



SCOTTISH EXECUTIVE

Gyrodactylus salaris

Contingency Plan

December 2006

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Contingency Plan for dealing with Suspicion and/or Confirmation of *Gyrodactylus salaris* in Scottish Waters

Assumptions

This plan:-

- Follows the outline structure of the SEERAD Contingency Plan for Foot and Mouth Disease to make use of information and expertise already within the department.
- Uses information already available from the SEERAD Plan of May 2002.
- Outlines the broad principles in the text and places detailed instructions and information in groups of appendices
- Assumes that Ministers will wish to choose between containment and eradication depending on the severity and distribution of the disease, the feasibility of the two options and the economic health of the fish farming/recreational fisheries industry at the time of any disease outbreak. The choice will also consider the need to preserve salmon stocks.
- Assumes there maybe some rivers where eradication is not possible. The choice between containment and eradication will have to be made on a catchment by catchment basis. The overriding criterion will be that there are no preconceived ideas.
- Assumes that resources will be available from across the SE if Ministers decide to take action.
- Assumes that use of private contractors will be sanctioned.
- Assumes that any necessary legislation will either be in place or can be implemented rapidly by amending orders.
- Assumes that DEFRA and Environment Agency will co-operate on cross border issues.
- Assumes that basic data in the appendices/ Operations Manual will be checked on regular basis and updated as required.

CONTINGENCY PLAN

1. Foreword

Context

1.1 Gyrodactylosis is a Notifiable disease caused by the parasite *Gyrodactylus salaris*, which if introduced into Scottish salmon rivers has the potential to cause widespread losses in the valuable stocks of wild Atlantic salmon.

1.2 *G. salaris* is a monogenean helminth parasite (skin and gill fluke) which has caused the virtual elimination of Atlantic salmon stocks from a number of rivers in Scandinavia and Northern Russia. The status of other Western European stocks of salmon is unclear.

1.3 *G. salaris* causes disease in Atlantic salmon, uses rainbow trout and Arctic charr as carrier hosts on which it can reproduce and uses brown trout as a transport host. *G. salaris* may reproduce on brown trout but not at a rate sufficient to maintain a viable population in the absence of Atlantic salmon.

1.4 The parasite is exotic to Scotland and it is highly improbable that the infection could enter the country by natural means because of the inability of the parasite to survive in full strength seawater. Significant risk is therefore associated with the actions of man both in the trade in fish and fish eggs and via leisure pursuits.

1.5 Commission Decision 2004/453/EC recognises that Great Britain has demonstrated freedom from *G. salaris* and maintains a surveillance programme to determine continued absence of the disease. The Decision therefore provides certain protective measures for GB with regard to *G. salaris* in salmonids.

1.6 The importation of live salmonids and of non-disinfected ova from areas of lower health status, with respect to *G. salaris*, is prohibited into Great Britain. NB Imports can occur from areas of a country that has *G. salaris* providing that the area from which stock are imported meets the requirements of Commission Decision 2004/453/EC.

1.7 The national and local government bodies involved in this contingency plan include the Scottish Executive Environment and Rural Affairs Department (SEERAD), Fisheries Research Services (FRS) which includes the Fish Health Inspectorate (FHI), Scottish Environment Protection Agency (SEPA), State Veterinary Service (SVS), District Salmon Fishery Boards (DSFBs), Scottish Natural Heritage (SNH), Scottish Water and Local Government Authorities in affected areas. Equivalent bodies in England (Environmental Agency and English Nature) will be involved where catchments cross the Scotland/England border. Successful control action will rely on assistance from all riparian owners, occupiers, angling organisations, fish farmers and all those commercial and leisure activities that rely on water resources for all or part of their activities.

Legislative basis for action

1.8 The control measures contained in this Contingency Plan can be implemented under the legal powers contained in The Diseases of Fish Acts 1937 and 1983. In Scotland, the

Scottish Ministers have responsibility for implementation of the Diseases of Fish Acts and have authorised the Fish Health Inspectorate (FHI) to act under these regulations for fish disease control. Other inspectors can be appointed by Ministers to deal with emergency situations.

1.9 *G. salaris* was designated as a Notifiable disease in 1988, under The Diseases of Fish Acts. This gives powers, where there are reasonable grounds for suspecting that a named notifiable disease agent is present to designate waters as infected and to make a Designated Area Order (DAO). A DAO is legally binding and any contravention of the conditions of the order is an offence.

1.10 Official controls can be applied to the movements into or out of the area covered by the DAO of live fish, live fish eggs and fish foodstuffs.

1.11 A DAO can make provision for the removal and disposal of dead and dying fish from the area.

1.12 An authorised inspector may control the movement in or out of a fish farm of live fish, live fish eggs and foodstuff if he/she has reasonable grounds for suspecting that the fish are infected with *G. salaris*. This is done by means of a Thirty Day Notice (TDN) which is applicable for 30 days but extendable to 60 days. This allows time for analysis to be conducted to confirm the presence of *G. salaris* or to rule out suspicion of infection.

1.13 In Scotland any person entitled to take fish from any inland waters, or employed for the purpose of having the care of any inland water, has reasonable grounds for suspecting that the waters are infected waters, it shall be his/her duty forthwith to report the facts in writing to Scottish Ministers, or, if the waters are situated in the area of a district board and are not a fish farm, to the board; and if without reasonable excuse he/she fails to do so, he/she shall be guilty of an offence. Fish farmers have a similar duty to report any suspicions to the Scottish Ministers.

1.14 Inspectors are empowered to inspect waters and fish farms and to take samples.

1.15 *G. salaris* is included as a List III disease in Annex A of Council Directive 91/67/EEC (as amended) but control measures are not specified. However, in response to evidence that *G. salaris* is not present in Scotland and that Scottish salmon stocks are highly susceptible to the disease, certain protective measures were granted to Great Britain by Commission Decision 2004/453/EC. This prevents the movement into the country of live salmonids and non-disinfected salmonid ova from areas not shown to be free from *G. salaris*. There are no compulsory powers to permit the slaughter or removal of infected fish populations or to require treatment of non-farm or farm sites to eradicate the parasite.

1.16 Disposal of all dead fish or other high-risk material is governed by The Animal By-Products (Scotland) Regulations 2003 which implements EU Regulation 1774/2002. Dead farmed fish subject to a DAO with respect to *G. salaris* will be specified as Category 2 waste and disposal would be via approved routes to an approved disposal site. Such movements would be made under the supervision of the FHI and of Local Authority Animal Health Inspectors.

1.17 A list of relevant legislation covering fish disease, environment and water issues can be found at Appendix 1.

Part of GB covered

1.18 This Scottish Executive Contingency Plan covers the actions to be taken in the event of suspicion or confirmation of *G. salaris* in any part of mainland Scotland [excluding the Rivers Tweed and Border Esk and any of their tributaries], or on any Scottish island. It will also be used to determine the Scottish response to any cross border issues e.g. in relation to activities on the Tweed and the Esk. In the event of an outbreak of *G. salaris* in any part of the Tweed containment and/or eradication will be the responsibility of Scottish Ministers in co-operation with their UK counterparts. In the event of an outbreak of *G. salaris* in any part of the Esk containment and/or eradication will be the responsibility of UK Ministers in co-operation with their Scottish counterparts.

Links to Other Plans (UK & Local)

1.19 This plan must be read in conjunction with the Operations Manual at Appendix 11 and any decisions made during the outbreak to contain and/or eradicate the parasite and with any relevant instructions issued by Scottish Ministers since the plans were last updated. DEFRA have responsibility for notification of disease to EC and OIE and will also co-operate on cross border issues. (See 1.18 above).

Changes to the Contingency Plan

1.20 This is the first issue of this plan and was finalised in March 2006. The plan will be tested within 12 months and reviewed annually thereafter. When changes are made to this plan in future a summary of the changes will appear in this section for ease of reference.

Contact point to notify changes

1.21 Proposals for amendments to this plan should be put in writing to:-

Scottish Executive Environment and Rural Affairs Department
Freshwater Fisheries and Aquaculture Branch 3
Room 414
SEERAD
47 Robb's Loan
Pentland House
EDINBURGH
EH14 1TY

2. Disease Response Assumptions

This section deals with the overview and more detailed information is given in Appendix 4.

Policy Objectives

2.1 The policy for dealing with an outbreak of *G. salaris* in either wild or farmed freshwater fish stocks will be based on a strategy of eradication but where this is deemed to be unachievable a strategy of containment will apply.

2.2 When *G. salaris* is first confirmed a national standstill may be implemented until the distribution of disease has been established by monitoring. Thereafter movement restrictions will be imposed over all infected catchments including fish farms. The decision on what to do with stocks of fish in transport within or from the catchment at the time movement restrictions are imposed will be decided by the Disease Strategy Group on advice from Fisheries Research Services. Unless there are special circumstances it is likely that such fish will be killed on arrival. The movement of fish for processing will be by licence which will specify the containment measures to be taken in transport and processing to prevent the spread of the disease.

2.3 Provision will be made for the declaration of catchments surrounding an infected catchment to be declared as buffer zones, with the imposition of movement restrictions, to reduce risk of disease spread

2.4 A major publicity drive will be implemented as part of the communications strategy. It will aim to make as many people as possible aware of the problem and the steps which they need to take to prevent further spread of the parasite.

Biology of *G. salaris*

2.5 *G. salaris* is a monogenean helminth parasite (skin and gill fluke) which has caused the virtual elimination of Atlantic salmon stocks from a number of rivers in Norway, Western Sweden, northern Finland and Northern Russia. The status of other Western European stocks of salmon is unclear.

2.6 *G. salaris* is unable to survive freezing, elevated temperatures, full strength seawater or desiccation. The parasite can survive 5-7 days off the host under damp cool conditions. It is highly fecund, rapidly detaches from dead hosts but is very good at finding a new host.

2.7 *G. salaris* causes disease in Atlantic salmon, uses rainbow trout and Arctic charr as carrier hosts on which it can reproduce and uses brown trout as a transport host. *G. salaris* may reproduce on brown trout but not at a rate sufficient to maintain a viable population in the absence of Atlantic salmon. Knowledge of the interactions between potential hosts and transport hosts and *G. salaris* is incomplete. Details of current knowledge is contained in Annex 1 of Appendix 3

2.8 The parasite is exotic to Scotland and it is highly improbable that the infection could enter the country by natural means because of the inability of the parasite to survive in full

strength seawater. Significant risk is therefore associated with the actions of man particularly in the trade in live fish and fish eggs and, to a lesser extent, via leisure pursuits.

2.9 The introduction of *G.salaris* into Scotland is likely to cause serious disease in affected stocks of wild Atlantic salmon, leading to the eradication of a large proportion of salmon stocks in affected catchments. It is thought unlikely that there are any river and/or loch systems in Scotland where salmon are present but brown trout are not.

2.10 The potential serious consequences of an outbreak of *G. salaris* in Scottish Atlantic salmon stocks make it imperative that most effort and resources must be directed at preventing the primary introduction of the parasite. Containment will also be a primary weapon even if eradication is not practical in a given situation. Containment, to prevent further spread, is also necessary while a decision is taken on the feasibility of an eradication programme and to allow time to plan and implement any programme.

2.11 Activities where there is an identifiable risk of introducing the infection into Scotland are described in the Risk Assessment (Appendix The management of these risks will form part of SEERAD's strategy to prevent the introduction of the parasite into Scottish waters.

Risk Assessment

2.12 This Contingency Plan is based on the principles of risk assessment and risk management. Consequently, the risk assessment first conducted on *G. salaris* in 1995 was updated in August 2000. A group was set up in 2005 to consider how best to prevent the introduction of *G. salaris* into Scotland. An updated risk assessment incorporating that group's main recommendations is at Appendix 4.

2.13 This Contingency Plan provides clear instructions for an official response should the parasite be found in Scottish waters. It will be necessary to define the distribution of infection, contain the infection to the area of occurrence and, if practical, seek to eradicate the parasite from Scottish waters

Detection and Diagnosis

2.14 Over 400 species of *Gyrodactylus* have been described. Many can be easily distinguished but *G.salaris* has a remarkable variety of morphological features and shows a degree of overlap with another species that is harmless to salmon, *Gyrodactylus. thymalli*. Methods in routine use can identify this complex but there is still some debate regarding the status of species within this complex. A decision tree for the identification of *G. salaris* is at Annex 4 of the Operations Manual.

2.15 As a minimum standard, the detection and diagnosis of *G. salaris* should be based on the methods described in the most recently updated version of the OIE Diagnostic Manual for Aquatic Animal Diseases. New methods for diagnosis of *G. salaris* that have not yet been fully validated may be taken into account to complement these internationally recognised methods.

2.16 A description of the biology, sampling procedures and diagnostic techniques for *G salaris* are presented in the OIE Manual of Diagnostic Tests for Aquatic Animals and key reference publications are also listed there.

2.17 The Expert Group on *G. salaris* will provide the most recent definitive information on aspects of the biology of the parasite, the disease caused by it in Atlantic salmon, its diagnosis and control methods.

Suspicion of the Presence of *G. salaris*

2.18 The Fisheries Research Service (FRS) and its component departments will be responsible for investigating any suspicion of *G. salaris* in Scottish Waters.

2.19 FRS will be responsible for serving and enforcing disease control notices, for taking samples, providing a diagnostic service and carrying out epidemiological investigations. FRS will advise the Disease Strategy Group (DSG) on issues relating to containment and eradication. FRS is responsible for producing and maintaining an Operations Manual. The current version is located at Appendix 11.

2.20 This Contingency Plan deals with the actions to be taken when *G. salaris* is suspected in Scottish Waters and the actions when the presence of the parasite is confirmed. There will also be instances when *G. salaris* will be considered as a potential diagnosis along with several other diseases and/or conditions. This plan will not normally be implemented until such investigation suggests that the likely cause is *G. salaris*. Each case will, however be judged on its merits and in certain circumstances movement controls maybe imposed before a strong suspicion of *G.salaris* is suggested.

2.21 Grounds for investigating the potential presence of *G .salaris* may be raised by any or all of the following circumstances:-

- Unexplained mortality or sudden loss of Atlantic salmon populations.
- The unexplained absence of juveniles in areas where they were previously plentiful.
- A claim by anyone, other than a person with a credible knowledge of fish disease that *G. salaris* has been found or suspected.

2.22 Reasonable grounds for suspicion of the presence of *G. salaris* may be aroused by any or all of the following circumstances:-

- A positive result arising from any of the investigations carried out in circumstances listed in 2.21 above.
- Mortality accompanied by gyrodactylid parasites and/or lesions characteristic of Gyrodactylosis.
- The known introduction (legal or illegal) of live susceptible fish species or objects capable of carrying the parasite, from areas at risk from *G salaris*, into direct contact with susceptible species of fish in Scottish waters.
- A claim by a person with a credible knowledge of fish disease that *G salaris* has been found.

2.23 Such suspicion will always prompt the immediate further investigation of the susceptible fish populations in the area of suspicion by the Fish Health Inspectorate (FHI) and laboratory analysis. The area of suspicion could include the whole catchment or even adjacent catchments if water transfer is practised or the water conditions between adjacent river mouths is suitable to allow the potential transfer of infected fish. Fisheries Trusts have a programme of stock assessment, sampling expertise and electro-fishing equipment that could be useful in these investigations.

2.24 In all of the above situations movement restrictions will be immediately imposed and only removed following receipt of negative laboratory results.

2.25 **Confirmation of disease** will be made when a positive laboratory identification of *G. salaris*, is made by the National Reference Laboratory for Fish Diseases at FRS Marine Laboratory, has been confirmed by the OIE Reference Laboratory for *G. salaris*. Full containment measures will be immediately imposed if they have not been implemented on suspicion. These measures will only be removed when scientific evidence indicates that *G. salaris* is no longer present in the catchment /farm.

2.26 If suspicion arises where the natural population of salmon is low consideration will be given to the use of caged sentinel salmon parr as a means of increasing the numbers of susceptible hosts and thus facilitating diagnosis. Such situations may arise if there is a suspicion of the parasite occurring in waters containing rainbow trout.

Detailed actions for further investigations, containment and eradication are set out on the Operations manual at Appendix 11

Support from major stakeholders

2.27 Major internal and external stakeholders have been involved in the preparation of this plan (*see Appendix 2*). It is anticipated that they will continue to be involved in reviews and exercises to test its robustness.

2.28 In the event of an outbreak internal stakeholders will work in close cooperation with the Disease Strategy Group (DSG) and Local Disease Control Centre (LDCC) managers. External Stakeholders will assist as major communication avenues between all parties affected by the outbreak and the Scottish Executive. Major stakeholders may be able to provide additional staff and expertise. (See appendix 2) At local level they will assist LDCC management to resolve local problems by acting as intermediaries and providing local knowledge.

