code of good practice

Code of good practice:
Freshwater Tanks, Ponds & Raceways

Chapter 2: Freshwater Tanks, Ponds & Raceways

Reading the Code

The Code of Good Practice for Scottish Salmonid Aquaculture (CoGP) comprises seven chapters, each relating to an operational area of salmonid aquaculture:

1. Broodstock
2. Freshwater Tanks, Ponds and Raceways
3. Freshwater Lochs
4. Seawater Lochs
5. Seawater Tanks
6. Processing Sites
7. Headquarters.

Each chapter sets out compliance points related to that specific operational area, which are grouped into sections by type. These sections are:

- Documents and Training
- Food Safety and Consumer Assurance
- Fish Health and Biosecurity
- Managing and Protecting the Environment
- Fish Welfare and Care
- Feed and Feeding
- Fallen Stock Management.

By setting the Code out as individual chapters, all sectional requirements which are critical for that area of operation are grouped together. Only those requirements which relate to the specific section are presented in each chapter.

A supplementary document, designed to assist the internal audit process, is available on request. It lists all sections and their compliance points in chronological order and is filterable by chapter.

Info Box:

Many of the activities carried out in freshwater tanks, ponds and raceways are regulated under European, UK and Scottish law. The requirements set out below are additional to legal requirements.

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7.3 Not included in this chapter

Compliance Points

Section 1:	Documents and Training
1.1	**Document Control**
1.1.1	Documents, records and other information relevant to the management of fish farming operations should be held and effectively controlled.
1.1.2	All documents should be the current version and be properly authorised.
1.1.3	All documents should be clearly written, contain sufficient details for the purpose and be readily accessible to the relevant personnel.
1.1.4	Reasons for amendments to, and replacement of, documents should be recorded.
1.1.5	All documents should be retained for an appropriate time and be available for inspection.
1.2	**Training**
1.2.1	Individuals should receive training relevant to their role.
1.2.2	Procedures should only be carried out by properly trained and competent personnel, or personnel in-training who are being supervised by an appropriate member of staff.
1.2.3	Documented evidence of training of individuals in relevant areas should be maintained. This includes, but is not limited to, areas such as: Fish Handling, Health and Safety, Sea Lice Management & Identification, Plankton identification, Vaccination, Boat Handling and operations.
1.2.4	Training of vaccinators should be carried out to British Veterinary Association or a similar, recognised, veterinary standard.
Section 2:	**Food Safety and Consumer Assurance**
2.1	**Use of Licensed and Approved Treatments**
2.1.1	Veterinary medicines should be used prudently under the conditions set out in the data sheet and/or as advised by the veterinary surgeon. [3b, 4k]

2.2	**Traceability to Farm and Enclosure of Origin**
2.2.1	Traceability records for eggs and fish should be maintained throughout production processes. [3f]
2.3 – 2.5	Not included in this chapter.
Section 3	**Fish Health and Biosecurity**
3.1	**Key Principles of fish health and biosecurity management**
3.1.1	Companies should have a Veterinary Health & Welfare Plan (VHWP) and Biosecurity Management Plan (BMP) covering relevant aspects, as set out in Annex 2.
3.1.2	VHWPs and BMPs should be reviewed at the end of each production cycle.
3.1.3	All staff engaged in the production of fish should be familiar with relevant aspects of the VHWP and BMP.
3.1.4	Risk assessments should be conducted by trained personnel experienced in the appropriate methodology (see Annex 3).
3.1.5	The outcome of risk assessments should be communicated to relevant production personnel and other personnel responsible for implementing the outcomes.
3.1.6	Farmers should reduce any risk to fish health associated with the presence of wild birds, mammalian predators and vermin by ensuring the secure storage of feed, good feeding practice and the secure, temporary, storage of dead fish.
3.1.7	Companies should have written procedures to ensure that production staff notify fish health teams immediately, and management where appropriate, when disease is suspected, where abnormal behaviour is evident, or where morbidity or mortality levels are unusually high or subject to rapid increase.
Info Box: Good hygiene practice includes the conduct and hygiene of personnel and visitors, their personal clothing, personal protective equipment and other equipment used by them on site.	
3.1.8	Personnel and visitors to sites should be made aware of the role they play in minimising the risk of disease transmission by following good hygiene practice and procedures.
3.2	**Removal and Disposal of Dead or Moribund Fish**
Info Box:	

<table>
<tr><td colspan="4">Disposal of dead fish is the subject of EU, UK and Scottish legislation.</td></tr>
<tr><td>3.2.1</td><td colspan="3">Where possible (e.g. subject to safe operating conditions), fish should be inspected daily and dead and moribund fish removed, whilst minimising handling to avoid stress to healthy fish within the enclosure.</td></tr>
<tr><td>3.2.2</td><td colspan="3">Where problems are identified during an inspection, prompt remedial action should be taken in accordance with the VHWP and BMP to determine the cause and deal with the problem including, where appropriate, consultation with a veterinary surgeon or fish health specialist.</td></tr>
<tr><td>3.2.3</td><td colspan="3">At all stages the number of dead fish should be recorded together with a record of the cause of death, where possible.</td></tr>
<tr><td colspan="4">Info Box:

