-medicated feed separate.

Requirement		Level
12.2	**The unit of certification has an Environmental Impact Assessment (EIA). This applies to all production sites, even when not required by law.**	**Essential**

The auditor must ensure that the UoC has in place an Environmental Impact Assessment (EIA). See above Section 1 Management of aquatic systems, specifically Section 1.1.3. and Section 2 – Location of the site, specifically Sections 2.2 - 2.3.

2.2.4.13. RISK ASSESSMENT

Requirement		Level
13.1	**The unit of certification has a science-based risk assessment covering its siting, culture practices, environmental conditions and impacts (including extreme events and other relevant uncertainties), which addresses: seed source, severity potential of reared species, disease transmission, escapes, chemical usage, feed ingredients, animal welfare, habitat functionality, and impact on predators.**	**Essential**

Risk assessment is a core activity of risk management and consists of identifying hazards, analysing and evaluating risks, and outcomes include action plans for risk treatment during the design and operational phases of a production unit (Holmen at al., 2018). The auditor must verify that the UoC has in place a science-based Risk Assessment covering all aspects of potential hazards and risks.

2.2.4.14. WASTE MANAGEMENT

Requirement		Level
14.1	**In order to maintain good culture and hygienic conditions, reduce food and feed safety hazards, as well as minimize**	

	waste, the unit of certification establishes and implements a policy of waste up to the final disposal, in which waste products, sources of pollution, components and methods of management are identified. This policy includes at least the following:	

The following requirements refer to the UoC's waste management policies throughout the production cycle that have been established according to the risk assessment. These should be reviewed in case corrective actions is needed.

Requirement		**Level**
14.1.1.	**Appropriate storage of hazardous, organic and non-biodegradable wastes.**	**Essential**

The auditor must ensure that the UoC has adequate and appropriate storage facilities for any hazardous, organic or biodegradable wastes.

Requirement		**Level**
14.1.2	**Appropriate pest control.**	**Essential**

Pests can be animals, generally rodents or insects, that may contaminate feed or chemicals used or stored on the aquaculture facility. The auditor must ensure that the UoC has in place appropriate pest control.

Requirement		**Level**
14.1.3	**Appropriate domestic sewage disposal.**	**Essential**

The auditor must ensure that the UoC disposes appropriately with any domestic sewage.

Requirement		**Level**
14.1.4.	**Recycling, reuse or reprocessing of all possible materials**	**Essential**

	used during the production cycle, conservation and transport of seafood products up to the final disposal.	

The auditor must ensure that the UoC recycles, reuses or reprocesses all possible materials throughout the production cycle until final disposal.

2.2. Literature

Berg, A., Rødseth, O. M., Tangeras, A. & Hansen, T. J. (2006) Time of vaccination influences development of adherences, growth and spinal deformities in Atlantic salmon (*Salmo salar* L). Diseases of Aquatic Organisms 69, 239-248.

Boyd, C.E. & Schmittou, H.R. 1999. Achievement of sustainable aquaculture through environmental management. Aquaculture Economics and Management. 3: 59-69.

Cattermoul, B.; Brown, D. & Poulain, F. (eds). 2014. Fisheries and aquaculture emergency response guidance. Rome, FAO. 167 pp.

Evensen, O. (2009) Development in fish vaccinology with focus on delivery methodologies, adjuvants and formulations. Options Mediterraneennes Serie A, Seminaires Mediterraneens, 86, 177– 186.

FAO. 2009. Environmental impact assessment and monitoring in aquaculture. FAO Fisheries and Aquaculture Technical Paper. No. 527. Rome, FAO. 57p. Includes a CD-ROM containing the full document (648 pages). http://www.fao.org/3/i0970e/i0970e.pdf

FAO. 2011. Aquaculture development. 6. Use of wild fishery resources for capture based aquaculture. FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 6. Rome. 81 pp. http://www.fao.org/3/BA0059E/ba0059e.pdf

Holmen, I.M., Utne, I.B. and Haugen, S. 2018. Risk assessments in the Norwegian aquaculture industry: status and improved practice. Aquaculture Engineering, 83: 65-75.

Midtlyng, P. J. (1997) Vaccinated Fish Welfare: Protection Versus Side-Effects. In: Fish Vaccinology. Gudding, R., Lillehaug, A., Midtlyng, P. J. & Brown, F. (eds): Developments in biological standardization, vol. 90, pp. 371-379. Basel, Karger.

OIE Aquatic Animal Health Code (2019)
https://www.oie.int/en/standard-setting/aquatic-code/access-online/