3. Command and Control—Management of Disease in Scotland

3.1 The disease will be managed in Scotland by the Disease Strategy Group assisted by the National Disease Control Centre (NDCC). They will draw on expertise from a large number of other groups within the Scottish Executive and representatives of the major organisations affected. In order to ensure rapid coherent responses between policy and field operations the head of NDCC will be a member of DSG. A senior member of FFA3 will also maintain close liaison with head of NDCC.

An organogram showing the command and control structure is given at Appendix 6, Annex 1.

3.2 The roles of the major players are outlined below with detailed actions and management structures being described in the relevant appendices.

Role of Diseases Strategy Group (DSG)

3.3 The Disease Strategy Group (DSG) will be responsible for the overall control of the outbreak in Scotland. The group will be responsible for:-

- Informing and advising Ministers on all aspects of the outbreak,
- Liaising with Defra and devolved administrations (NB Defra have responsibility to liaise with EC and OIE),
- Liaising with relevant Scottish Agencies,
- Overseeing and auditing the work of the National Disease Control Centre,
- Receiving reports from NDCC and Expert Group and deciding on further actions for surveillance, containment and eradication strategies,
- Ensuring that the Communications Strategy is implemented and ensuring that all External and Internal Stakeholders are kept informed and
- Making provision for additional equipment, accommodation and staff to be provided to deal with the outbreak.

3.4 In the event of several foci of disease at the same time the DSG may consider setting up Local Disease Control Centres (LDCCs) under the overall control of NDCC. It is envisaged that these units would act as forward field stations with diagnosis, epidemiology and administration retained at NDCC.

(See Command and Control Section and Appendix)

Role of the National Disease Control Centre (NDCC)

3.5 The NDCC will:-

- Be responsible for receiving all reports of suspicion of disease and arranging for the necessary sampling and restriction regimes to be put in place,
- Implement all necessary field actions,
- Report to DSG on regular basis,
- Set up local Stakeholder Groups and
- Provide a response, in conjunction with the Scottish Executive Press Office, to media requests for local information
- Have responsibility for sending material to the OIE reference laboratory for confirmation of *G. salaris*.

3.6 On receipt of information indicating grounds for suspecting the presence of *G. salaris* in Scottish waters, the NDCC will be immediately established to evaluate the level of suspicion of the presence of *G. salaris*. When it is concluded that the grounds are reasonable, the Head of the NDCC will immediately advise the Head of the DSG and the Chairman of the *G. salaris* Expert Group of the information obtained.

3.7 The Head of the NDCC will advise the DSG on the level of containment considered proportionate to the level of risk. A positive diagnostic result for *G. salaris* from the National Reference Laboratory for Fish Diseases for Scotland obtained prior to confirmation from the OIE Reference Laboratory for *G. salaris* will initiate implementation of the full containment plans of a *G. salaris* confirmed situation (paragraphs 2.25).

Role of the Expert Group

3.8 The Chairman of the Expert Group on *G. salaris* will:

- Maintain up to date information on developments in the identification and control of Gyrodactylosis,
- Advise the Head of the NDCC of the level of risk associated with the current suspicion of *G. salaris*,
- Provide an update of relevant containment, diagnostic and control measures and
- Assist in the training of staff and in preparing and running training exercises.

Role of other Groups in control of *G. salaris*

3.9 A range of other groups are involved in the control of an outbreak of *G. salaris*. They include SE Departments, External Enforcement Bodies and Stakeholders. The groups are listed below with roles and responsibilities being detailed in Appendix 2.

3.10 Scottish Executive Groups

- Press Office
- Human Resources Group
- Finance Group
- Scottish Procurement Directorate
- Communications and Information Services Division
- GIS Unit
- Economic Impact Assessment Group
- Wildlife and Habitats Division
- Water Division
- Fisheries Research Services
- Veterinary Unit
- Agricultural Staff
- Staff Welfare Officer
- Health and Safety Officer
- Office of the Solicitors of the Scottish Executive

3.11 External Enforcement and Advisory Bodies

- Local Authorities
- Police
- Scottish Environment Protection Agency (SEPA)
- Scottish Natural Heritage (SNH)
- Association of Salmon Fishery Boards
- District Salmon Fishery Boards
- Water Baliffs
- Scottish Water
- Drinking Quality Water Regulator

3.12 Other Groups

- National and Local Stakeholder Groups
- Fish Vets Society
- Rivers and Fisheries Trusts Scotland (RAFTS)
- Scottish Salmon Producers Organisation
- British Trout Association
- Scottish Anglers National Association
- Scottish Federation for Coarse Angling
- Atlantic Salmon Trust
- Salmon and Trout Association
- Scottish Fisheries Co-ordination Centre

- Ordinance Survey
- Hydro Electric Industry
- Scotch Whisky Industry
- sportscotland representing Leisure Industry
- Scottish Canoe Association
- Scottish Society for the Prevention of Cruelty to Animals (Scottish SPCA)
- Visit Scotland

Operations Manual

3.13 The Operations Manual to deal with an outbreak of *G. salaris* is located at **Appendix 11**. It is drawn up and maintained by FRS and covers the roles and responsibilities of key players and organisations, job descriptions and the actions to be taken to control the disease by which ever method the Minister shall decide.

Responsibilities and Job Descriptions of Lead Players

3.14 It is vitally important for the success of any control programme that the Lead Players understand their individual roles and where they fit into the control system. Current Post Holders have been allocated specific roles in this plan. It is intended that line managers incorporate these duties in to routine job descriptions and encourage staff to review them on a regular basis.

3.15 The roles and responsibilities are detailed in Appendix 6

Training Policy

3.16 Staff cannot be expected to perform effectively without being given training and support in the tasks they are expected to perform. To meet these aims line managers must discuss training needs with individual staff members and allow time and budgetary resources for effective training.

3.17 Core Competencies of relevant staff must be identified and suitable training given to fulfil any identified need. This may involve secondments to assist in other countries or using Norwegian experts to provide training in Scotland.

3.18 In order to ensure a coherent response to a disease outbreak this plan will be tested periodically by either a desk top or field exercise. This testing will include all the agencies who will be involved in the control of an outbreak.

4 ERAD Headquarters Structures & Responsibilities

Freshwater Fisheries & Aquaculture Division (FFA).

4.1 FFA consists of five branches that are responsible for all policy and funding matters. Branch 2 deals with Salmon and Freshwater Fisheries, Branch 3 with Fish Health and Welfare and Branch 4 with Aquaculture Policy. They will lead SEERAD's policy response to an outbreak of *G. salaris*. An organo-gram showing the Branch structure of FFA is given at Appendix 6 Annex 2.

4.2 In the operation of this Contingency Plan FFA will have responsibilities for:-

- Providing staff to DSG and NDCC,
- Liaison with Office of the Solicitor to the Scottish Executive
- Issuing warrants for additional Inspectors;
- Ensuring that DSG and NDCC are kept fully briefed of developments and issues so that they can meet the requirements of the communications strategy (*see Appendix 5*)
- Dealing with requests from DSG for necessary additional resources.
- Developing and advising on policy in relation to *G.salaris* control.

Fisheries Research Services (FRS)

4.3 The Fisheries Research Services is the executive body responsible for implementing and enforcing the control measures for *G.salaris* in Scotland. It is also responsible for producing and maintaining the Operations Manual that is contained at Appendix 11 and ensuring that its own staff and staff on secondment are trained and fully conversant with the plan. FRS will need to liaise closely with DSG and FFA in relation to service of notices, advice to Ministers and media issues.

4.4 The FRS Freshwater Laboratory is responsible for advising SE and Ministers on freshwater fish and fisheries. The laboratory has specific expertise on gene banking and water chemistry. Staff also have the skills to sample fish and fish populations and to advise on the design and installation of barriers should an eradication plan be considered.

Agriculture Group

4.5 The Agriculture Group has a large cadre of staff who are conversant with contingency procedures for other diseases. They also have a large body of local data and knowledge that will be relevant to control procedures and their wider effect on the countryside. The group is thus well placed to provide additional staff resources both at management and field operative level.

Veterinary Unit

4.6 The Veterinary Unit is part of the State Veterinary Service and an Executive Agency of Defra. It is responsible for advising SEERAD on the disposal of fish and fish waste. It may also be able to provide advice on the welfare of fish during containment and slaughter.

5 Field Operations

Operations Manual

5.1 The Operations Manual will form the core instruction to staff on how to deal with a suspicion of disease, with confirmation of disease and the actions required in a containment or eradication campaign. This manual also gives instructions on diagnosis and epidemiological investigations.

Local Plans

5.2 Local Plans, to deal with disease in specific catchments, will be developed by the FRS to guide the implementation and enforcement of containment and eradication measures. They may relate to a single catchment or to groups of catchments depending on size, geographical location, ease of access and location of suitable premises from which to operate. The creation of such plans will be guided by the extent of disease as determined by epidemiological investigation after disease is confirmed.

National Disease Control Centre

5.3 The occurrence of suspicion of the presence of *G. salaris* will result in the NDCC being established at FRS in Aberdeen.

Structure of NDCC plus resources required

5.4 A schematic structure with a list of resources required is given in the Operations Manual. It is the responsibility of FRS to develop this structure for specific disease situations taking in to account the scale of the problem in the specific catchment(s) and the resources available.

Composition and Structure of Management Group of NDCC

5.5 The composition and structure of the management group is given in **the Operations Manual** together with job descriptions for the lead players. Additional responsibilities may be added by the NDCC Manager depending on how the outbreak develops. It may be possible for one individual to take the lead in more than one area.

Work Allocation

5.6 In the initial stages of an outbreak it is likely that the number of staff involved will be small and normal procedures for allocating and auditing work will suffice. However as the outbreak develops there will be much additional work and it is essential that a system is set up to ensure that all work is allocated according to priorities. The work must be tracked through the system and audited on completion. The NDCC Manager will delegate one member of staff to oversee this work.

Action Flow Charts

5.7 It is essential to ensure that all work and any follow up actions are completed. Action Flow Charts can be adapted to deal with local and unforeseen circumstances to ensure that no required actions are overlooked.

Actions to contain disease

5.8 The distribution of the parasite will be unknown when the first case is discovered. It is important, for overall control, that movements of fish are restricted until parasite distribution is determined. To this end a Scotland-wide standstill will be considered with a licensing provision based on risk assessment to cover essential movements. Irrespective of whether or not a national standstill is imposed any farms or catchments identified, through forward or backward contact tracing, will be placed under restrictions until investigation shows that the parasite is no longer present. It may still be prudent to maintain containment measures to reduce the risk of any further spread of Gs.

5.9 Once the presence of *G salaris* is suspected, action must be taken to contain the spread of the disease within the catchment, between catchments and between farms. This will be achieved by serving thirty day notices (TDN), which, by service of a second notice, may be extended to sixty days. A TDN may only be served on a fish farm site. Once disease has been confirmed, or sixty days has passed and disease is still suspected or disease has been confirmed on a fish farm site, a Designated Area order (DAO) will be made. Where disease is suspected or confirmed in the wild environment a DAO will be made. Both TDNs and DAOs may be used to control the movement of live fish, eggs, and fish feed.

5.10 Where disease is so widespread throughout the country that containment is no longer considered feasible, either movement of live fish, eggs and fish feed may be permitted in accordance with the terms of a DAO, or where it is considered that a DAO can no longer serve a practical purpose it may be revoked by the making of a revocation order.

Actions to eradicate disease

5.11 If disease is confirmed the DSG will prepare a report for Ministers giving recommendations as to whether they consider that eradication is a feasible possibility in the circumstances that exist at the time of confirmation.

5.12 In arriving at a decision the DSG will take account of information provided by relevant bodies as per the details given in *Appendix 2* and the policy objectives and legislative basis for action detailed in sections A & B of this plan. If the final decision is that eradication is not feasible and/or justified the DSG will consider what enhancements (if any) are required to the containment measures, already in place, to minimise the impact of this disease.

Protection of Genetic Lines

5.13 Before eradication is proposed the catchment will be surveyed to decide whether it is feasible to preserve genetic lines. This can be achieved by holding brood fish in captivity to rear progeny, in quarantine, until such time as the catchment can be restocked. Alternative

stock rebuilding strategies can be considered at this stage. *Details on gene banking and restoration are given at Appendix 9.)*

5.14 When Gs is confirmed in a river system, a gene banking and restoration steering group (GBRSG) should be established immediately, with representatives from FRS and local fisheries interests such as DSFBs, Trusts, etc.

5.15 The GBRSG should formulate and implement a plan for the capture of Atlantic salmon broodstock from potentially infected populations at the first possible opportunity. This should encompass the production and quarantine of fertilised eggs and the cryopreservation of sperm, and identify secure, disease free rearing facilities, where the living and frozen material will be gene banked. Fertilised eggs from disease free parents will be used to establish family lines in the facilities, which can then be used for the production of eggs for restocking.

5.16 When a plan for Gs eradication is developed, gene banking needs for other affected species populations, if any, will need to be identified, facilities put in place, appropriate broodstock collections carried out, and restoration plans developed.

5.17 The basic issues and considerations surrounding gene banking and restoration work are detailed in Appendix 9.

Staffing requirements

5.18 In a worst case scenario many catchments may be affected when the first case is confirmed. There could, therefore, be a need for a major increase in staff, inspectors, laboratory facilities and resources. It will fall to Head of DSG in consultation with SE colleagues to identify and supply these resources. This plan sets out the management structures required to manage an outbreak or series of outbreaks.

5.19 FRS is responsible for deciding the staff requirements for disease control measures in a particular catchment. They will need to liaise with DSG and FFA when eradication proposals are being drawn up to ensure that sufficient trained staff is available either from within the SE or from outside contractors.

5.20 FFA are responsible for ensuring that sufficient trained staff are available to deal with the increase in policy and administrative work that an outbreak will generate.

6. Communications

SE Communications Strategy Policy

6.1 The Scottish Executive developed a Communications Strategy in 2002/3 following on from the “Lessons Learnt” reports after the Foot and Mouth outbreak in 2001. This strategy was used to formulate a strategy to deal with communications in future outbreaks of exotic disease. This plan will adapt the policy to suit the needs of communications in a disease situation that is expected to move more slowly and also over a much longer time scale.

6.2 It is essential that all participants in the control programme are aware of all relevant information. To ensure that information is fully circulated a Communications Coordinator will be appointed immediately. He/she will be responsible for ensuring that the communications strategy is fully implemented (*Job description at Appendix 6*). Until such time as a Communications Coordinator is appointed the task will form part of the remit of the Head of DSG in consultation with Head of NDCC and Press Office.

Internal up and down “Chain of Command”

6.3 Tight communication and coordination of activity is essential to a successful disease control process. When a suspected case is first reported the Head of DSG will brief the Minister and senior management including the Chief Press Officer. MSPs/MPs with a constituency interest will also be alerted. Arrangements will be put in place in case disease is confirmed.

6.4 It is for each manager in the chain to decide which staff need which pieces of information BUT the information flows must be proactively managed to keep staff informed. The Head of DSG will appoint a Communications Co-ordinator who will be responsible for ensuring that all managers (HQ, Field and Laboratory) are made aware of policy and decisions that affect their role. Similarly each manager must produce a regular report to DSG on relevant actions within their unit.

6.5 The Communications Coordinator will develop communication strategies, in consultation with managers, to take account of the stage and scale of the outbreak. Full details of Communications Issues and Strategy are given in Appendix 5 which should be consulted whenever guidance is needed.

Media Briefing Policy

6.6 The Press Office will lead in dealing with the media and in handling requests for interviews and media briefings. Press Office will decide, in consultation with Ministers and DSG, whether any particular situation warrants a formal media briefing. NDCC will also be consulted on local issues.

6.7 The aim of briefings will be to pass information to the general public and to relay a coordinated message. Staff will also have to deal with concerns raised by media personnel so will need to be fully briefed. The Press Office will thus liaise closely with the press offices of other involved agencies to ensure that information is shared and best use is made of available media time.

Provision of information on disease status and proposed action

6.8 The Executive's Policy, in dealing with information on cases of suspect or confirmed disease, has been that it will not normally name locations. However the Environmental Information (Scotland) Regulations 2004 requires Scottish Public Authorities to make environmental information available unless the situation is covered by an exception to provide the information and where there is provision in the legislation to respect the confidentiality of the information. Legal opinion, in 2006, is that neither caveat appears to apply to an outbreak of GS and the Executive would have to release the information if requested. If such requests are received legal advice will be sought before a decision is made.