It is acknowledged that certain planned events in hatcheries result in potentially significant mortality rates. These include ‘shocking’ eggs and ‘first feeding’ fry. There is no requirement to notify the Marine Directorate’s Fish Health Inspectorate unless the operator has concerns around the outcomes of these two events.</td></tr>
<tr><td>3.2.4</td><td colspan="3">Where the level of fish mortality exceeds the applicable threshold below, this should be notified in a timely manner to Marine Directorate's Fish Health Inspectorate and the veterinary surgeon who has the fish under their care.</td></tr>
<tr><td></td><td>Egg to First Feed</td><td>10 weeks</td><td>6% weekly</td></tr>
<tr><td></td><td>First Feed to 5g</td><td>10 weeks</td><td>3% weekly</td></tr>
<tr><td></td><td>5g to Smolting</td><td>20 weeks</td><td>1.5% weekly</td></tr>
<tr><td>3.2.5</td><td colspan="3">In the event of a disease outbreak, subject to safe operating conditions, dead fish should be removed daily.</td></tr>
<tr><td>3.3</td><td colspan="3">New Production Farms: Proximity to Existing Broodstock Sites</td></tr>
<tr><td>3.3.1</td><td colspan="3">All new production farms, pens, and marine-linked land-based sites should be sited based on the results of a thorough, documented, risk assessment which considers environmental parameters including, but not limited to, tidal excursions, the regional hydrodynamic and potential site linkages.</td></tr>
<tr><td>3.4</td><td colspan="3">Broodstock Origin</td></tr>
<tr><td>3.4.1 – 8</td><td colspan="3">Not included in this chapter.</td></tr>
<tr><td>3.5</td><td colspan="3">Importation of Gametes and Fertilised Eggs</td></tr>
</table>

Info Box It is acknowledged that risks to fish health associated with the movement of gametes and fertilised eggs are lower than risks associated with the movement of live fish.	
3.5.1	Companies proposing to import eggs for the first time from overseas should visit the sites on which the eggs are produced and audit the procedures being followed on these sites to satisfy themselves that good practice and appropriate risk management are being followed. [4c]
3.5.2	Proposals to import gametes and fertilised eggs should be underpinned by a documented risk assessment. A decision to import should only be taken if the outcome of the risk assessment is satisfactory (see Annex 3). [4c]
3.5.3	In all cases, written evidence should be provided that eggs have been properly disinfected. [4c]
3.5.4	Water and packaging which has come into contact with imported eggs should be properly disinfected and disposed of by an approved method. [4c]
3.6	**Importation of Live Salmonids**
Info Box: The importation of live salmonids is the subject of UK Legislation. The provisions set out below are in addition to legal requirements.	
3.6.1	Companies proposing to import live salmonids from overseas should visit the sites on which the fish are being produced and audit the procedures in operation to satisfy themselves that good practice is being followed.
3.6.2	Proposals to import live salmonids should be underpinned by documented risk assessments.
3.6.3	A decision to import should only be taken if the outcome of the risk assessment is satisfactory.
3.6.4	Risk assessments should take into account the potential to introduce Gyrodactylus salaris.
3.6.5	Farmers should hold on record appropriate, independent certification to demonstrate that any salmonids to be imported are free from pathogens.
3.6.6	Farmers should hold records to demonstrate that salmonids to be imported have been vaccinated, where this is appropriate.

3.6.7	Live salmonids should not be imported from countries of lower health status.
3.6.8	To ensure no erosion of the health status of fish in the Scottish jurisdiction, an exception to the foregoing will only be acceptable under very specific circumstances, where no other suitable source of fish is available. Where this is the case, the following condition(s) should be met: 1. The company has suffered an acute, significant, and unforeseen challenge which has materially impacted the company's ability to put smolt to sea using existing smolt capacity. It is unacceptable to propose importation of live salmonids from countries of lower health status to facilitate company growth. 2. Where a company needs to identify a new source of smolt supply and is considering importation from an approved zone or compartment within a country of lower health status, contact should first be made with Scottish producers to establish availability from within Scotland and to consider options. 3. Operators receiving such applications should consider them favourably and facilitate supply options to operators who are considering the import of smolt from countries of lower health status. 4. Documented evidence should be provided which demonstrates that the operator's existing production requirements cannot be met from existing and suitable UK sources or from countries of a similar or higher health status. Due to commercial confidentiality, there is no expectation on operators to share details of their production plans with other operators. 5. Prior to each importation, the importing company should visit the site(s) on which fish are being produced and audit the procedures in operation to satisfy themselves that good practice is being followed. 6. The operator wishing to import live salmonids should notify and seek written approval from the relevant trade bodies.
3.6.9	Following the importation of live salmonids from zones or compartments within countries of lower health status, the following conditions should be met: 1. Imported live salmonids should be contained, for no less than three months, on farms which are no less than two tidal excursions from other defined salmon producing areas. 2. For no less than three months after importation, fish should be tested at weekly intervals for parasites and listed, notifiable and other potentially serious diseases. 3. For no less than three months after importation, all boat movements off the farm holding the fish should be subject to appropriate disinfection. 4. During the initial three-month containment period, the owners of the imported fish should make all other operators aware of where imported live salmonids are being held/farmed. 5. Testing for listed, notifiable and other potentially serious diseases should be carried out on all dead fish and any fish showing signs of morbidity. 6. If any listed, notifiable or other potentially serious diseases are identified, all fish should be culled in a timely manner, and the farm fallowed.

	7. Imported fish should only be positively released from initial containment farms where the results of health tests have been negative. 8. Where fish cannot be positively released from the containment farm, measures to deal with the fish should be in accordance with OIE and Marine Directorate guidance. 9. Following importation, movements of imported live salmonids should only take place on the basis of a satisfactory outcome from a documented risk assessment (Annex 3). 10. Following importation, movements of imported live salmonids should only take place after the owner of the fish has notified salmon farmers operating within two tidal excursions of their new destination and their planned route to that destination. 11. Any well boat movements of imported fish should take place with closed wells on the wellboat.
3.6.10	All risk assessments, independent health certificates and vaccination records relating to live salmonids imported from countries of a lower health status should be shared with the appropriate trade body.
3.7	**Disease Control: Stripping and Production of Gametes**
3.7.1 – 6	Not included in this chapter
3.8	**Broodstock Movements**
3.8.1 – 8.5	Not included in this chapter.
3.9	**Site Disinfection**
3.9.1	Enclosures (pens, tanks etc) should be cleaned/disinfected when empty, along with associated equipment.
3.9.2	Disinfection should be conducted to a level sufficient to inactivate pathogens considered to pose significant risk (Annex 4).
3.10	**General Criteria Applying to All Fish Movements**
3.10.1	Decisions to stock sites or move fish should be based on an acceptable outcome from a documented risk assessment.
3.10.2	Fish should receive a general health check prior loading for transfer and be in good condition when loaded.
3.10.3	General health check (above) should be performed by relevantly trained staff, documented, and records maintained.

3.10.4	During transfer, all efforts should be made to ensure factors likely to stress fish are minimised. [6a] Examples of potential actions taken include: • Documented risk assessment prior to transport • Managing oxygen whilst in transport • Managing any crowding appropriately
3.10.5	The number of different sources of fish used to stock sites should be kept to a minimum.
3.11	**Ongrowing and Transfer**
3.11.1	As far as is reasonably practicable in freshwater ongrowing areas, personnel, equipment and personal protective equipment should be site specific. [6a]
3.11.2	Where movement between freshwater ongrowing areas is unavoidable, cleaning and disinfection should, as far as is reasonably practicable, be in accordance with the Standard Disinfection Protocols (see Annex 4).
3.11.3	Helicopter buckets, vehicles and road transport equipment used for fish transfer should be cleaned and disinfected, (see Annex 4).
3.11.4	Documented evidence of disinfection should be obtained from those responsible for transportation.
3.11.5	Salmonid aquaculture sites should contain only one commercial species. An exception to this is the cohabiting of salmon/trout with cleaner fish such as wrasse and lumpsuckers on marine sites or seawater tanks.
3.11.6	As far as is reasonably practicable in marine FMAs, personnel, equipment and personal protective equipment should be site specific. [4h]
3.12 – 20	Not included in this chapter.
3.21	**Harvesting Operations**
3.21.1	The method used to crowd, remove and harvest fish should be assessed for the risk of escapes and, where appropriate, contingency arrangements put in place to minimise the risk.
3.21.2	Not included in this chapter.
3.21.3	Not included in this chapter.
3.21.4	Bleeding of fish should take place on a facility where the blood water is contained.
3.21.5	Blood water and effluent should be contained and disinfected to minimise the risk of spread of pathogens.