6.9 It may be essential to the disease control strategy that stakeholders are given as much information as possible to enable them to implement measures to reduce the risk of disease spread. When a suspect case is confirmed the location may be publicised together with a briefing document setting out the actions that will be taken to contain and/or eradicate the parasite.

Publicity to industry and related users

6.10 SEERAD will, as part of its ongoing preventative programme, continue to issue advisory leaflets on fish diseases and their prevention. Once disease is suspected, SEERAD will communicate with all stakeholders by letter and/or E-mail to keep them up dated on the stage of the disease.

6.11 Stakeholder Groups will meet at National and Local level and be responsible for assisting in keeping their members informed.

6.12 Various bodies e.g. Police, COSLA, SEPA, Riparian Owners, DSFBs, may be able to help by displaying notices at strategic points.

6.13 A strategy will be developed to use web-based information as part of the communications policy adopted.

Help/Information Lines

6.14 It is likely that there will be many requests for information in the event of a disease outbreak. The provision of such information is very time consuming and has the potential for diverting staff from managing and controlling the outbreak. The Communications Coordinator will be responsible for setting up a helpline to deal with requests for information. A National Helpline will be staffed by FRS Staff and briefing will be supplied by Communications Coordinator in consultation with Head of DSG. At local level use will be made of other enforcement bodies who will be asked to cooperate in staffing a multi discipline Help Line. A draft briefing document is provided at **Appendix 5**. Additional information will be added in response to questions received and developments in policy and control measures. The information being given out should be in accord with similar information being given out in rest of UK but will also need to reflect specific Scottish issues.

Response to correspondence

6.15 All correspondence needs to be handled so that responses meet SEERAD targets. Responses also need to be consistent with current policy.

6.16 To meet these two targets all correspondence, on policy issues, will be replied to from a central unit staffed by FFA. Correspondence on operational matters will be the responsibility of the Head of NDCC who may delegate a senior member of staff to respond on his/her behalf. Correspondence that relates to the roles and responsibilities of non SEERAD agencies should be acknowledged and passed to the appropriate agency to respond.

Web site

6.17 A *Gyrodactylus salaris* web page will be drawn up for inclusion on the SE website providing core information and contact points. This web page should be drawn up in advance and be ready to operate at a moments notice Consultation with Defra will be needed particularly on UK and EC issues. Relevant organisations will be asked to include links on their web sites.

7. Resources

Provision of Accommodation/Staffing

7.1 Head of DSG will be responsible for ensuring that there is adequate accommodation and staff resource to enable the outbreak to be controlled successfully. He/she will be responsible for developing agreements with other SE departments and external agencies to ensure that resources are available. (See Appendix)

Implementation of Operations Manual

7.2 The implementation of the Operations Manual is the most resource intensive part of any control programme. The Head of NDCC is responsible for setting up the NDCC and implementing the Operations Manual and any subsequent plans to deal with specific catchments. He/she will decide on the specific resources required for each phase of the operation and advise the Head of DSG of requirements. (See Appendix 11)

Information Technology/ Telephones etc

7.3 The Executive's Communications and Information Services Division (SCOTS Consultancy) will be responsible for the provision of all additional IT requirements. The Division will be responsible for arranging for the provision of IT support in stand alone LDCC(s) if required (see para 3.4 above) and for ensuring that support in existing units is sufficient.

7.4 The Executive's Communications and Information Services Division (Voice and Data Service) will be responsible for the provision of extra telephone equipment including the provision of the help lines.

Procurement & framework agreements/call off contracts

7.5 Scottish Procurement Directorate (SPD) will develop framework agreements/call off contracts for use by Local Authorities, other agencies and external contractors for the provision of goods and services in the event of an outbreak. SPD will also be responsible for procuring additional goods and services for use as the control measures are developed. Ordering procedures must ensure that the ownership of these goods/services remains with the Executive, irrespective of who places the order.

Laboratories

7.6 The Head of FRS will ensure that there is sufficient trained staff to deal with the likely diagnostic capability. He/she must also ensure that all field staff is trained in correct procedures for taking samples, packing and despatching same to laboratories and reporting necessary epidemiological data to Head of Laboratory. Procedures must also be in place for formal reporting of suspicion of disease and despatching samples to OIE reference laboratory.

7.7 The Head of FRS will consult with Heads of other approved laboratories on a regular basis to determine the capacity of currently approved laboratories. He/she will make contingency arrangements for dealing with testing that is above the capacity of approved laboratories at FRS.

Appendix1 – Summary of Legislation Affecting Control of Gyrodactylus salaris.

The aim of this appendix is to draw together a summary of the EU, UK and Scottish legislation that may have to be considered when dealing with an outbreak of *Gyrodactylus salaris*. In the event of conflict between legislation OSSE will be consulted. The appendix is divided into three sections for ease of reference but it should be borne in mind that there may be more than one piece of legislation impacting on a particular issue.

This appendix will need to be reviewed when the draft Aquaculture and Fisheries Bill becomes law and when the EU Fish Health Directive is enacted.

The following powers are sought and included in the draft Aquaculture and Fisheries Bill:-

- Powers to eradicate *G. salaris*
- Authority to authorise or direct the removal of dead and moribund stock
- Powers to impose standstills on all waters and fish farms
- Powers to erect barriers and close fish passes
- Powers of compulsory access
- Powers to require clearance of farms upstream of a barrier if they contain species on which *G. salaris* can reproduce
- Powers of mandatory disinfection of recreational gear.

It is assumed that the plan may have to be modified if some or all of these powers fail to become available.

Legislation relating to Fish

1. Diseases of Fish Acts 1937 & 1983

1.1 *Gyrodactylus salaris* is a notifiable disease under Section 4 of the Diseases of Fish Act 1937. Under the provisions of the Act the official service has the power, on behalf of the Minister to:

- Inspect fish farms and other waters and to take samples
- Impose movement restrictions on fish, eggs and fish food, to and from and within farms and waters which are infected or suspected of being infected
- Require the disposal of dead or dying stock and direct the manner of their disposal
- Grant authority for the removal of fish in infected waters for the purpose of controlling the spread of *Gyrodactylus salaris*.

1.2 Where suspicion exists that designated waters are infected the Minister may make a Designated Area Order (DAO) to control the movement of live fish, live fish eggs, fish feedstuffs and other things including the removal of dead or dying fish.

1.3 An authorised inspector, who suspects disease in a fish farm, can serve a Thirty Day Notice (TDN) to control movements similar to 1.2 above.

1.4 Under the Diseases of Fish Act 1937 Ministers may authorise any person as an inspector with powers to enter land, to carry out inspections and to take samples. It is an offence to obstruct an inspector in the course of these duties.

1.5 For the purposes of performing duties under the Diseases of Fish Act 1937 a person authorised by a District Salmon Fisheries Board may enter land in the district providing it is not a fish farm. Refusal to admit or to obstruct such a person is an offence.

1.6 Section 7 onwards of the Diseases of Fish Act 1983 provides powers for inspectors to collect information, powers to require registration and for the enforcement of the collection of information etc.

2. The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

2.1 The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 provides for the establishment of salmon fishery districts, the formation of boards, the employment of bailiffs and the use of otherwise unlawful methods to catch fish.

3. Commission Decision 2004/453/EC

3.1 Commission Decision 2004/453/EC classifies Great Britain as a disease free zone in relation to *G. salaris*.

3.2 Great Britain thus has Additional Guarantees under Commission Decision 2004/453/EC preventing the importation of live salmonids and non-disinfected salmonid ova from areas infected by GS. It should be noted that imports can take place from a country that has *G.salaris* in some of its fish stocks providing that the import is from a disease free zone.

4. The Animal By-Products (Scotland) Regulations 2003.

4.1 EU Regulation 1774/2002 is enacted by means of the Animal By-Products (Scotland) Regulations 2003 which sets out the permissible ways of dealing with various categories of animal waste.

4.2 Dead farmed fish that are infected with *G. salaris* would be classified as Category 2 by-products and the route of their disposal to an approved disposal site would be subject to supervision by FRS and/or Local Authority Inspectors.

4.3 Dead fish affected with *G. salaris* maybe disposed of by rendering, incineration and in certain specific cases by burial.

5. Freshwater Fish Directive 78/659/EEC

5.1 Article 1(3) gives the aim of the Directive as being to “protect or improve the quality of those running or standing fresh waters which support, or which, if pollution were reduced or eliminated, would become capable of supporting fish belonging to

- Indigenous species offering a natural diversity, or
- Species, the presence of which is judged desirable for water management purposes by the competent authorities of the Member States”

5.2 The Directive does not mention the active substances which may be used to eradicate *G. salaris*. However, Annex 1 assumes that “the concentrations of other harmful substances are very low”.

[Note, this Directive is normally given meaning through CoPA license conditions and will be superseded in time by no less stringent requirements in the WEWS Act/Water Framework Directive]

Legislation relating to the Environment

6. The Control of Pollution Act 1974 (as amended) and The Water Environment (Controlled Activities) (Scotland) Regulations 2005

6.1 The Control of Pollution Act 1974 (COPA) which will be replaced in 2006 by The Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR) is the legislation providing a regulatory framework for licensing activities which may impact upon the water environment in Scotland.

6.2 Proposals to use rotenone, aluminium sulphate or other chemical treatments to deal with an outbreak of *G. salaris* may require to be considered under the licensing provisions of this legislation.

6.3 Proposals to construct barriers to impede the passage of migratory fish while not regulated under COPA may require to be considered under the licensing provisions of CAR.

7. EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (the “Habitats Directive”) and EC Directive 79/409/EEC on the Conservation of Wild Birds (the “Birds Directive”)

7.1 EC Directive 92/43/EEC and EC Directive 79/409/EEC are enacted by means of the Wildlife & Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended 2004). The requirements of the ‘Habitats Regulations’ are summarised in SE Circular 6/1995 (as amended June 2000).

7.2 The Habitats and Birds Directives aim to maintain or restore certain natural habitats and wild species in “favourable conservation status”. If a site within the Natura series can be treated to eliminate *G. salaris*, or if it is likely that the treatment may impact a European Protected Species [EPS], Scottish Ministers and all competent public authorities (including SEPA) are required to have regard to the requirements of the Habitats Directive (Regulation

3(4)) [See Appendix 10]. Public authorities are obliged not to permit developments or operations damaging to an interest to be protected within a European site, unless there are imperative reasons of overriding public interest.

8. RAMSAR Convention on Wetlands of International Importance

8.1 The Convention covers all aspects of wetland conservation and wise use.

8.2 The UK has generally designated these areas as Sites of Special Scientific Interest (SSSIs) that receive statutory protection under the Wildlife & Countryside Act 1981 and the Nature Conservation (Scotland) Act 2004. Advice must be sought from SNH should the application of chemical treatments, or the erection of barriers to fish movements to eradicate or contain an outbreak of *G. salaris*, be considered.

9. Wildlife & Countryside Act 1981(as amended) and Nature Conservation (Scotland) Act 2004

9.1 The Wildlife & Countryside Act 1981(as amended) has been amended by the Nature Conservation (Scotland) Act 2004 and several other Acts and Regulations including the Criminal Justice (Scotland) Act 2003.

9.2 The Nature Conservation (Scotland) Act 2004 gives a statutory basis for the Scottish Biodiversity Strategy. It also makes the SSSI system more adaptable and efficient and strengthens the legal protection of specified plant and animal species. Public bodies must consult SNH before carrying out or giving permission for operations which affect a SSSI. Should operations to control *G. salaris* be likely to impact on any of the species specified in Schedule 5 of the Wildlife & Countryside Act 1981, then a licence will almost certainly be required and either SNH or SEERAD must be informed prior to the operation taking place.

10. The Environmental Assessment (Scotland) Act 2005

10.1 The Environmental Assessment (Scotland) Act 2005, when enacted, will require plans published after that date to be subjected to an environmental assessment.

Legislation relating to Water

11. Water (Scotland) Act 1980:

11.1 The Water (Scotland) Act places a duty on Scottish Water to supply wholesome water for domestic purposes to every part of its limit to supply and gives Scottish Water powers for the purpose of providing such a supply.

11.2 The 1980 Act also gives Scottish Water powers for the conservation and protection of water resources, which include the power to restrict use and the power to make Byelaws to prevent misuse and prevent pollution.

11.3 Byelaws for Preventing Pollution of Water (Catchment Control Byelaws): a number of Catchment Control Byelaws were made by the former Regional and Islands Councils for

the purpose of protecting surface or ground waters against pollution. However, in accordance with the 1980 Act these Byelaws ceased to have effect ten years after they were made. Only the Byelaws for the Glasgow supply (Milngavie) have been extended as provided for in the 1980 Act and are still in force. Scottish Water has powers to make byelaws for the purpose of protecting its water resources from pollution.

12. The Water Supply (Water Quality) (Scotland) Regulations 2001:

12.1 The Water Supply (Water Quality) (Scotland) Regulations 2001 transpose the requirements of the European Drinking Water Directive and define wholesomeness by setting standards.

12.2 The 2001 Regulations require Scottish Water to monitor the quality of the water it supplies and to publish an annual report on the quality of that water.

13. Water Environment and Water Services Act 2003 (WEWS)–

13.1 WEWS will largely, if not completely, supersede CoPA. This Act has transposed the EC Water Framework Directive into Scots Law. The Act aims to protect and, where possible, restore the ecological status of the water environment.

13.2 The Act applies to all water bodies including lochs, rivers, coastal and transitional waters and ground waters and places responsibilities on public bodies to take account of the aims of the Water Framework Directive when carrying out their normal statutory duties.

13.3 Ministers have the power to take decisions to eliminate a fish population using a priority substance as defined in the Water Framework Directive.

14. The Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR)

14.1 CAR is the main secondary legislation made under WEWS and requires that any activity which poses a threat to the water environment (e.g. introduction of chemicals) will need to be authorised by SEPA.

14.2 There are three tiers of authorisation but in terms of fish farming and the implementation of this plan licences will be required if it is intended to alter a water course, river banks, the flow of a river (dams etc), discharges (chemical treatments, disinfectants etc) or abstractions and or impoundments. SEPA are the licensing authority and must be consulted

14.3 CAR will be fully implemented by 1 April 2006 after which date all applications for authorisation will need a full risk assessment. This may take up to four months and it is thus important that SEPA are involved at an early stage in the planning cycle.

14.4 Ministers have powers to direct SEPA to authorise construction of barriers and use of chemical treatments.

15. Dangerous Substances Directive (76/464/EEC)

15.1 This Directive defines pollution as the direct or indirect discharge of substances into the aquatic environment the results of which “are to cause hazards to human health, harm to living resources and to aquatic ecosystems, damage to amenities or interference with other legitimate uses of water”.

15.2 Article 2 of the 76/464 Directive requires Member States to “reduce pollution....by the dangerous substances in the families and groups of substances in List II”. One of the groups of substances mention in List II includes “Biocides and their derivatives”.*[Note, this Directive is normally given meaning through CoPA licensing and will be superseded in 2006 by no less stringent requirements in the WEWS Act/Water Framework Directive]*

16. The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2005

16.1 This order should be consulted to determine whether there may be possible conflict between the use of water for drinking and the use of any proposed treatments.

17. Biocidal Products Directive 98/8/EEC

The Biocidal Products Directive permits the authorisation and placing on the market of Biocidal products within the member state. It also provides for the recognition of authorisations within the Community.

The Directive aims to establish, at Community level, a positive list of active substances that may be used in Biocidal products.

Only products that have been authorised may be used as Biocidal products.

Appendix 2 Roles and Responsibilities of Scottish Executive Departments, External Enforcement Bodies and other Stakeholders.

A. Scottish Executive Groups

1. Press Office

1.1 The Press Office will be responsible for dealing with all requests from the media for information and provision of staff for interviews. They will organise and chair media briefings as required.

1.2 The Chief Press Officer will deal with all aspects of media briefing related to the DSG and requests for interviews with Ministers. He/she will be a member of the DSG.

1.3 A Press Officer will be attached to NDCC and will be responsible for dealing with local media requests. He/she will also liaise with Press Officers of other organisations at local level to ensure that a coordinated response is achieved.

1.4 All requests for interviews to individuals in the chain of command must be referred to the relevant Press Officer before any agreement can be given to undertake an interview. It is unlikely that any official out with the chain of command will give media interviews but each request will be judged on its merits.

2. Human Resources Group

2.1 Human Resources will be responsible for dealing with requests from DSG/FFA for additional staff to enable an effective response to an outbreak to be mounted.

2.2 They will be responsible for briefing DSG and NDCC Managers to ensure that staff rules in relation to employment law, payments, travel and subsistence entitlements etc are understood and followed.