3.21.6	Appropriate containment measures should be in place to prevent the leakage of blood water from bins, etc.
3.21.7	Harvest bins should be checked for damage, thoroughly cleaned and disinfected between operations.
3.21.8	Equipment used for on-site harvesting should be dedicated to individual sites or, if moved between sites, thoroughly cleaned and disinfected before being moved.
3.21.9	At the end of each period of harvesting, all equipment should be thoroughly cleaned and disinfected.
3.21.10	All activities involving movement of fish, cleaning and disinfection of bins and equipment should be recorded and the records retained for an appropriate time.
3.22	**Biological Vectors of Fish Disease: Birds and Mammals**
3.22.1	Transmission of infectious agents by birds and mammals should be minimised through:[6h, 6i, 6j] • Measures designed to exclude birds and mammals from areas where farmed fish are held • Hygienic procedures for handling dead fish • Feeding practices that minimise wastage.
3.23 – 3.28	Not included in this chapter.
3.29	**Use of Medicinal Products**
Info Box: All the veterinary medicines currently licensed for the treatment of salmonids are Prescription Only Medicines (POMs). As such, they must be prescribed by a veterinary surgeon and used under his/her instructions.	
3.29.1	VHWPs and BMPs should include relevant aspects of medicine and vaccine use. [4k, 4m]
3.29.2	When medication is to be applied, clear written instructions on the use of the medicine should be obtained and effectively communicated to the personnel responsible for its application.[4k]
3.29.3	Where the recommended course of treatment at the correct dosage cannot be completed, a treatment may be curtailed. Where treatment is terminated early, this should be recorded and further advice sought from the veterinary surgeon.[4k]
3.29.4	To avoid the possibility of contamination of unmedicated feed with medication, feed bins or hoppers should be emptied and cleaned or emptied and flushed with appropriate volumes of feed that can only be fed to the population the prescription was originally written for (i.e. the medicated population).[4k.]

3.29.5	Anyone administering a medicine must follow what is written in the prescription. The veterinary surgeon or other person supplying the product should also advise on the correct withdrawal period. Where there is a lack of clarity on any areas of the prescription, the appropriate veterinary surgeon should be contacted. [4k]
3.30	**Vaccination**

Info Box:

As is the case with most terrestrial food producing animals, vaccines are used in fish farming in Scotland to help prevent or mitigate the effects of a range of bacterial and viral diseases. Vaccination of Scottish salmon is now normal practice, and this has had a demonstrable effect in maintaining high standards of fish health. In the case of the vaccines used against bacterial diseases, these have also had a very significant effect in minimising the need for antibiotic use. Most vaccination takes place in freshwater. Good practice in vaccination is described in 'Responsible use of vaccines and vaccination in fish production' published by the Responsible Use of Medicines in Agriculture Alliance (RUMA).

3.30.1	Where appropriate, VHWPs and BMPs should include a vaccination regime to protect fish from diseases which may present a risk to their health. [4k]
3.30.2	Farmers should develop documented SOPs to be followed when vaccinating populations of fish. [4m]
3.30.3	There should be an SOP that draws on information supplied by the prescriber and vaccine manufacturer, along with any guidance prepared by third parties. [4m]
3.30.4	If a vaccination contractor is engaged, SOPs should be mutually agreed and specify responsibilities of all parties involved. [4m]

Info Box:

Vaccines must be used and stored in accordance with the manufacturer's Data Sheet and/or the advice of the person prescribing the vaccine. Vaccines for use in Scottish salmon are categorised as either POM-V or POM-VPS; however, only a veterinarian may prescribe any vaccine for use out with the conditions of its Marketing Authorisation, which may include use in fish of a specific size or within a temperature range.

3.30.5	Feeding should be withdrawn from fish to be vaccinated for an appropriate period, in accordance with Data Sheet recommendations and fish welfare guidance. [4m]
3.30.6	Fish should be appropriately graded in preparation for vaccination. [4m]

Info Box:

The temperature of the water in which vaccinated fish are held pre- and post- vaccination will often have an important bearing on the effectiveness of the vaccine and the protection it confers.

3.30.7	The temperature of the water in which fish are held should be recorded in the week leading up to vaccination, and for a period (as indicated by product Data Sheets) afterwards. [4m]
3.30.8	Vaccination equipment should be maintained and used in a hygienic manner. [4m]
3.30.9	In the immediate lead-up to vaccination operations, all machinery, equipment, tables, vaccination kit, PPE and other materials to be used should be checked to ensure that all that is required is available and fit for purpose. Where companies utilise external equipment, declarations can be sought and held on record. [4m]
3.30.10	The relevant SOP for automated vaccination equipment should state that it is manned at all times whilst in operation. [4m]
3.30.11	An appropriate regime for monitoring fish welfare during automated vaccination should be included in the relevant SOP. [4m]
3.31	**Where Vaccination Equipment is Brought On Site from Elsewhere**
3.31.1	Equipment should be disinfected appropriately. The supplier should provide proof that the equipment has been appropriately disinfected, and equipment should be disinfected before and after use. Records should be kept.
3.31.2	To verify that vaccines have been applied in an optimal manner, that they have assisted in achieving the required protection against the relevant pathogen(s), and to demonstrate that the health and welfare of the vaccinated fish remain good, fish should be examined at appropriate intervals during the procedure and after vaccination.

Info Box:

Records must be kept of all vaccination procedures conducted on site and must include the following information:

- Date of vaccination
- Identification of the batch(es) of fish vaccinated
- Vaccine used (including batch numbers and method of application)
- Details of dosage.