2.3 In the event of a large outbreak consideration will be given to posting a Human Resource manager to the NDCC.

3. Finance Group

3.1 Finance Group will be responsible for ensuring the payment ,via Scottish Executive Accounting System (SEAS),of all invoices received as a direct consequence of an outbreak of *G. salaris*. All such invoices must be duly processed by SEERAD and authorised by a senior manager from DSG, FFA or NDCC.

3.2 Finance Group will advise on the affordability of any measures proposed.

3.3 Finance Group will be responsible for meeting the SEERAD request for the provision of formal budget cover and any required accounts codes for SEAS.

3.4 Finance Group will consider SEERAD's proposed arrangements to secure the regularity, propriety and value for money of any proposed expenditure.

4. Scottish Procurement Directorate (SPD)

4.1 Scottish Procurement Directorate will arrange framework agreements/ call off contracts with Local Authorities, Enforcement Agencies and Private Contractors as applicable for the supply of goods and services. Ordering procedures must ensure that the ownership of these goods/services remains with the Executive, irrespective of who places the order.

4.2 In addition they will procure accommodation, goods and services from other sources as requested by DSG and/or NDCC.

5. Communications and Information Services Division

5.1 Communications and Information Services Division (SCOTS Consultancy) will be responsible for the provision, installation, maintenance and support of any additional IT equipment required in the control of the outbreak.

5.2 The unit will also be responsible for developing new IT programmes if these are required.

5.3 The Voice and Data Services unit of the Division is responsible for provision of extra telephone facilities.

5.4 There may be constraints in more remote areas due to lack of infrastructure facilities.

6. GIS Unit

6.1 GIS Unit will assist in outbreak control by providing facilities to plot actions and to provide information on individual catchments to permit detailed planning to either contain or eradicate the parasite.

7. Economic Impact Assessment Group

7.1 The Economic Impact Assessment Group will assess the effects of the disease outbreak on the salmon fisheries and ancillary industries.

7.2 The group will also assess the effects on any industrial or leisure pursuits involving affected waters. The Group will advise Ministers on the nature and scale of any adverse effects.

8. Wildlife and Habitats Division

8.1 Wildlife and Habitats Division are responsible for implementation of the Nature Conservation (Scotland) Act and the EC Habitats and Species and Wild Birds Directives.

8.2 The Division is responsible for policy in relation to Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), invasive non native species, the Scottish Biodiversity Strategy and its Implementation Plans and the UK Biodiversity Action plan.

8.3 The Division will need to be consulted where any action proposed to deal with *G. salaris* is likely to involve any of the above.

9. Water Division

9.1 Water Division are responsible for implementing the Water Environment and Water Services Act 2003, The Water (Scotland) Act 1980 and the Drinking Water, Dangerous Substances and the Water Framework Directives.

9.2 The Division will need to be consulted when planning eradication programmes that are likely to involve any of the above legislation.

10. Fisheries Research Services.

10.1 FRS operates as an agency of the Scottish Executive and as such has internal structures which mirror the work of many of those departments listed above. Where the situation affects only the work of FRS staff, finance, human resources and health and safety issues will be dealt with by FRS staff.

10.2 FRS will be responsible for serving and enforcing disease control notices, for taking samples, providing a diagnostic service and carrying out epidemiological investigations.

10.3 FRS will advise DSG on issues relating to containment and eradication.

10.4 FRS is responsible for producing and maintaining an Operations Manual.

10.5 FRS maintain a comprehensive website. They will ensure that there are highly visible links to any official *G salaris* website (or will host the website if required – decision on the location of the primary web-site is yet to be made.)

10.6 In cooperation with SE press office, FRS will deal with local and national press enquiries in line with current policy.

10.7 FRS has an established GIS section which will prepare and supply mapping capability to FRS staff, the NDCC, LDCC (if implemented), DSG (if required) and other agencies if possible.

10.8 FRS will be responsible for the operation of the NDCC.

10.9 FRS will be responsible, through the NDCC for the implementation and operation of any LDCC established during an outbreak of *G salaris*.

10.10 FRS will be responsible for the training of staff seconded or volunteered to assist in the sampling and containment operations in relation to *G salaris* outbreaks.

11. **Veterinary Unit**

11.1 The Scottish Executive Environment and Rural Affairs Department, Animal Health and Welfare Division, Branch 4, is responsible for advising on the disposal of infected fish and fish waste.

11.2 They will advise NDCC Manager on proposals to dispose of infected fish or fish waste.

11.3 The State Veterinary Service (SVS) is responsible for advising on fish welfare issues.

12. **Agricultural staff**

12.1 Agricultural Staff from local offices can assist in setting up and manning help lines and information services.

12.2 Their local expertise may be used in drawing up proposals for eradication plans and for resolving local problems.

12.3 Local Area Offices may be able to supply administrative staff of grades A1 to B1 to form the nucleus of an administrative team to the NDCC Management.

13. **Staff Welfare Officer**

13.1 The Staff Welfare Officer is responsible for safeguarding the welfare of all SE staff whether they are working at their home unit or on secondment.

13.2 The work of eradicating disease can mean working longer hours than normal often in a stressful environment. The Staff Welfare Officer will be responsible, in conjunction with the NDCC Manager and DSG, for ensuring that staff welfare is protected.

13.3 The following services are available to help managers and staff:-

- The Counselling and Welfare Service provide a confidential service to managers and staff and can be contacted on 0131-244-5693.
- The Employee Assistance Programme is a confidential service, provided by Independent Counselling and Advisory Services Ltd (ICAS) and may provide a useful source of support to staff and their families. Their helpline number is 0800 587 5670.

14. **Departmental Health & Safety Officer (DHSO)**

14.1 DHSOs are responsible for ensuring that all staff are provided with a safe working environment and that management put in place reasonable precautions to protect staff from undue hazards.

14.2 DHSOs will have to ensure that risk assessments are carried out, for all new procedures to be undertaken, and a written analysis is read and signed by all staff involved before any new work is carried out.

15. Office of the Solicitors to the Scottish Executive (OSSE)

15.1 OSSE will have to be consulted when advice is required on legislative issues.

15.2 OSSE will provide advice on any new or amended legislation that may be required.

B. External Enforcement and Advisory Bodies

16. Local Authorities

16.1 Animal Health Inspectors employed by Local Authorities are responsible for the safe disposal of dead fish and other infected materials from areas subject to control measures.

16.2 Local Authority Emergency Planning Departments are able to supply a wide range of goods and services to deal with disease emergencies. They have “call-off” contracts with Defra for use in outbreaks of exotic animal diseases.

16.3 Local Authority EHOs have statutory duties relating to the quality of private water supplies. They will need to be consulted in the event of proposals to treat waters from which private supplies are drawn.

17. Police

17.1 Police Forces in Scotland have no direct input into *G.salaris* outbreaks but will provide assistance in gaining lawful access to premises when the owner refuses an Inspector legitimate access.

17.2 The Police must be used to stop/apprehend vehicles and drivers if illegal movements are suspected.

18. Scottish Environment Protection Agency (SEPA)

18.1 SEPA is responsible for enforcing environmental legislation and giving advice to SEERAD on proposals to contain/ eradicate *G. salaris*.

18.2 SEPA can provide detailed maps of catchment areas and, in many cases can provide hydrological data and basic chemical data for suspected or infected rivers.

18.3 SEPA will also, in conjunction with the SEERAD Veterinary Unit and the Local Authority, have responsibilities with respect to regulating the disposal of dead fish.

18.4 SEPA has a major role to play in developing eradication plans that involve the use of chemical treatment of catchments.

18.5 SEPA Officers may be able to assist in placing of Notices but this will depend on the availability of resources.

18.6 SEPA maybe required to license, under CAR, any barriers that maybe required in an eradication programme

19. **Scottish Natural Heritage (SNH)**

19.1 Scottish Natural Heritage is responsible for advising Scottish Ministers in matters relating to the conservation and enhancement of the natural heritage for promoting its sustainable use, and for fostering its understanding and enjoyment by the public.

19.2 When considering plans to tackle *G salaris* outbreaks, SNH must take into account the proximity of any treatment to designated areas, and its potential impact on wildlife and their habitats.

20. **Association of Salmon Fishery Boards**

20.1 The ASFB is the representative body of the 44 DSFBs (see section 20) which have statutory powers and duties to manage and conserve salmon and sea trout stocks. Not all parts of Scotland are currently covered by DSFBs eg Clyde, Loch Lomond and N.Ayrshire/Renfrewshire. The ASFB itself has no statutory powers.

20.2 The ASFB will provide a co-ordinating role between all the DSFBs and works closely with Rivers and Fisheries Trusts of Scotland (RAFTS). It will be the principal conduit for communication with FRS and FFA.

20.3 The ASFB will assist with publicising control measures.

20.4 The ASFB will assist in the development, promotion and implementation of appropriate training programmes for DSFB staff where required.

21. **District Salmon Fishery Boards (DSFBs)**

21.1 DSFBs are statutory bodies set up under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 [the 1986 Act was abolished, to the extent that it applied in Scotland (except for that part of the River Tweed catchment that lies within Scotland), by the 2003 Act].

21.2 The local DSFB (if relevant) will provide the Head of the NDCC with precise and up-to-date details of all known owners or managers of salmon fisheries in the affected water catchment(s).

21.3 DSFBs will provide information to the FRS and FFA on owners or occupiers of non-farmed waters and angling clubs etc.

21.4 DSFBs will report any suspicion of infection to FRS and remove dead and dying fish from non farm waters and ensure their safe disposal if so authorised by Ministers. They may also transfer such fish to FRS for diagnostic purposes if required.

21.5 DSFBs will assist with publicising control measures.

21.6 There are no DSFBs in a number of catchment areas. Statutory authority for these areas lies with the Scottish Executive.

22. **Water Bailiffs**

22.1 Water Bailiffs are appointed by DSFBs to enforce the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. In areas where there are no DSFBs, Scottish Ministers appoint water bailiffs.

22.2 Water Bailiffs have wide ranging powers to enter premises, make enquiries and seize fish and equipment if they have reasonable grounds for believing that an offence has been committed. With additional written authority from the DSFB a bailiff may enforce the provisions of the Diseases of Fish Act 1937 and enter premises and take samples under this Act.

23. **Scottish Water**

23.1 Scottish Water is responsible for managing Scotland's fresh water assets and providing clean potable water for domestic and industrial use. They will give advice on control measures that may involve diversion of water supplies, treatment with chemicals and the destruction and removal of fish.

23.2 Scottish Water will have to be consulted in the event of proposals to use chemical treatments, to place barriers in catchments and/or to cut off public supplies.

24. **Drinking Water Quality Regulator (DWQR)**

24.1 DWQR is responsible for enforcing the Water Supply (Water Quality)(Scotland) Regulations 1990. DWQR has powers to enforce action to ensure that public water supplies are safe for human consumption.

24.2 DWQR will have to be consulted when any action of containment or eradication is likely to affect drinking water quality.

C. Other Groups

25. **National & Local Stakeholder Groups**

25.1 Stakeholder Groups will be set up at national and local level to consult with and advise the DSG and NDCC on control and eradication issues that affect their industry/pursuit and/or members.

25.2 The National Stakeholder Group will be set up by the Head of DSG, and will liaise directly with him/her. The group will be responsible for disseminating information to relevant groups about the diseases status. They will also keep SEERAD informed of any issues within the control strategy that are likely to cause problems throughout Scotland or large areas thereof and help to seek solutions.

25.3 Local Stakeholder Groups will be set up by the Head of the NDCC and be responsible for disseminating local information to their members/ contacts. They will keep the Head of NDCC informed of local problems and help to seek solutions.

26. Fish Veterinary Society

26.1 Fish Vets have a role to play in carrying out surveillance work, in treatment of fish diseases and in supervising welfare at emergency slaughter.

26.2 Fish Vets can advise on and supervise the treatment of fish farm stocks in order to reduce losses whilst decisions are being made and plans put in place to carry out an eradication campaign.

27. Rivers and Fisheries Trusts Scotland (RAFTS)

27.1 RAFTS are the representative body for all the Rivers and Fisheries Trusts. They are a charitable body and have a role in dissemination of information to members.

27.2 Trusts are charitable bodies which routinely monitor freshwater fish stocks and habitat, and undertake restoration, environmental and education projects.

27.3 They can provide information, education and communication services, and have in the region of 50 fisheries biologists and seasonal staff working at a local level across Scotland. The only significant areas where Trusts exist without DSFBs are in Loch Lomond and the Clyde catchment.

28. Scottish Salmon Producers' Organisation (SSPO)

28.1 SSPO is an industry association whose quality assurance membership scheme represents about 90% of the tonnage produced by the Scottish Industry. SSPO will be able to contact a large proportion of salmon fish farmers.

28.2 SSPO will need to be consulted when any action is likely to have adverse effects on fish farms.

29. British Trout Association (BTA)

29.1 BTA represents about 80% of the farmers involved in trout production in the UK.

29.2 BTA will need to be consulted if any action is likely to have adverse effects on trout farms.

30. Scottish Anglers National Association (SANA)

30.1 The Scottish Anglers National Association Ltd., which represents 320 Clubs and 30,000 anglers, is recognised as the governing body for Game Angling in Scotland.

30.2 SANA Ltd., which is a Company Limited by Guarantee, consists of the committees, which together with a Company Secretary/Finance Director, Vice President and President voluntarily represent the membership.

30.3 The SANA Competitions Section is responsible for selection and management of International Teams, and controls and delivers the Scottish National Trout Fly Fishing

Championship and Scottish Rivers Championship. The Scottish Clubs Committee controls and delivers the Scottish Club Championship.

30.4 SANA provides a channel of communication for the game angling sector.

31. **Scottish Federation for Coarse Angling**

31.1 SFCA will be consulted over the impact on coarse fisheries in affected catchments of any potential containment or eradication measures under consideration.

31.2 SFCA provide a channel of communication with the coarse angling sector; both in terms of disseminating information from the Executive to anglers, and by way of passing "up the line" any reports of apparent infection observed by anglers on the bank.

32. **Atlantic Salmon Trust**

32.1 The Atlantic Salmon Trust is a UK wide charity which draws its funding largely from private donations.

32.2 The Trust's main function is to work for the conservation and improvement of wild salmon and sea trout stocks to a level that allows sustainable exploitation. To this end the trust conducts and supports research activities and gives practical advice on the management of fisheries and rivers.

33. **Salmon and Trout Association**

33.1 The Salmon & Trout Association Ltd is a non-profit making company whose objects are:-

- To safeguard and improve salmon, trout and other salmonid stocks and their fisheries in the United Kingdom and their environment and to ensure the maintenance of adequate supplies of clean water for these fisheries.
- To protect and further the interests within the UK of all who fish for salmon, sea trout and trout and other salmonid stocks by rod and line by fair and legal methods and of all who own or manage salmon, sea trout and trout fisheries for the enjoyment of rod anglers;

33.2 The Association in Scotland is represented by two elected Directors on the Association Board, who will have responsibility for the Association's objects and strategy UK-wide but with particular reference to the Scottish Parliament and Scottish law and requirements in Scotland. The Association in Scotland numbers around 900 individual, trade and professional members and would make this channel available for the communication of GS information and directives.

34. **Scottish Fisheries Co-ordination Centre**

34.1 The Scottish Fisheries Co-ordination Centre (SFCC) is an association of District Salmon Fishery Boards, Fisheries Trusts, FRS, the SE and others established in 1997 in order to help its members collect, collate, use, and provide information on freshwater fish, their habitats and fisheries.

34.2 Among other things the SFCC provides a mechanism for local fisheries managers and biologists to standardise aspects of data collection, co-ordinates the supply of spatially related GIS data, provides a mechanism for scientific analysis of fish and habitat data and collates and provides fish and fisheries data at local, regional and national scales to inform policy decisions.

35. **Ordnance Survey**

35.1 The Ordnance Survey is the primary source of paper and digital mapping which would be needed for planning and implementing disease control measures.

35.2 They can also provide a Geographical Information System (GIS) to enable plotting of data in relation to river systems.

35.3 In event of large outbreaks Ordnance Survey may be able to provide staff to operate GIS systems.

36. **Hydro Electricity Industry**

36.1 The hydro-electric industry uses large quantities of loch and river water to generate electric power. Part of the process involves transfer of water within and between catchments.

36.2 Hydro-electric industry controls about 35 fish passes that may need to be closed to prevent upstream migration of fish.

36.3 In an eradication programme formal consultation will be required in advance of any actions to clean out water intakes or to prevent water transfer as a disease control measure.