3.31.3	Any suspicion of adverse effect should be immediately reported to the person who prescribed the vaccine.
3.32	**In Addition to the Legal Requirements Above**
3.32.1	The method of vaccination (e.g. manual, machine-assisted, fully automated) should be recorded.
3.32.2	The names of the personnel involved should be recorded.

3.33	**Adverse Events**
Info Box: Certain responsibilities are associated with adverse events arising from veterinary medicine use. Summaries of these are available from the VMD and the National Office of Animal Health.	
3.33.1	Farmers should report and record adverse events, both in fish being treated and in persons involved in the application of a treatment.
3.34.1 – 15	Not included in this chapter.
4	**Managing and Protecting the Environment**
4.1 – 4.2	Not included in this chapter
4.3	**Redundant Equipment and Waste Materials**
4.3.1	All waste materials such as feed bags, etc. should be carefully collected, properly segregated, stored and recycled or disposed of by an approved means within a defined timescale.
4.3.2	Not included in this chapter.
4.4	**Noise**
4.4.1	Farmers should ensure that equipment that creates significant noise (air blowers, generators, etc.) is suitably muffled to prevent unacceptable disturbance to wildlife or people. Local Environmental Health departments may be consulted for advice.
4.5	**Lights**
4.5.1	The appropriate use of surface and submerged lights on pen sites should seek to minimise any local issues.
4.6	**Odours**
4.6.1	Farmers should ensure that offensive odours that might arise from farming activities are strictly managed and minimised. Local Environmental Health departments may be consulted for advice.
4.7	**Containment: Environmental Assessment**
4.7.1	Weather permitting, and having regard to health and safety conditions, daily visual inspection of the holding units should be carried out to ensure containment of the stock.

4.7.2	Not included in this chapter.
4.7.3	Existing sites should have SOPs which are based on risks identified. These may include risk assessments that consider the impact of the following: • Fish handling and transport • Failure of utility services, structures, equipment • Predators • Weather - flood, wind, snow, ice • Collision • Pollution • Mass stock kill event • Fire • Intruders
4.7.4	Farmers should identify and hold contact details for other relevant stakeholders sharing the same water catchment, e.g. other finfish farms, fishing interests, leisure water sports, hydro-electric production, public drinking water or other abstraction schemes. [5c]
4.8	**Containment: Design and Construction**
Info Box: The Scottish Technical Standard (STS) determines the technical requirements for fish farm equipment. It has been designed to be appropriate and proportionate for the Scottish finfish farming industry and applies to the farming of all species of finfish in Scotland. It should be applied alongside operational procedures, codes of practice, operator's manuals and the training of staff to ensure equipment is used and maintained appropriately and that procedures are followed correctly. All operators should be working towards full compliance with the standard.	
4.8.1	If an existing farm is in a location where it is likely to be affected, suitable flood defences should be in place to prevent the escape of any stock. [5c]
4.8.2	Farmers operating land-based aquaculture systems should have effective measures in place to prevent stock from jumping out of the holding facilities and making their way into surface waters or natural water courses. [5c]
4.8.3	All reasonable measures should be put in place to screen the water inflow to the aquaculture system to prevent the ingress of wild fish, while still allowing them to return to their natural environment. [5c]
4.8.4	Inflow systems should also be designed to prevent any upstream escape of farm stock. [5c]
4.8.5	Screen sizes and configuration should be capable of containing the entire range of fish sizes contained within the unit in every instance. [5c]

<table>
<tr><td>4.8.6</td><td>The farmer should be aware of the minimum fish size supplied where new stock is introduced: [5c]</td></tr>
<tr><td></td><td>
<table>
<tr><td colspan="2">Guideline Minimum Fish Size vs Mesh Size: Trout</td></tr>
<tr><td>Minimum Fish Size (g)</td><td>Maximum Screen Size or Aperture (mm)</td></tr>
<tr><td>0.2</td><td>2</td></tr>
<tr><td>0.8</td><td>3</td></tr>
<tr><td>3.0</td><td>6</td></tr>
<tr><td>10</td><td>8</td></tr>
<tr><td>30+</td><td>12.5</td></tr>
<tr><td colspan="2">Guideline Minimum Fish Size vs Screen Size: Salmon</td></tr>
<tr><td>Minimum Fish Size (g)</td><td>Maximum Screen Size or Aperture (mm)</td></tr>
<tr><td>0.2</td><td>2</td></tr>
<tr><td>0.8</td><td>3</td></tr>
<tr><td>3.0</td><td>4</td></tr>
<tr><td>10</td><td>8</td></tr>
</table>
</td></tr>
<tr><td>4.8.7</td><td>Screen integrity should be inspected daily and any necessary action taken. [5c]</td></tr>
<tr><td>4.8.8</td><td>Records of inspections and any remedial action required should be maintained. [5c]</td></tr>
<tr><td>4.8.9</td><td>Screens should be constructed from suitably strong and robust material to ensure they are fit for purpose. [5c]</td></tr>
<tr><td>4.8.10</td><td>The water leaving a land-based aquaculture system should incorporate two screens between the fish holding unit and the outflow of a suitable size and construction to prevent the passage of fish in all potential water conditions. [5c]</td></tr>
<tr><td>4.8.11</td><td>Screening should be configured to enable changing of screens without any potential escape of stock. [5c]</td></tr>
<tr><td>4.8.12 – 24</td><td>Not included in this chapter.</td></tr>
<tr><td>4.9 – 4.14</td><td>Not included in this chapter.</td></tr>
<tr><td>4.15</td><td>Second-hand Equipment</td></tr>
<tr><td>4.15.1</td><td>Farmers should have documented records for the selection, preparation and installation of second-hand pens and mooring equipment to ensure they are fit for purpose.</td></tr>
<tr><td>4.16</td><td>Fish Handling and Transfer</td></tr>
<tr><td colspan="2">Info Box:

The risk of escape is increased during procedures such as fish input, grading, vaccination and transfer of fish within and between sites.</td></tr>
</table>

4.16.1	Prior to handling fish, the integrity of all handling equipment should be checked, including pipelines, pumps, transport tanks, graders, counters and vaccination stations.
4.16.2	Checks should also include suitability during adverse weather conditions, where this is appropriate.
4.16.3	The use of safety nets, secondary pipe joint security devices or other forms of bunding is recommended at potential risk points, such as pipe connections.
4.16.4	A documented risk assessment, a Standard Operating Procedure and a contingency plan should be in place before any such procedure is followed, and nets should be checked for tears or damage.
4.17	**Helicopter Operations**
4.17.1	Helicopter operations will be accompanied by a documented risk assessment which includes, but is not limited to: • Appropriate checks on receiving farms equipment • Named person responsible for operation • Safety briefing from ground or helicopter pilot
4.18	Not included in this chapter.
4.19	**Failure of Containment**
Info Box: Guidance on what to do in the event of an escape is available on the Marine Directorate website.	
4.19.1	Farmers should have site-specific contingency plans that describe actions to be taken in the event of any escapes.
4.19.2	All farm staff should be aware of factors affecting the potential breaches of containment and trained in actions to take in the event of an escape.[5c]
4.19.3	Weather permitting, and having regard to health and safety conditions, daily visual inspection of the holding units should be carried out to ensure containment of the stock. [5c]
4.19.4	Any escape, or suspected escape, of live fish should be reported immediately to all relevant stakeholders, including the relevant trade body, the local District Salmon Fishery Board and Fisheries Trust (or at the latest, within 48 hours of discovery). [5c]
4.19.5	A decision to attempt to recapture fish and the method to be employed should be agreed with the local District Salmon Fishery Board and Fisheries Trust and permission sought from the Marine Directorate. [5c]

Info Box:

The salmon farming sector and Fisheries Management Scotland have collaborated to develop a framework, to contribute to wild salmonid conservation in river catchments adjacent to areas where escape events of farmed fish have occurred.

The objective of the framework is to ensure that such contributions are applied to best effect. The management and provision of funds for wild fisheries projects will be overseen by a single purpose company, The Salmon Interactions Association.

The reporting of escapes is covered by statutory and non-statutory controls, including those in this Code. An escape does not, per.se, indicate (or imply) any environmental impact nor any wrongdoing on the part of the farmer (which would then be the subject of statutory controls). The provisions herein have been established collaboratively, by the salmon farming sector and wild fishery management organisations responsible for the governance of migratory salmonid populations, to provide support for conservation projects following an escape.

These provisions do not apply in circumstances where an escape has arisen through malicious activity, vandalism and / or the intentional release of fish by a third-party.
It is agreed that the provisions herein do not apply where a contribution made following an escape would place a business risking financial pressure onto a salmon farming company, as determined in consultation with The Salmon Interactions Association.

14.19.6	Following a confirmed escape from a salmon farm, and at the direction and discretion of The Salmon Interactions Association, the relevant farmer should make a financial contribution to The Salmon Interactions Association, calculated in accordance with figures contained in the table below (4.19.7).
14.19.7	Contributions to the Salmon Interactions Association should be made according to the number of salmon that have escaped, as defined in the table below:

Number of Escaped Salmon	**Amount**
1 - 50	£500
51 – 200	£1000
201 – 500	£2500
>501	£5 per fish, up to a capped maximum of £50,000

Info Box:

Local fisheries organisations are defined as Members of Fisheries Management Scotland including River / Fishery / Waters Trust and District Salmon Fishery Boards, where present.

14.19.8	The salmon farmer and relevant local fisheries organisation(s) should collectively determine whether the escape was deemed to be significant, taking full regard for guidance provided by The Salmon Interactions Association.
14.19.9	Where the farmer and relevant local fisheries organisation(s) cannot reach consensus on whether an escape was significant, The Salmon Interactions Association should decide.
Info Box: It is acknowledged that repeated introgression studies, including in a specific location, may not be needed or appropriate, including if they demonstrate no or negligible levels of introgression.	
14.19.10	For any escape that is deemed to be significant, the farmer should contribute to an introgression study, if this is deemed necessary by the local fisheries organisation(s), the farmer and The Salmon Interactions Association.
14.19.11	If an introgression study demonstrates clear and increased introgression (as determined by The Salmon Interactions Association), a further contribution should be made by the farmer (based on the number of fish escaped) to The Salmon Interactions Association for two further years following the escape.
14.19.12	As an exception to the foregoing (4.19.11), the farmer and the local fisheries organisation(s) may agree to a contribution for two further years, following an escape, in lieu of an introgression study (4.19.10). In this instance, the farmer should make a contribution (based on the number of fish escaped) to The Salmon Interactions Association for two further years following the escape.
14.20	Not included in this chapter.
5	**Fish Welfare and Care**
5.1 – 5.3	Not included in this chapter
5.4	**Backing Up a Farm**
5.4.1	Where appropriate, there should be emergency back-up systems to maintain a high standard of water quality.
5.5	**Design and Planning of Farms, Equipment and Operating Systems**
5.5.1	Equipment and farm design should protect the fish from predators and vermin.
5.5.2	Equipment should be designed in such a way as to avoid creating welfare problems for the fish.

5.5.3	Equipment should be capable of being cleaned and disinfected.
5.5.4	Contingency plans should be in place in case of failure of the water supply or of equipment which is critical to the welfare of the fish.
5.5.5 – 5.5.6	Not included in this chapter.
5.6	**Water Supply and Quality**
5.6.1	Monitoring should be carried out to ensure that water quality parameters are maintained within the known acceptable limits for the species. The parameters measured and the monitoring intervals will depend on the system, species, stage of development and time of year.
5.6.2	Where water quality parameters are out with the acceptable range, steps should be taken to identify the cause and put in place remedial action as soon as possible.
5.6.3	Where appropriate, automatic equipment fitted with alarms should be used to monitor water quality.
5.6.4	Where the welfare of the fish is critically dependent on air/oxygen supply or pumped water, automatic oxygen and water level monitoring equipment should be used.
5.6.5	Aeration/oxygenation/water level monitoring equipment should be fitted with alarms and backup systems which are tested daily.
5.6.6	Automatic and emergency back up and monitoring equipment should be routinely inspected, calibrated and serviced, in accordance with manufacturer's recommendations.
5.6.7	Farmers should be familiar with water quality parameters for their stock and be able to recognise visual and behavioural indicators of inadequate water quality.
5.7	**Lights**
5.7.1	Levels of light to which fish are exposed should be appropriate to the salmonid's stage of development, optimal for welfare, and its use based on sound research/specialist advice/practical experience.
5.7.2	Sudden changes in light levels should be avoided wherever possible.
5.8	**Inspection and Testing**
5.8.1	Weather permitting, and having regard to health and safety conditions, equipment should be visually inspected daily.
5.8.2	Significant defects should be immediately recorded and reported to supervisors.

5.8.3	Reported defects should be immediately rectified and, where this is not possible, alternative measures put in place to safeguard fish welfare.
5.9	**Predator Control: General**
Info Box: Predator management requires a site-specific approach. Various management options are available for the control of predators. However, it is acknowledged that not all control options will be suitable for all farm situations. Some aspects of predator management are subject to UK and European legislative controls. Consequently, predator management plans may be subject to regional restrictions.	
5.9.1	Farms should have a site-specific predator management plan.
5.9.2	Farmers should document sightings of relevant predators in the vicinity of farms.
5.10	**Stockmanship and Husbandry**
5.10.1	Farmers should be able to recognise indicators of reduced welfare in fish, including abnormal behaviour, physical injury and symptoms of disease, and take remedial action if such indicators are apparent.
5.11	**Handling Live or Unconscious Fish**
5.11.1	Live fish should only be removed from water and handled when absolutely necessary.
5.11.2	Adequate support should be given to the body when fish are handled.
5.11.3	Live fish should never be held by the gills or tail only.
5.12	**Hand Nets**
5.12.1	Hand nets should be kept clean, disinfected and in good repair.
5.13	**Assessing Suitability for Transfer to Sea**
5.13.1	The principles of assessing smoltification should be incorporated into the VHWP.
5.13.2	Prior to the transfer of juvenile Atlantic salmon to sea, smolts should be checked and all relevant data recorded.
5.13.3	Farmers should assess smoltification of fish using a suitable, evidenced test.
5.13.4	Fish should not be exposed to salt concentrations greater than 35 ppt.