37. **Scotch Whisky Industry**

37.1 The Scotch Whisky Industry uses large quantities of water in its distilleries. Part of the distinct flavour of individual whisky derives from the water quality.

37.2 Any chemical treatment of distillery water is likely to have an adverse effects on whisky quality and it will thus be necessary to liaise with individual distilleries in advance of any proposed eradication campaign to agree the best time for treatment to take place.

38. **sportscotland**

38.1 There are many bodies representing members of the wider community that rely on access to water for their pursuits sportscotland have acted as an umbrella in drawing up this plan and will be a member of National and Local Stakeholder Groups.

38.2 sportsScotland will act as a source of advice to the leisure industry and can also advise if individual bodies merit attendance at stakeholder groups.

39. **Scottish Canoe Association**

39.1 The SCA will be consulted over the impact on canoeing in affected catchments.

39.2 The SCA will provide a channel of communication with canoeists and convey information relating to access to inland waters within an infected catchment and any requirements to disinfect recreational equipment.

40. **Scottish Society for the Prevention of Cruelty to Animals (Scottish SPCA)**

40.1 Scottish SPCA is a charitable body with no legal powers in relation to the welfare of animals. They do, however, respond to complaints from the public over cruelty and work closely with Procurators Fiscal in taking cases to court.

40.2 Scottish SPCA may request permission to audit slaughter procedures in the event of an outbreak and NDCC managers, in consultation with DSG, should be prepared to grant the request subject to any conditions which may be appropriate to prevent disease spread.

41. **Visit Scotland**

41.1 VisitScotland is the national tourism agency for Scotland, whose core objectives are to:-

- Attract visitors by building a successful Scottish tourism brand
- Engage and work in partnership with the tourism industry
- Enhance the visitor's experience
- Provide strategic direction to the industry
- Manage our business efficiently and effectively

41.2 VisitScotland is aware that an outbreak of *Gyrodactylus Salaris* (GS) would have a significant impact on angling tourism and water sports and is committed to promoting awareness of GS through websites, tourist information centres, anglers welcome scheme and quality assurance advisers.

41.3 VisitScotland, whole heartily supports the Scottish Executive communications and contingency planning to keep the disease out of Scotland.

Appendix 3 Factors to be considered when deciding on whether to contain or eradicate disease.

In the initial stages of an outbreak movement controls maybe imposed nationwide until the distribution of the parasite is established. Thereafter consideration will be given to either containment and/or eradication on a catchment by catchment basis. Eradication will be the best solution if it is practical.

1. Containment

1.1 The suspicion or confirmation of the presence of *G. salaris* will immediately lead to the introduction of appropriate containment measures in the infected area. In addition, if it is concluded that eradication is impossible or unacceptable, or that the salmon population in a catchment can be sacrificed to the risk from *G. salaris*, containment of the infection may be used as a long-term strategy.

1.2 Containment measures have been shown to have a significant level of success in preventing the progressive spread of *G. salaris* from infected catchments in both Norway and Finland. The Expert Group will maintain a comprehensive and up-to-date knowledge of the approaches and success levels of the policy in these countries.

1.3 Regular surveillance for *G. salaris* infection in the buffer zone established around the infected zone will permit the assessment and, therefore, the active management of the risk of spread of the infection from the delineated source. The frequency of the surveillance and sampling will initially be high after the first detection of *G. salaris* infection but will later be adjusted depending on the results obtained and advice from the Expert Group. The level of surveillance carried out by water bailiffs will be increased in initial stages.

1.4 The movement of live fish of susceptible species poses the greatest risk of transferring *G. salaris* from infected to uninfected areas. The rigorous application of the powers given in the Diseases of Fish Acts may be used to restrict the activities of man in transferring live fish or eggs from controlled areas.

1.5 Treatments and the prevention of escapes of fish from infected fish farms to uninfected local waters will be an immediate priority. If prevention of escapes is difficult it may be necessary to depopulate an infected fish farm to stop diseases spread even if eradication is not an option for the whole catchment. However, when infection is present in wild populations, the natural movements of infected wild fish through freshwater may lead to the infection of the whole catchment unless barriers impassable to fish are constructed and maintained to prevent the movement of fish from the infected area. It is likely that such a measure would only be practical in very exceptional circumstances but could be appropriate as a temporary measure prior to the implementation of an eradication strategy. Where fish passes exist in infected catchments they should be closed immediately that disease is confirmed in an attempt to contain the disease.

1.6 *G. salaris* is known to have the ability to survive in fresh water for a limited period free from fish hosts. *G. salaris* uses a variety of potential and transport hosts. Knowledge of the various inter reactions is not fully understood. The current information is summarised in

Annex 1. It thus has the potential for limited spread through freshwater. The treatment of effluent waters from infected fish farms (e.g. chemical, heat, salinity), if initiated sufficiently early to prevent spread to wild fish populations, may be initiated. The prevention of such spread in natural conditions may be considered to be virtually impossible.

1.7 Measures to contain risk associated with the use of angling equipment in infected areas are outlined in the pamphlet “Keep *Gyrodactylus salaris* out of Scottish Rivers” and the Code of Practice to Avoid the Introduction of *Gyrodactylus salaris* to GB. This information, applicable also to boating, sailing and fish farm equipment, will be widely disseminated to local residents. More widespread targeting of specialist audiences e.g. wild fishery interests, fish farmers, anglers and other users of water will be achieved by distribution of the same information to groups listed in Appendix 2

1.8 The safe disposal of dead fish and processing waste is the responsibility of the fishery owner or fish farmer or fish processor regulated by SEPA and the relevant Local Authority, depending on the waters from which they came and the method of disposal. The Animal By-Products (Scotland) Regulations 2003 sets out the permissible ways of dealing with various categories of animal waste. Fish infected with *G. salaris* and processing waste of these fish would be classed as Category 2 by-products. This means there are three principle options available for dealing with the waste resulting from an outbreak of *G. salaris* namely rendering, incineration or in certain specific cases by burial. Responsibility for high risk waste lies with any person who has it in their possession or under their control. The Animal Health Inspector of the relevant Local Authority has responsibility for ensuring the safe disposal of high risk infectious material preferably by rendering or incineration

1.9 Rendering is cheaper and able to handle much larger quantities of waste than incineration. These two methods are also administratively simpler options because SEPA would not need to make an assessment of the impact of the disposal route since the process would destroy the parasite. The route of disposal will be subject to supervision by FRS and/or Local Authority Inspectors.

1.10 Burning and burial are permitted in certain circumstances, usually where there is a health risk associated with moving the waste, a lack of rendering capacity, or where the waste is infected with a disease which could survive the rendering process. In order to bury or burn *G. salaris* infected waste, SEPA would need to be content that the waste would not pose an unacceptable risk to the environment.

1.11 Local Consultants in Public Health Medicine {Health Board Employees} may need to be consulted if run off, leachates or smoke from the disposal process, are thought to pose risk to Public Health.

2. Eradication

2.1 Eradication of *G. salaris* infection has been successfully achieved in several rivers and fish farms in Norway. The Expert Group should maintain a comprehensive and up-to-date knowledge of the approaches and success levels of the policy in that country and others with a view to guiding SEERAD policy if better methods become available.

2.2 Eradication of the infection may be the preferred option if the distribution of infection is restricted, limited to a small watercourse or confined to a fish farm. All the measures

required for a containment programme will also be implemented during the planning stages to an eradication programme to reduce the risk of disease spread both within the catchment and to other catchments.

2.3 It may be necessary to construct barriers to prevent the migration of susceptible species of fish into treated or untreated parts of the catchment over a longer period. Barriers may also be used to divide a catchment up into manageable sections for treatment. On fish farms it will be necessary to ensure against escapes until all fish are killed out.

2.4 Given the nature of the possible chemical treatments to control the infection or to remove susceptible fish, the possibility of treatment would have to be discussed with SEPA and SNH. Legal advice from OSSE would need to be sought in event of SEPA and/or SNH refusing to grant the necessary consents. Ministers have powers to instruct agencies to issue the necessary consents.

2.5 *G. salaris* can be effectively managed as a disease in fish farms through the use of chemical (formalin) baths for fish stocks. Current information on treatments for *G. salaris* is contained in Annex 2. However, the infection is not normally eliminated by such methods and fallowing of the farm will be required to allow eradication of the parasite. Fallowing may be enforced under the terms of the TDN or DAO in place on the farm. Such measures will only be appropriate for removing *G. salaris* from an area, if there is evidence that the infection has not spread from the farm to local wild populations of susceptible fish species. When it is evident that the on-farm precautions are inadequate to prevent escapes consideration will be given to destroying the farm stocks to prevent disease spread to the wider environment.

2.6 Norwegian practical experience has shown that eradication of infection may be possible through the use of rotenone when *G. salaris* occurs. The Expert Group will develop and maintain an up-to-date protocol dealing with the planning and implementation of an eradication scheme for *G. salaris*. The protocol will be based on the use of rotenone and any other suitable chemical which may be identified. The protocol will include estimated costs per cubic flow and length of river, other resources required (e.g. identified materials and staffing) and the ecological and social implications of treating the main types of river systems present in Scotland. The Operations Manuals will contain up-to-date details of sources of rotenone and other necessary materials and staff.

2.7 It is theoretically possible to eliminate *G. salaris* from some watercourses through the use of barriers that are impassable to migratory fish if these are placed in the estuary at salinity levels where the parasite cannot survive. The integrity of such barriers would need to be securely maintained for the complete period while susceptible fish species are able to persist in the catchment. The Expert Group will maintain an up-to-date broad evaluation of the practicality and costs of such barriers for the main appropriate types of watercourses present in Scotland and make this available to the CDU in the event of an outbreak of *G. salaris*.

2.8 It is important that any plan to eradicate susceptible species of fish should include measures to mitigate against the significant loss of fish populations in the target watercourse. These measures would include the preservation of stocks and genetic material in gene banks and the timing of any treatment to coincide with the season when the majority of adult fish stocks are at sea where this is applicable.

2.9 In making recommendations to Ministers on the feasibility of attempting to eradicate disease DSG will take note of consultations with the internal and external stakeholder groups listed in Appendix 2, the Expert Group and disease and epidemiology reports prepared by FRS. Criteria to be evaluated will include the level of disease, the practical difficulties in eradication, the cost, the consequences of taking no action, any adverse effects on the environment and any adverse economic effects on the angling and associated industries.

3. Other Considerations

3.1 This plan is aimed at the containment and/or eradication of *G. salaris* should Scottish waters become infected. There are, however, many users of water on whom this plan will impact should it ever have to be implemented. This section of the plan deals with arrangements to deal with these impacts when planning containment/eradication plans. They are not meant to be all embracing and, if an outbreak occurs, there may be other new factors that will have to be taken into account. It will be up to SEERAD staff and stakeholders to identify and deal with any new or emerging factors.

3.2 Rotenone is the only chemical that has been successfully used on a large scale to treat infestations of *G. salaris*. It is selective in its action, dependant upon the concentration at which it is applied and kills the host (denying the parasite the means to survive), all other fish species and may also kill other vertebrate and invertebrate species. Some of these species will be of interest and value from a conservation point of view and may merit specific special attention. Aluminium sulphate has also been used, in field trials, to kill the parasite but does not kill the host or other species. The use of aluminium sulphate may markedly alter the water chemistry and thus impact on species by this route. SEPA and SNH must be consulted in the event of proposals to use either chemical.

3.3 SEPA is responsible for enforcing environmental legislation and may require to licence the use of chemicals to destroy *G. salaris*. SEPA will need to be consulted when eradication plans involve the use of either rotenone or aluminium sulphate. SEPA will also need to be consulted when there are proposals to contain the spread of disease within a fish farm by the use of chemical such as formalin as discharge consents maybe required. A list of chemicals which maybe used to treat fish against *G. salaris* is in Annex 2.

3.4 Rotenone is moderately toxic to humans at high dose rates and formalin based products can be extremely irritant. Bearing in mind the major use of water in food preparation and for drinking, medical colleagues should be consulted on any plans to use these chemicals. Local Authority Environmental Health offices have responsibility for private water supplies and the Drinking Water Regulator for water quality issues. They will both need to be consulted.

3.5 If burial and/or local incineration is required to dispose of dead fish problems may arise/ in terms of human health, from leachates and/or products of incineration given off as aerosols/smoke. Medical colleagues should be consulted when plans involve either of these disposal methods.

3.6 The hydro electric and water supply industries regularly practices water transfers both within and between catchments to ensure adequate supplies. In the planning of containment and eradication measures these industries will need to be consulted. Actions that maybe

required include the cessation of water transfers to limit disease spread or the extension of the infected and buffer zones to include all the area(s) involved in any transfer operations and the temporary closure of a power stations to allow chemical treatment therein.

3.7 The whisky industry uses large quantities of water primarily for cooling purposes. Plans to treat water will have to be discussed with individual distilleries to ensure that adequate alternative water supplies can be obtained for the duration of treatment.

3.8 A large variety of leisure pursuits use water for their activities. Where it has been assessed that leisure pursuits pose a potential risk of the spread of *G salaris*, these activities must be controlled or measures taken to ensure that the identified risk is mitigated against. This should be done in full consultation with the relevant representative body.

ANNEX 1. POTENTIAL HOSTS AND TRANSPORT HOSTS FOR G. SALARIS.

| Species | Attach | | | Reproduce | | | References |
|--|--------|-------|------|-----------|-------|------|---|
| | Lab | Field | Farm | Lab | Field | Farm | |
| Atlantic salmon, <i>Salmo salar</i> | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Rainbow trout, <i>O. mykiss</i> | ✓ | ✓ | ✓ | ✓ | | ✓ | Mo, T. A. (1988) Virksomheten i 1987 og program for virksomheten i 1988. <i>Gyrodactylus</i> undersøkelser ved Zoologisk Museum, Universitet Oslo. Rapport nr. 4, pp.1-29. Bakke, T.A., Jansen, P.A., Kennedy, C.R. (1991) The host specificity of <i>Gyrodactylus salaris</i> Malmberg (Platyhelminthes, Monogenea): Susceptibility of <i>Oncorhynchus mykiss</i> (Walbaum) under experimental conditions. <i>Journal of Fish Biology</i> 39 : 45-57. Buchmann, K., Uldal, A. (1997) <i>Gyrodactylus derjavini</i> infections in four salmonids: comparative host susceptibility and site selection of parasites. <i>Diseases of Aquatic Organisms</i> 28 : 201-209. |
| Brown trout, <i>S. trutta</i> | ✓ | ✓ | | ✓ | | | Johnsen, B.O., Jensen, A.J. (1992) Infection of Atlantic salmon, <i>Salmo salar</i> L., by <i>Gyrodactylus salaris</i> , Malmberg 1957, in the River Lakselva, Misvaer in Northern Norway. <i>Journal of Fish Biology</i> 40 : 433-444. Malmberg, G., Malmberg, M. (1991) Investigations on <i>Gyrodactylus</i> on salmonids in nature and in hatcheries in 1951-72 and 1986-May 1991. <i>Information från Sötvattenslaboratoriet, Drottningholm</i> . 2: 1-130. Jansen, P.A., Bakke, T.A. (1995) Susceptibility of brown trout to <i>Gyrodactylus salaris</i> (Monogenea) under experimental conditions. <i>Journal of Fish Biology</i> 46 : 415-422. |
| Arctic charr, <i>Salvelinus alpinus</i> | ✓ | ✓ | | ✓ | | | Bakke, T.A., Jansen, P.A. (1991) Susceptibility of Arctic charr (<i>Salvelinus alpinus</i>) to <i>Gyrodactylus salaris</i> Malmberg (Monogenea). <i>Bulletin of the Scandinavian Society of Parasitology</i> 1 : 60. Bakke, T.A., Jansen, P.A., Harris, P.D. (1996) Differences in susceptibility of anadromous and resident stocks of Arctic charr to infections of <i>Gyrodactylus salaris</i> under experimental conditions. <i>Journal of Fish Biology</i> 49 : 341-351. Mo, T. A. (1988) <i>Gyrodactylus</i> -undersøkelser av fisk i forbindelse med rotenonbehandlingen av Skibotnelva i August 1988. University of Oslo, Zoological Museum, <i>Gyrodactylus</i> undersøkelser. Rapport nr. 5, pp. 1-14. |
| Brook trout, <i>S. fontinalis</i> | ✓ | ✓ | | | | | Bakke, T. A., Harris, P. D., Jansen, P. A. (1992) The susceptibility of <i>Salvelinus fontinalis</i> (Mitchell) to <i>Gyrodactylus salaris</i> Malmberg (Platyhelminthes; Monogenea) under experimental conditions. <i>Journal of Fish Biology</i> 41 : 499-507. |
| Lake trout, | | | | | | | Bakke, T. A., Jansen, P. A., Grande, M. (1992) The susceptibility of <i>Salvelinus n</i> |

| | | | | | | | |
|--|---|--|--|---|--|--|---|
| <i>S. namaycush</i> | | | | | | | <i>Gyrodactylus salaris</i> Malmberg (Platyhelminthes; Monogenea) under experiment (Serie A) |
| Grayling, <i>Thymallus thymallus</i> | ✓ | | | ✓ | | | Bakke, T.A., Jansen, P.A. (1991) Susceptibility of Grayling (<i>Thymallus thymallus</i>) to <i>Gyrodactylus salaris</i> Malmberg (Monogenea). <i>Bulletin of the Scandinavian Society of Parasitology</i> 1: 61. Soleng, A., Bakke, T.A. (2001) The susceptibility of grayling (<i>Thymallus thymallus</i>) to experimental infections with the monogenean <i>Gyrodactylus salaris</i> . <i>International Journal for Parasitology</i> 31: 793-797. Sterud, E., Mo, T.A., Collins, C.M., Cunningham, C.O. (2002) The use of host specificity, pathogenicity, and molecular markers to differentiate between <i>Gyrodactylus salaris</i> Malmberg, 1957 and <i>G. thymalli</i> Zitnan, 1960 (Monogenea: Gyrodactylidae). <i>Parasitology</i> 124: 203-214. |
| Whitefish, <i>Coregonus lavaretus</i> | ✓ | | | | | | Soleng, A., Bakke, T.A. (2001) The susceptibility of whitefish (<i>Coregonus lavaretus</i> L.) to experimental infections with the monogenean <i>Gyrodactylus salaris</i> Malmberg, 1957. <i>Bulletin of the Scandinavian Society for Parasitology</i> 11: 32-36. |
| <i>Salmothymus obtusirostris</i> | | | | ✓ | | | Zitnan, R. & Cankovic, M. (1970) Comparison of the epizootological importance of the parasites of <i>Salmo gairdneri irideus</i> in the two cosat areas of Bosnia and Herzegovina. <i>Helminthologia</i> 11:161-166. |
| Eel, <i>Anguilla anguilla</i> | ✓ | | | | | | Bakke, T.A., A., J.P., Hansen, L.P. (1991) Experimental transmission of <i>Gyrodactylus salaris</i> Malmberg, 1957 (Platyhelminthes, Monogenea) from the Atlantic salmon (<i>Salmo salar</i>) to the European eel (<i>Anguilla anguilla</i>). <i>Canadian Journal of Zoology</i> 69: 733-737. |
| Lamprey, <i>Lampetra planeri</i> | ✓ | | | | | | Bakke, T. A., Jansen, P. A., Brabrand, Å. (1990) Susceptibility and resistance of brook lamprey, <i>Lampetra planeri</i> (Bloch), roach <i>Rutilus rutilus</i> (L.) and perch, <i>Perca fluviatilis</i> L., to <i>Gyrodactylus salaris</i> Malmberg (Monogenea). <i>Fauna norv. (Serie A)</i> 11: 23-26. |
| Roach, <i>Rutilus rutilus</i> | ✓ | | | | | | Bakke, T. A., Jansen, P. A., Brabrand, Å. (1990) Susceptibility and resistance of brook lamprey, <i>Lampetra planeri</i> (Bloch), roach <i>Rutilus rutilus</i> (L.) and perch, <i>Perca fluviatilis</i> L., to <i>Gyrodactylus salaris</i> Malmberg (Monogenea). <i>Fauna norv. (Serie A)</i> 11: 23-26. |
| Minnow, Phoxinus phoxinus | ✓ | | | X | | | Bakke, T. A., Sharp, L. A. (1990) Susceptibility and resistance of minnows, <i>Phoxinus phoxinus</i> (L.) to <i>Gyrodactylus salaris</i> Malmberg, 1957 (Monogenea) under laboratory conditions. <i>Fauna norv. (Serie A)</i> 11: 51-55 |
| Perch, <i>Perca fluviatilis</i> | ✓ | | | | | | Bakke, T. A., Jansen, P. A., Brabrand, Å. (1990) Susceptibility and resistance of brook lamprey, <i>Lampetra planeri</i> (Bloch), roach <i>Rutilus rutilus</i> (L.) and perch, <i>Perca fluviatilis</i> L., to <i>Gyrodactylus salaris</i> Malmberg (Monogenea). <i>Fauna norv. (Serie A)</i> 11: 23-26. |
| Three-spined stickleback, <i>Gasterosteus aculeatus</i> | ✓ | | | | | | Soleng, A., Bakke, T.A. (1998) The susceptibility of three-spined stickleback (<i>Gasterosteus aculeatus</i>), nine-spined stickleback (<i>Pungitius pungitius</i>) and flounder (<i>Platichthys flesus</i>) to experimental infections with the monogenean <i>Gyrodactylus salaris</i> . <i>Folia Parasitologica</i> 45: 270-274. |

| | | | | | | | |
|--|---|--|--|--|--|--|---|
| Nine-spined stickleback, <i>Pungitius pungitius</i> | ✓ | | | | | | Soleng, A., Bakke, T.A. (1998) The susceptibility of three-spined stickleback (<i>Gasterosteus aculeatus</i>), nine-spined stickleback (<i>Pungitius pungitius</i>) and flounder (<i>Platichthys flesus</i>) to experimental infections with the monogenean <i>Gyrodactylus salaris</i> . <i>Folia Parasitologia</i> 45: 270-274. |
| Flounder, <i>Platichthys flesus</i> | ✓ | | | | | | Soleng, A., Bakke, T.A. (1998) The susceptibility of three-spined stickleback (<i>Gasterosteus aculeatus</i>), nine-spined stickleback (<i>Pungitius pungitius</i>) and flounder (<i>Platichthys flesus</i>) to experimental infections with the monogenean <i>Gyrodactylus salaris</i> . <i>Folia Parasitologia</i> 45: 270-274. |

ANNEX 2. PUBLISHED INFORMATION ON TREATMENTS FOR G. SALARIS.

| | |
|--|---|
| Buchmann, K. (1997) Salinity tolerance of <i>Gyrodactylus derjavini</i> from rainbow trout <i>Oncorhynchus mykiss</i> . Bulletin of the European Association of Fish Pathologists 17: 123-125. | Parasite eliminated at salinity greater than 7ppt. |
| Buchmann, K. Kristensson, R. T. (2003) Efficacy of sodium percarbonate and formaldehyde bath treatments against <i>Gyrodactylus derjavini</i> infestations of rainbow trout. North American Journal of Aquaculture 65: 25-27. | <i>G. derjavini</i> eliminated after 18h in sodium percarbonate at 80mg/L or more or formaldehyde at 20mg/L eliminated parasites. Significant reduction after formaldehyde at 5 pr 10 mg/L for 18h. |
| Crigel, P., Losson, B. & Defour, J. (1995) Utilisation de la quinaldine, un anesthetique pour poissons, a des fins antiparasitaires. Annales de Medecine Veterinaire 139: 343-348. | Quinaldine appears effective after 99secs at 26mg/l, but my translation of the original French article is not perfect. No identification of species and possibly a combination of <i>Dactylogyrus</i> and <i>Gyrodactylus</i> on the fish used. |
| El-Khatib, N.R.H. (2003) Biological eradication of some parasitic diseases in fishes using <i>Bacillus thurigiensis</i> Agerin® product. Veterinary Medical Journal Giza. 51(1), 19-28. | Not effective against <i>Gyrodactylus</i> spp. on <i>Oreochromis niloticus</i> at 1000ppm/1h or 2h, 500ppm/1h or 2h, 100ppm/indefinite |
| Mo, T. A. (2000) Desinfeksjon av fiskeutstyr. Fiske (Norwegian Angling Magazine) 3. | Use of Virkon to treat equipment. Personal communication from author indicates that Virkon kills <i>G. salaris</i> in a few seconds. |
| Moen A et al (2005) | Bekjempelsen av <i>Gyrodactylus salaris</i> i Ranaregionen 2003 - 2004. 230 p. |
| Poleo, A.B.S., Schjolden, J., Hansens, H., Bakke, T.A., Mo, T.A. (2004) The effect of various metals on <i>Gyrodactylus salaris</i> (Platyhelminthes, Monogenea) infections in Atlantic salmon (<i>Salmo salar</i>). Parasitology 128: 1-9. | Infected salmon were exposed to aqueous aluminium (Al), copper (Cu), zinc (Zn), iron (Fe) and manganese (Mn), at 4 different concentrations. There was a negative correlation between <i>G. salaris</i> infections and metal concentrations in both Zn- and Al-exposed salmon. In the Zn-experiment, all 4 concentrations tested (63-488 µg/L) caused a decrease in the <i>G. salaris</i> infections, while in the Al-experiment the <i>G. salaris</i> infection did not decline at the lowest concentration 292µg/L. The number of <i>G. salaris</i> increased continuously during the experiments in all control groups, and in all groups exposed to Cu, Fe and Mn. At the highest concentration (85µg/L), however, copper seemed to impair the growth of <i>G. salaris</i> infection. Aqueous Al and Zn have a stronger effect on the parasite than on the salmonid host. |
| Rach, J. J., Gaikowski, M. P. & Ramsay, R. T. (2000) Efficacy of hydrogen peroxide to control parasitic infestations on hatchery-reared fish. Health 12: 267-273. | Claim elimination possible, but only skin scrapes used to monitor fish, not whole fish examination. |
| Santamarina, M. T., Tojo, J., Ubeira, F. M., Qiunte | Bithionol and nitroscanate 100% effective |

| | |
|--|--|
| (1991) Anthelmintic treatment against <i>Gyrodactylus</i> sp. infecting Rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Diseases of Aquatic Organisms</i> 10: 39-43. | (possibly <i>G. derjavini</i> or <i>G. teuchis</i> , but not identified by authors) |
| Schmahl, G. (1993) Up to date chemotherapy against monogenea: a review. <i>Bulletin Français de la Pêche et de la Pisciculture</i> 328: 78-81. | Trichlorfon results equivocal, Mebendazole effective against some species (possibly effect of water quality parameters), praziquantel effective, Toltrazuril effective, HOE092V (under development at time of publication, I have no further information) effective. |
| Schmahl, G. Taraschewski, H. (1987) Treatment of fish parasites 2. Effects of praziquantel, niclosamide, levamisole-HCl and metrifonate on Monogenea (<i>Gyrodactylus aculeati</i> , <i>Diplozoon paradoxum</i>). <i>Parasitology Research</i> 73: 341-351. | Praziquantel, niclosamide and levamisole-HCl effective against <i>G. aculeati</i> on sticklebacks |
| Soleng, A. & Bakke, T. (1991) Experimental studies on the salinity tolerance of <i>Gyrodactylus salaris</i> Malmberg, 1957. <i>Bulletin of the Scandinavian Society of Parasitology</i> 1: 79. | <i>G. salaris</i> can survive for up to 5 days at 10‰, over 54 days at 7.5‰. Mean extinction time at 10‰ was 29hours at 12°C and 55 hours at 6°C. Mean extinction time at 7.5‰ was 41 hours at 12°C, 95 hours at 6°C. Max. survival time at 12°C was 54 days. |
| Soleng, A. Bakke, T. (1993) Salinity tolerance of <i>Gyrodactylus salaris</i> Malmberg (Monogenea) infecting presmolts of Atlantic Salmon, <i>Salmo salar</i> . Experimental studies. 2nd International Symposium on Monogenea, Montpellier, France, 5-7 July. | 15‰ salinity, mean survival is 17 hours (max. 24 hours) at 12°C, 32 hours (max. 74 hours) at 6°C. 20‰ salinity, survival mean 10 hours, max. 12 hours at 12°C, mean 16, max. 18 hours at 6°C. 33‰ salinity survival max. 10 minutes at 12°C, max. 19 minutes at 6°C. |
| Soleng, A. & Bakke, T. A. (1997) Salinity tolerance of <i>Gyrodactylus salaris</i> (Platyhelminthes, Monogenea): laboratory studies. <i>Canadian Journal of Fisheries and Aquatic Sciences</i> 54: 1837-1845. | Parasites die after a few minutes in full-strength (33‰) sea water from freshwater. In 7.5‰ salinity, parasites survive up to 56 days. Survival time decreases with increasing salinity |
| Soleng, A., Poleo, A. B. S., Alstad, N. E. W. & Bakke, T. A. (1999) Aqueous aluminium eliminates <i>Gyrodactylus salaris</i> (Platyhelminthes, Monogenea) infections in Atlantic salmon. <i>Parasitology</i> 119: 19-25. | Parasites eliminated after 4 days in water with 202µg Al/litre. Effect of Al is concentration dependent and enhanced when pH lowered to 5.0. Suggest this might be a useful treatment in hatcheries. |
| Steverding, D., Morgan, E., Tkaczynski, P., Walder, F., Tinsley, R.C. (2005) Effect of Australian tea tree oil on <i>Gyrodactylus</i> spp. infection of the three-spined stickleback <i>Gasterosteus aculeatus</i> . <i>Diseases of Aquatic Organisms</i> 66: 29-32. | Tea tree oil at 3-30ppm in presence of Tween80 at 0.01% lowered prevalence and parasite burden. 30ppm lowered prevalence from 90 to 50%, abundance from 5.9 worms per host to 1.4. Tween80 alone also parasiticidal, reduced burden from 12.6 to 5.9 worms per host. |
| Tojo, J., Santamarina, M. T., Ubeira, F. M., Estevez, J. & Sanmartin, M. L. (1992) benzimidazoles against <i>Gyrodactylus</i> sp. infecting rainbow trout <i>Oncorhynchus mykiss</i> . <i>Diseases of Aquatic Organisms</i> 12: 185-189. | Benzimidazoles effective, with fenbendazole effective with no harm to fish. Some were totally ineffective. Possibly <i>G. derjavini</i> or <i>G. teuchis</i> , but species not identified in this paper |

| | |
|--|---|
| <p>Tojo, J., Santamarina, M. T., Ubeira, F. M., Leiro, J. & Sanmartin, M. L. (1993) Efficacy of antiprotozoal drugs against Gyrodactylosis in rainbow trout (<i>Oncorhynchus mykiss</i>). Bulletin of the European Association of Fish Pathologists 13: 79-82.</p> | <p>Quinacrine HCl 100% effective in bath treatment, without signs of toxicity. Other treatments less than 100% effective. Possibly <i>G. derjavini</i> or <i>G. teuchis</i>, but species not identified in this paper</p> |
| <p>Tojo, J. L. & Santamarina, M. T. (1998) Oral pharmacological treatments for parasitic diseases of rainbow trout <i>Oncorhynchus mykiss</i>. II: <i>Gyrodactylus</i> sp. Diseases of Aquatic Organisms 33: 187-193.</p> | <p>Triclabendazole and nitroscanate effective, another 22 compounds ineffective. Possibly <i>G. derjavini</i> or <i>G. teuchis</i>, but species not identified in this paper</p> |

APPENDIX 4 Additional information on Disease Responses

1. Resumé of relevant legislation and copies of notices.

1.1 List of relevant legislation is given in Appendix 1.

1.2 Appendix 1 also sets out the powers of the various agencies and inspectors in relation to specific pieces of legislation.

1.3 The powers of Ministers to appoint inspectors is detailed in Appendix 1, section 1.

1.4 Water bailiffs are appointed by DSFBs under powers listed in Appendix 2, paragraph 20.

2. Summary of protective measures

2.1 In the initial stages there may be a need to impose a national standstill until the distribution of the disease is established. Thereafter restrictions maybe limited to infected catchments and buffer zones. Where water transfer activities link a clean catchment to an infected one both will be subject to restrictions. Details of the requirements for surveillance sampling are contained in the Operations Manual (See Appendix 11). These requirements may be enhanced by additional scientific advice at the time.

2.2 Movement restrictions will be used to control the movements of fish, fish ova, fish feedstuffs and materials likely to carry viable infection whenever a TDN or DAO is in force. The initial action will be to ban movements to, from and within the infected zone which may include buffer zones as well as the infected catchment(s).

2.3 A risk assessment will be carried out to determine what movements may be permitted under licence. This assessment will also be used to decide on the criteria to be applied when assessing what uses of water will be permitted in the infected zone.

2.4 Surveillance sampling will be determined after a review carried out by FRS Epidemiology team in consultation with FHI and FFA. Surveillance sampling will be used firstly to determine the extent of disease spread within Scotland, to assess the origin of disease and thus what further surveillance is needed and, after treatment, to determine freedom from disease.