5.13.5	Saltwater tolerance tests can be aversive in non-smolting fish. Farmers should immediately kill any moribund fish and terminate the test if fish begin to show signs of distress.
5.14	**Crowding**
5.14.1	Personnel should adhere to a written procedure for crowding of fish.
5.14.2	The frequency and duration of crowding should be kept to the minimum.
5.14.3	Not included in this chapter.
5.14.4	Farmers should monitor fish behaviour during crowding and act if fish show signs of stress or damage.
5.14.5	Farmers should monitor oxygen levels during crowding and take corrective action if levels fall below a critical point.
5.15	**Marking**
5.15.1	External marking methods that cause distress or injury to farmed fish should not be used.
5.16	**Stocking Density**
Info Box: As a rule, stocking density may be adjusted in line with the biological and behavioural needs of fish having regard to the prevailing environmental conditions and, in particular, water quality. The farming system in which the fish are held and the ability to maintain high standards of water quality are important defining factors in determining optimum stocking density.	
5.16.1	Stocking density should be monitored in relation to fish health, fish behaviour and water quality to ensure that fish welfare is not compromised.
5.16.2	Immediate attention should be taken where any problems relating to stocking density arise.
5.17	**Grading**
5.17.1	Details of planned frequency and procedures for grading should be part of the VHWP.
5.18	**Transport of Live Fish**
5.18.1	Fish should be crowded and transported in such a way that possible adverse effects on their welfare are minimised.

5.18.2	Biosecurity and fish welfare should be considered before transporting fish populations and covered in the VHWP and BMP.
5.18.3	For transport, oxygen monitoring should be carried out with sufficiently frequent monitoring intervals.
5.18.4	Control systems for oxygenation of water should be such that adjustments may be made timeously to ensure that oxygen levels always remain within safe limits.
5.18.5	Supplementary oxygen or air should be sufficient to last longer than the anticipated length of the journey, including helicopter transport.
5.18.6	Excessive or rapid changes in water temperature or pH in transport tanks should be avoided.
5.18.7	Any fish that die during transportation should be separated from live fish as soon as possible after arrival and the cause of death determined by a competent person.
5.18.8	Transport water should not be discharged enroute directly into natural water courses.
5.19	**Harvest and Culling**
5.19.1	Crowding fish prior to harvesting should be for the minimum time possible, especially where more than one crowding session is necessary to complete the harvest.
5.19.2	Killing efficiency should be monitored by a proficient person to ensure fish do not regain consciousness prior to death.
5.19.3	Arrangements for emergency culling should be addressed in the VHWP and BMP.
6	**Feed Formulation**

Info Box:

Fish feed manufacturing is a specialist sector of the feed manufacturing industry. Fish Farmers generally source their feed through specialist commercial suppliers, who must operate within the relevant feed legislation and strict regulatory controls. That situation is reflected in this section of the CoGP.

6.1	**Feed Formulation**
6.1.1	Farmers should ensure, through labelling information or documentary assurance, that they use feeds that have been formulated for the species and life stage of fish being grown.

6.1.2 - 4	Not included in this chapter.
6.2	Not included in this chapter.
6.3	**Use of Feed**
6.3.1	Farmers should have a written feed management plan, or a digital system, which includes/tracks the following: • Feeding the correct feed size • Feeding the correct amount of feed to any population of fish, in the proper manner and over the correct period(s) of the day • Regular monitoring of feed conversion efficiency (following sample weighing), and assessment of whether feeding protocols and guidelines to assist farm personnel are effective.
6.3.2	Not included in this chapter.
6.4	**Withholding Feed**
Info Box: Feed withdrawal may form part of the response to the onset of adverse environmental conditions. It may also form part of the strategy to help in the treatment of certain diseases (e.g. pancreas disease in Atlantic salmon).	
6.4.1	Before any relevant handling event, feed should be withheld.
6.4.2	Veterinary advice should be sought on feed withdrawal with, as appropriate, feed withdrawal protocols being included in the VHWP.
6.4.3	The period during which fish are deprived of food to achieve gut clearance prior to certain procedures or harvesting should be appropriate to the temperature.
6.4.4	Not included in this chapter.
6.5	Not included in this chapter.
7	**Fallen Stock Management**
7.1	Not included in this chapter
7.2	**Fallen Stock Collection**
7.2.1	Closed, secured and labelled transport/storage containers should be used at all times where fallen stock is transported after collection from the production unit to any storage facility (temporary or otherwise).
7.2.2	Not included in this chapter.

7.2.3	Any equipment used for the terrestrial transfer of fallen stock from a shorebase or land-based production unit for further processing should be cleaned and disinfected according to recommended practice before re-use.
7.2.4	Fallen stock will be handled in a discrete manner. Any container (e.g., tubs etc.) used for the storage of fallen stock should be kept covered and secured when in use and/or unattended to prevent unauthorised access at any time.
7.2.5	Any equipment used for the storage of fallen stock should be cleaned and disinfected, as required, according to recommended practice (see Annex 4).
7.2.6	Not included in this chapter.
7.3	Not included in this chapter.

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