2.5 Cleansing and disinfection of premises, equipment and vehicles will be determined on a case by case basis by the inspector in charge BUT it should be assumed that any licensed movement into, out of or within the infected zone will be preceded by a supervised cleansing and disinfection. Vehicles involved in licensed movements will be cleansed and disinfected before movement and again thereafter and will not be allowed to be further used until the post movement cleansing has been carried out.

2.6 Cleansing and disinfection of fishing & leisure pursuit equipment will be determined by whatever decision is taken on restricting these activities. In a situation where it is decided to permit fishing and leisure pursuits within an infected zone there will be no need to carry

out cleansing and disinfection UNLESS the equipment used is transferred to a non infected zone.

3. Risk assessments and options for dealing with disease

3.1 A risk assessment was carried out on *G.salaris* in 2000. This has been updated, during the preparation of this plan, by the Prevention sub group using the following terms of reference:-

“To develop preventive measures at home and abroad to exclude Gyrodactylus salaris from Scotland through the control of:

Commercial activities, including the movement of ova, live and dead fish, aquatic plants and ballast water for whatever purpose.

Research activities including fish, disease and fisheries research

Recreational activities including angling, boating and other water based activities

To develop containment measures at home to contain the spread of G salaris through the control of:

The movement of live and dead fish and their ova, for whatever purpose.

The transfer of water between catchments for whatever purpose.

The transfer of equipment associated with waterborne activities for whatever purposes.”

3.2 The risk assessment categorises risks into high, moderate or low risk and is summarized in Annex 1 to this Appendix. Whilst the risk assessment is aimed primarily at keeping *G.salaris* out of Scotland it can equally provide a basis for action to contain the spread of disease were it to enter Scottish waters.

3.3 The assessment details the likely constraints on the effectiveness of measures, the surveillance of preventative measures and which organizations have key interests.

3.4 The risk assessment highlighted a number of areas where there was a case made for improved/ increases publicity over a wide range of issues. These issues are dealt with in Annex 9 of Appendix 5 on communications.

3.5 The Dee District Salmon Fishery Board has carried out a survey of the Dee catchment which describes the physical and biological characteristics knowledge of which may be required in making a decision to contain or eradicate *Gyrodactylus salaris*. A copy is at Annex 2 and can be used as a template in assessing other catchments.

4. Key Events and Action Flow Charts

4.1 The Operations Manual (Appendix 11) contains a series of action flow charts which describe what actions need to be taken to deal with the following events:-

- Dealing with the suspicion that *G salaris* maybe present,

- Placement of movement restrictions,
- Establishing a surveillance zone and
- Sampling sites following disease confirmation.

4.2 The key administration and policy events will be in support of the following activities:-

- Keeping Ministers fully briefed
- Setting up, managing and providing staff and other resources for DSG, NDCC and LDCC(s)
- Defining the infected area(s) and agreeing the surveillance, containment and eradication strategies
- Implementing the Communications Strategy including liaison with media (See Appendix 6 Para 5.2)
- Liaison with other SE Divisions, Enforcement and Advisory bodies and Stakeholder Groups.
- Emerging policy issues (See Appendix 6 Para 6)

5. Action on confirmation of disease

5.1 In the initial stages there may be a need to impose a national standstill until the distribution of the disease is established. This will involve consultation with Defra in relation to the Tweed and Border Esk Rivers.

5.2 On receipt of confirmation that disease exists, based on laboratory reports, the head of DSG will immediately notify Ministers and instruct FRS to inform the owner of the results, to set up the NDCC and to implement the Operations Manual.

5.3 DSG will meet as soon as possible and ensure that a press release is prepared and that arrangements are made for briefing the media. It is likely that Minister will take first briefing but a nominated official may stand in if Minister is not available.

5.4 DSG will notify Defra giving such details as are available to enable Defra to notify EC and OIE.

5.5 Head of DSG will issue instructions to all SE Departments specifying their roles and ensure that all Enforcement Bodies are notified.

5.6 Head of DSG will ensure that all stakeholders are contacted by most expeditious means (confirmed in writing) to alert them to the situation and to make arrangements for the first Stakeholder meeting.

5.7 Head of FRS sets up NDCC according to instructions in Operations Manual and notifies Head of DSG of staff and equipment requirements.

5.8 Head of NDCC arranges meeting of relevant Agencies at FRS in Aberdeen

5.9 FRS evaluate situation, inform DSG and implement detailed investigation to establish the extent of the disease, any movements to be traced and recommendations to extend infected zone and movement controls.

6. Protocols to declare freedom from disease

6.1 The programme of investigations to ensure no evidence of fish or parasite in infected zone will be determined by epidemiologists in consultation with FHI and the Expert Group. Details of the sampling protocols to be followed are in the Operations Manual (See Appendix 11). The consultation will also determine what criteria will be used to make a decision as to what constitutes freedom from disease.

6.2 When restocking is contemplated this should be done before the infected zone is lifted. Recently introduced fish will probably succumb to any parasites still in the system. Restocking with sentinel parr in cages will be considered as a means of concentrating the susceptible host to increase the chance of detecting the parasite.

Appendix 4 Annex 1 Risk Assessment**Risk****Dark—Highest risk****Medium—Moderate risk****Light—Low risk**

| Vector | Measures | Risk | Likely constraints on effectiveness of measures | Surveillance of preventative measures | Key interests |
|---|---|------|---|---------------------------------------|--|
| Recreational activity | | | | | |
| <ul style="list-style-type: none"> Anglers Transmission on wet tackle & clothing Transmission via imported live bait (see movement below) | Publicity & awareness at Ports of entry to Scotland. Declarations & guidance at points of entry to water. Clear advice on disinfection procedures & ready availability of treatments. | | Difficulties with enforcement at local level. Apathy amongst angling stakeholders. Difficulty in covering all sectors and convincing low-risk groups. | Enforcement at local level | SEERAD ASFB RAFTS S&TA SFCA SANA IFM SEPA Visit Scotland |
| <ul style="list-style-type: none"> Canoeists Transmission on wet craft, clothing and equipment | Publicity & awareness at Ports of entry to Scotland. Declarations & guidance at points of entry to water. Clear advice on disinfection procedures & ready availability of treatments. | | Difficulties with enforcement at local level. Apathy amongst canoeists. Difficulty in covering all sectors and convincing low-risk groups. | Enforcement at local level | SCA BCU Sportscotland Visit Scotland |
| <ul style="list-style-type: none"> Leisure craft & towed vessels Transmission on and within craft | Publicity & awareness at Ports of entry to Scotland. Declarations & guidance at points of entry to water. | | Potential lack of understanding of risks/consequences by users. Difficulties with enforcement at local level. | Enforcement at local level | British Waterways HMRC Visit Scotland |
| <ul style="list-style-type: none"> Rafting activity Transmission on wet craft and clothing | Publicity & awareness at Ports of entry to Scotland. Declarations & guidance at points of entry to water. | | Potential lack of understanding of risks/consequences by users. Difficulties with enforcement at local level. | Enforcement at local level | SRA Visit Scotland Sportscotland |
| <ul style="list-style-type: none"> Other water activity Gold panning Canyoning Transmission on clothing/equipment | Publicity & awareness at Ports of entry to Scotland. | | Making connection between participants activity and risks could be difficult. | ? | ? Visit Scotland |

| | | | | | |
|--|--|--|---|---|-------------------------------|
| <ul style="list-style-type: none"> • Fishery/aquatic researchers <p>Transmission on clothing/equipment</p> | <p>Publicity & awareness at Ports of entry to Scotland. Declarations & guidance at points of entry to water. Clear advice on disinfection procedures & ready availability of treatments.</p> | | <p>Relatively small sector. Guidelines could be produced with some effectiveness.</p> | <p>Clear national protocols for operators</p> | |
| Commercial Activity | | | | | |
| Movement of ova | <p>Publicity & awareness at Ports of entry to Scotland. Statutory controls and protocols for treatment.</p> | | <p>Persons operating outwith the law. Lack of effective enforcement activity.</p> | <p>Statutory enforcement & Random inspections</p> | <p>SEERAD SQS BTA</p> |
| Movement of live fish (salmonids) | <p>Publicity & awareness at Ports of entry to Scotland. Statutory controls and protocols for treatment. 'Border' issues.</p> | | <p>Persons operating outwith the law. Lack of effective enforcement activity. Political issues associated with EU trade issues.</p> | <p>Statutory enforcement & Random inspections</p> | <p>SEERAD SQS BTA</p> |
| Movement of live fish (cyprinids) | <p>Publicity & awareness at Ports of entry to Scotland. Statutory controls. 'Border' issues.</p> | | <p>Persons operating outwith the law. Lack of effective enforcement activity.</p> | <p>Statutory enforcement & Random inspections</p> | <p>SFCA</p> |
| Movement of live fish (ornamentals) | <p>Statutory controls. 'Border' issues.</p> | | <p>Persons operating outwith the law. Lack of effective enforcement activity.</p> | <p>Existing regulatory controls</p> | |
| Ballast water movement | | | | | |
| Import of aquatic plants | | | | | |
| | | | | | |

Appendix 4, Annex 2 River Dee Catchment Characteristics Gyrodactylus salaris Task Force

1. Flow Information

Mean daily flow - 46 cumecs, Maximum – 879 cumecs, Minimum – 5 cumecs (post abstraction). Data collected at Park over the period 1975-2005

2. Length of Main Stem and Major Tributaries

Total river and stream length = 1,299 km
The length of each tributary is shown in Appendix 1.

3. Location and Size of Lochs

| Loch | Outflow Reference | Grid | Volume (ML) |
|----------|-------------------|------|-------------|
| Callater | NO 17761 84333 | | 1080 |
| Muick | NO 29957 84197 | | 785000 |
| Davan | NJ 44589 00675 | | 708 |
| Kinord | NO 44630 98959 | | 1160 |
| Aboyne | NO 53502 99727 | | 280 |
| Skene | NJ 78395 06938 | | 1700 |

There are a number of small lochans around the catchment, but no data is available on them.

4. Presence of Water Abstraction / Transfer Sites

| Type | Watercourse | Grid reference | Weir height (m) | Volume |
|------------------------------------|----------------|----------------|-----------------|-----------------------------|
| Water table abstraction | Clunie Water | NO 1515 9035 | Not applicable | 210 m ³ /day |
| Water table abstraction | Crathie | NO 2650 9520 | Not applicable | 30 m ³ /day. |
| River abstraction | River Gairn | NO 3530 9725 | Not applicable | 1040 m ³ / day |
| River abstraction | Water of Tanar | NO 5065 9755 | Not applicable | 720 m ³ / day |
| Water table abstraction | Birse Burn | NO 5325 9635 | Not applicable | 10 m ³ / day |
| River abstraction | River Dee | NO 6470 9640 | Not applicable | 60,000 m ³ / day |
| River abstraction from impoundment | Water of Dye | NO 6180 8315 | Approx. 1.5 m. | 4000 m ³ / day |
| River abstraction | River Dee | NJ 8999 0260 | Not applicable | 28000 m ³ / day |

Note that there are no known out of catchment water transfers. A schematic of the location of each abstraction point is given in Appendix 2.

5. Location of Weirs and Fish Passes

A schematic of locations is given in Appendix 3. Current condition of weirs is unknown.

| Type | Watercourse | Grid reference | Weir height (m) | Comment |
|-----------------------|-----------------------|----------------|-----------------|--|
| Mill impoundment | Corriemulzie Burn | NO 112 889 | Approx. 8m. | Mill no longer water powered, dam breached |
| Mill impoundment | Gelder Burn | NO 247 932 | Approx 1.5m | Sawmill still operational. |
| Fire pond impoundment | Ballochbuie Burn | NO 210 911 | Approx. 2m | Small pond |
| Mill impoundment | Chapel Burn (Muick) | NO 362 943 | Approx. 2m | Used as put-take fishery |
| Raised loch | Birsemore Loch | NO 527 975 | Approx 2m | Sawmill impoundment-disused |
| Mill impoundment | Dess Burn | NO 570 998 | Approx 1.5m | Sawmill impoundment-disused |
| Mill weir (x2) | Cattie Burn | NO 573 954 | Approx 1.5m | Sawmill impoundment-disused |
| Mill weir | Water of Feugh | NO 574 911 | Approx 1.5m | Partial diversion to sawmill lade |
| Mill weir | Water of Feugh | NO 590 915 | Approx 1.5m | Partial diversion to sawmill lade |
| Mill weir | Coy Burn | NO 742 962 | Approx 3m | Impassable mill dam |
| Raised loch | Leuchar Burn (Culter) | NJ 784 069 | Approx 2m | Loch of Skene |
| Mill weir | Leuchar Burn (Culter) | NJ 784 061 | Approx 10m | Garlogie dam-currently drained |
| Mill weir | Culter Burn | NJ 834 011 | Approx 10m | Impassable mill dam |

6. Presence/Absence of Fish Fauna

The following species are known to be present within the Dee catchment. At present distribution information is not known.

| | | |
|-----------------|----------------------|-------------|
| Atlantic salmon | Trout (brown & sea) | Eel |
| Brook lamprey | River lamprey | Sea lamprey |
| Minnow | 3-spined stickleback | Pike |
| Perch | Rainbow trout | Bream * |
| Roach * | Tench * | Char ** |
| Brook Trout | | |

* Stocked into ponds adjacent to catchment but unknown if present within the main catchment.

**Anecdotal information that char are present.

7. Relevant Designations

The main stem of the River Dee, and major tributaries, have been designated as a Special Area of Conservation for Atlantic salmon, otters and freshwater pearl mussels. The upper catchment lies within the designated Cairngorms National Park. There are National Nature Reserves present, although their designation status is being re-evaluated at Dinnet.

8. Presence/Absence of Fish Farming

There are no commercial fish farms operating within the catchment. Rainbow trout fisheries are operated at the following locations:

| | |
|---------------------------------|----------------|
| Corriemulzie pond | NO 10941 87724 |
| Braemar pond | NO 13750 90533 |
| Tullich pond | NO 39165 98292 |
| Muick ponds (2, close together) | NO 35955 93610 |
| Tanar pond | NO 46790 95215 |
| Dess pond | NJ 57491 01769 |
| Strachan pond | NO 66988 92272 |
| Raemoir pond | NO 69663 97757 |
| Crynoch pond | NO 86383 97221 |
| Loriston Loch | NJ 94008 01234 |

9. Angling Information

The Dee District Salmon Fishery Board is the statutory body charged with protecting and managing salmon stocks across the Dee catchment. The Board holds a contact list for all salmon fishery proprietors across the catchment. Tel: 013398 80411

The Dee Salmon Fishery Improvement Association represents salmon fishery proprietors along the river. Tel: 013398 85341.

10. Presence / Absence of Wild Fish Hatcheries

- i) Mill of Dinnet – operated by Dee District Salmon Fishery Board, under review but currently 70,000 eggs to eyed egg stage.
- ii) Dess & Aboyne – operated by Dess & Aboyne Working Group in Aboyne, circa 50,000 eggs to eyed egg.
- iii) Invercannie – operated by Middle Dee Group, circa 25,000 eggs to eyed egg.

All hatcheries abide by the Dee Hatchery Code which stipulates the terms and conditions of stripping and stocking, and is managed by the Board.

11. Levels of Monitoring

Up to and including 2005 the majority of electric fishing performed on the catchment was by the Dee District Salmon Fishery Board. From 2006 onwards it will be performed by the River Dee Trust. Data from 2000 onwards is SFCC compliant. Board and Trust data is collected from approximately 100 sites across the whole catchment on an annual basis.

FRS undertake annual electric fishing in the upper catchment, which conform to SFCC protocols.

Vakki fish counters are operated by the Middle Dee Group on the Beltie and Cattie tributaries and data extends back to the late 1990s. A Vakki fish counter has been used on the Feardar Burn since 2002 by the Dee District Salmon Fishery Board. FRS operates two fish traps on the Baddoch and Girnock Burns, with data going back to the 1990s and 1960s respectively.

At present there is no systematic survey of the health status of fish stocks across the Dee on an annual basis. Samples are submitted to FRS on an ad hoc basis.

12. Recreational Activities

| Activity | Representative Bodies |
|----------------|--|
| Canoeing | Aboyne Canoe Club |
| | Aberdeen University Canoe Club |
| Rowing | Aberdeen University & Aberdeen Rowing Club |
| Sailing | Aberdeen Harbour Board |
| Coarse Fishing | Dinnet & Dunecht Estates |
| Game Fishing | Aberdeen & District Angling Association |
| | Ballater Angling Association |

13. Relevant Agencies on the Dee Catchment

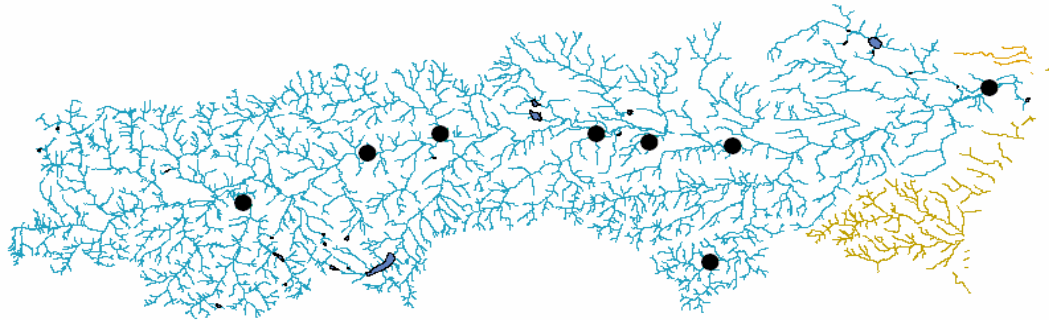
| Agency | Address |
|---|--|
| Aberdeen City Council | St Nicholas House, Broad Street, Aberdeen, AB10 1GZ |
| Aberdeenshire Council | Viewmount, Arduthie Road, Stonehaven, AB39 2DQ. |
| Aberdeen & District Angling Association | 162 North Deeside Road, Aberdeen, Ab13 0HL |
| Aberdeen Harbour Board | 16 Regent Quay, Aberdeen, AB11 5AE |
| Ballater Angling Association | Unknown |
| Cairngorms National Park | Albert Memorial Hall, Station Square, Ballater, AB35 5QB |
| Crown Estate | 6 Bell's Brae, Edinburgh, EH4 3BJ |
| Dee District Salmon Fishery Board | 4 Mill of Dinnet, Aboyne, Aberdeenshire, AB34 5LA |
| FRS Marine Laboratory | PO Box 101, Victoria Road, Torry, Aberdeen, AB11 9BD. |
| Forest Enterprise | 1 Highlander Way, Inverness |
| Grampian Police | Queen Street, Aberdeen, AB21 9AS |
| Health & Safety Executive | Lord Cullen House, Fraser Place, Aberdeen, AB25 3UB |
| National Farmers Union | Ballater Road, Aboyne, AB34 |
| RSPB | 10 Albyn Terrace, Aberdeen |
| SEPA | Greyhope House, Greyhope Road, Torry, Aberdeen, AB11 9RD |
| SNH | 17 Rubislaw Terrace, Aberdeen, AB10 1XE |
| Scottish Water | Craig Mitchell House, Flemington Road, Dundee, KY7 5QH |
| Upper Deeside Access Trust | Aboyne Castle Business Centre, Aboyne, AB34 5JP. |

Appendix 1 Length of Each Watercourse

| Water Course | Main Stem Length (km) | Length of Significant tributaries (km) |
|-----------------------|------------------------------|---|
| River Dee | 133.7 | - |
| Geldie Burn | 16 | 17.8 |
| Bynack Burn | 8.9 | 8.7 |
| Lui Burn | 27.4 | 3.3 |
| Ey Burn | 4.6 | 26.5 |
| Corriemulzie Burn | 4.4 | - |
| Water of Quoich | 5.7 | 7.6 |
| Clunie Water | 18.4 | 25 |
| Allt Slugain | 5.7 | 5.6 |
| Allt Dourie | 4.5 | - |
| Glen Beg Burn | .1 | - |
| Garbh Allt | 7.8 | 9.2 |
| Feardar Burn | 7.9 | 10.9 |
| Gelder Burn | 9.5 | 7.4 |
| Coinlach Burn | 3.4 | 1.8 |
| Piper Burn | 5.5 | 4.3 |
| Girnock Burn | 11.2 | 8.4 |
| River Gairn | 32.4 | 84.1 |
| River Muick | 26.1 | 60.6 |
| Glen Muick House Burn | .8 | - |
| Tullich Burn | 9.2 | 4.1 |
| Dinnet Burn | 13 | 19.2 |
| Culsten Burn | 4.3 | 2.2 |
| Pollagach Burn | .2 | 2 |
| Water of Tanar | 0.9 | 41.7 |
| Fungle Burn | 5.6 | - |
| Tarland Burn | 18.4 | 32.6 |
| Birse Burn | 7.2 | 6.1 |
| Rose Burn | 3.2 | - |
| Dess Burn | 10.2 | 15.3 |
| Neil Burn | 2.5 | - |
| Cattie Burn | 11.6 | 8.4 |
| Beltie Burn | 20.7 | 29.8 |
| Water of Feugh | 9.2 | 83.2 |
| Water of Dye | 23.5 | 52.3 |
| Burn of Bennie | .4 | - |
| Balbridie Burn | 5.3 | - |
| Coy Burn | 15.6 | 15.5 |
| Sheeoch Burn | 14.9 | 8.5 |
| Drumallan Burn | 4.6 | 2.3 |
| Altries Burn | 3.9 | - |
| Culter Burn | 25 | 35.1 |
| Crynoch Burn | 12.4 | 4.8 |
| Aberdeen burns | 19.9 | - |
| Sub-totals | 654.7 | 644.3 |
| Total | 1299 | |

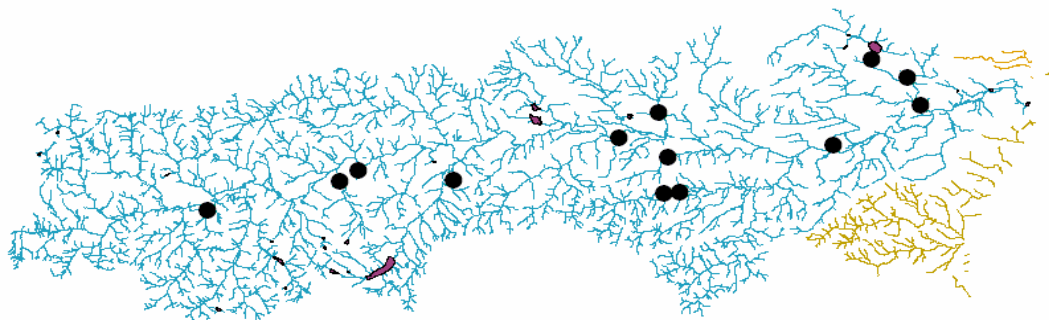
Appendix 2: Abstraction points for potable water in the Dee catchment.

Potable Water Abstraction Points



Appendix 3: Additional weirs and passes in the Dee catchment.

Weirs and Passes



APPENDIX 5 Communications Issues and Strategy

1. This appendix details the communication issues that will need to be addressed during an outbreak, describes the role of the Communications Co-ordinator and provides guidance and suggested templates for reports, letters, agendas, press releases and Question and Answer briefs. These are not meant to be exclusive and it will be the responsibility of Communications Co-ordinator to amend the templates to take account of the situation as it exists when documents are produced.
2. It is important that everyone involved in dealing with an outbreak of *G.salaris* in Scotland is kept fully briefed, understands their role and provides relevant information, when it is required, to assist the decision making process. A priority will be to ensure that the staff in the field are fully aware of Scottish policy but it will also be vital that appropriate communication is undertaken with other parts of the Scottish Executive and key stakeholders (See Appendix 2) who will have a key role in disseminating information to their members. It is also important that any person or organisation that may be impacted by *G. salaris* are also kept informed.
3. The head of DSG will appoint a senior member of FFA to be the Communications Co-ordinator to take responsibility for all communications issues. The Communications Co-ordinator must ensure that the communications process is actively managed so that relevant information is passed expeditiously to those who need it and any responses required meet the deadlines imposed.
4. The Communications Co-ordinator will use all methods at his/her disposal to ensure that information is disseminated to those who need to know and to respond to requests for information. Thus in addition to Media briefings use will be made of the SE website, advisory and explanatory leaflets, help lines and letters to specific organisations and individuals. The Communications Co-ordinator will establish links with similar individuals in the Enforcement sector and with stakeholder groups to ensure that best use is made of all the available resources and information so that the SE, the Fisheries sector and industrial, service and leisure users of water are kept fully briefed on developments that affect them.
5. The Communications Co-ordinator will liaise with the Press Office on all issues relating to media involvement and, in conjunction with Press Office, will organise media briefings and ensure that relevant personnel, including Ministers, are available and fully briefed on the issues to be presented. Arrangements will be made immediately on suspicion and/or confirmation of an outbreak for a media briefing attended by the Minister and senior officials from DSG. Regular briefings will be held thereafter and news releases will be issued covering disease updates, strategy and policy. The Press Office will be responsible for liaising with Defra on responsibilities related to handling media briefing given Defra's lead role.
6. Regular progress reports will be placed in the Scottish Parliament Information Centre (SPICe) to keep MSPs informed of the progress in controlling the disease. These reports will be prepared by the Communications Co-ordinator in consultation with DSG, FFA and FRS. The aim will be to keep MSPs informed and to reduce parliamentary correspondence and questions.

7. The Communications Co-ordinator will develop a system for receiving, despatching and recording all items of communication in accord with Freedom of Information legislation. He/she will also ensure that all meetings/actions are recorded in accord with SEERAD instructions in force at the time.

8. The Communications Co-ordinator will be responsible for ensuring that an adequate supply of leaflets and posters on *Gyrodactylus salaris* is maintained and available for distribution. He/ she will ensure that an up to date mailing list is maintained of all major organisations (See Appendix 2) to ensure that mail shots can be despatched expeditiously. He/she will liaise with these organisations to ensure that they have sufficient material to distribute to their members.

9. The following minutes/letters are provided as annexes to this Appendix:-

- Annex 1 Draft Minute to Minister reporting suspicion/confirmation of disease Minutes should include sufficient details of the case to give Minister an overview of the situation. Fuller briefing will be provided if Minister is required to give press conference.
- Annex 2 Draft Minute to DEFRA, reporting suspicion/confirmation of disease
- Annex 3 Draft letter to Enforcement Bodies and affected Local Authorities. This letter will be sent to enforcement bodies listed in Appendix 2 Section A and to local authorities in the infected area(s) It will give a resumé of the situation and refer them to their copy of this plan for further guidance on the actions that they need to take.
- Annex 4 Draft letter to stakeholders

A draft letter has been prepared but this should be tailored to explain what the current disease situation is, what measures have been put in place to deal with situation and what action SEERAD are requesting that they take. Letter can be amended to include a number of actions that maybe taken depending on what decisions have been taken to deal with the outbreak. It maybe appropriate to have an initial letter to core stakeholders with a second letter to all stakeholders once disease picture becomes clearer and control decisions have been formulated.

- Annex 5 Draft letter to fish farmers, riparian owners, angling clubs and organisation representing same in the infected area confirming disease and the extent of the infected and buffer zones

A basic draft letter has been produced but this should be added to/amended to describe the situation and progress made at the date of writing. It maybe decided that this should be the first in a series of letters to keep those most affected up to date.

- Annex 6 Draft letter to affected persons/parties explaining containment and eradication policies

This letter is intended for all non-fisheries water users e.g. industrial users (Distilleries etc), service industries (eg Hydro—Electric companies) and leisure industry (eg canoe clubs). More detailed specific letters will be required to individual companies/groups if it is envisaged that specific control/eradication methods will affect them individually.

- Annex 7 Draft agendas for DSG, and Stakeholder Meetings

Draft agendas that can be used for all meetings will ensure that key issues are not omitted from discussion. One off items can be dealt with as AOCB. All meetings should have a written record taken. It will be for Chairs to decide if this is a full minute or a list of action points.

- Annex 8 Draft Press Release

A variety of Press Releases will be required depending on circumstances. A list of the most likely releases that will be needed are given in Annex 8. Press Releases should follow normal SE protocols and be agreed between the Communications Coordinator and Press Office.

10. A question and answer brief will be prepared by FRS in conjunction with DSG, the Expert Group, Enforcement Bodies and FFA. The Q & A brief will be circulated to all bodies listed in Appendix 2 and will be posted on the SEERAD web pages. The communications Co-ordinator will liaise with Defra to ensure that consistent messages are given particularly in relation to the Tweed and the Border Esk.

A basic draft should be produced and kept up to date detailing answers to questions on clinical signs of disease, the current situation in Europe, legal powers available to ministers, biosecurity issues and import controls. The Brief can be expanded to describe the progress of the outbreak and to cover issues raised by the implementation strategy agreed by ministers. This may be developed to deal with environmental and public health concerns.

11. FRS will also set up and man a helpline to provide information to the industry and the general public. Other groups within SE who have expertise in this field eg agricultural staff, may also be available to assist.

12. Experience from Norway strongly suggests that anglers have a vital role to play in identifying early indications of disease, in reporting these indications and in disseminating information among the local communities on precautions that need to be taken. SEERAD will be responsible for ensuring that this group are kept fully briefed on issues related to *G salaris* and that their representative organisations are supplied with advisory literature to disseminate both before and during outbreaks. Norwegian experience further emphasises that face to face contact with local stakeholder groups should be arranged for the affected area, especially where containment is required, or where local assistance will be required to carry out effective containment or eradication strategies.

13. The Prevention sub group identified a series of specialist groups that could be targeted with publicity re *G.salaris*. These are listed in Annex 9. They also made recommendations for developing new publicity. These recommendations will be reviewed and if adopted, material will appear in future versions of this plan.

Appendix 5

Annex 1 Minute to Minister reporting suspicion and/or confirmation of disease.

From: Head of DSG
ERAD
Date

PS/Deputy Minister for Environment and Rural Affairs

GYRODACTYLUS SALARIS –REPORT OF SUSPECT/ CONFIRMED CASE

Purpose

To alert the Deputy Minister to the existence of a suspect/confirmed case of *Gyrodactylus salaris*

Priority

Urgent

Background

1. *Gyrodactylus salaris* is an external parasite of Atlantic salmon with the potential to cause widespread severe loss to the salmon fishing industry in Scotland. The parasite is widespread in Norway and has cause substantial loss both in fish stocks and in financial income to dependant communities.
2. *Gyrodactylus salaris* is a Notifiable disease of salmonids and is reportable under the Diseases of Fish Act 1937.

Update

3. *Either*
 - Fisheries Research Services(FRS) have investigated a report that *Gyrodactylus salaris* may exist on the premises of ***(insert name and address if a fish farm or name of the water if in wild salmon)*** and have been unable to rule out the presence of the parasite. They have served restrictions on the premises and submitted samples to the Diagnostic Laboratory at FRS. Results are awaited.

Or

- Fisheries Research Services(FRS) have investigated a report that *Gyrodactylus salaris* may exist on the premises of ***(insert name and address if a fish farm or name of the water if in wild salmon)***and were unable to rule out the presence of the parasite. They served restrictions on the premises and submitted samples to the Diagnostic Laboratory at FRS. The laboratory has now confirmed the presence of *Gyrodactylus salaris* and

samples have been despatched for final confirmation by the OIE reference laboratory as is standard procedure in such cases.

4. Investigations are continuing by FRS staff on behalf of SEERAD to find the source of disease and also to determine its spread. We have to assume, given no evidence to the contrary that the disease may be affecting several Scottish waters. Head of DSG will wish to discuss with you the imposition of a Scotland wide standstill on the movement of live fish, fish eggs and fish feed as a means of limiting disease spread until the distribution of the disease is established.

5. Press Office will arrange a media briefing. It is likely that the Minister will face detailed questions on the programme for control and eradication of this disease and how it has arrived in Scottish waters. Officials are preparing a press statement and a brief on likely questions.

Head of DSG

Date

Ext

Copy List

PS/Minister ERAD

Special Advisors

Press ERAD

Branch Heads Fisheries

Appendix 5

Annex 2 Minute to Defra reporting suspicion and/or confirmation of disease.

From: Head of DSG
ERAD
Date

Head of Fisheries Defra

GYRODACTYLUS SALARIS –REPORT OF SUSPECT/ CONFIRMED CASE

Purpose

To alert Defra to the existence of a suspect/confirmed case of *Gyrodactylus salaris*

Priority

Urgent

Update

Either

- Fisheries Research Services(FRS) have investigated a report that *Gyrodactylus salaris* may exist on the premises of (***insert name and address if a fish farm or name of the water if in wild salmon***) and have been unable to rule out the presence of the parasite. They have served restrictions on the premises and submitted samples to the Diagnostic Laboratory at FRS. Results are awaited.

Or

- Fisheries Research Services(FRS) have investigated a report that *Gyrodactylus salaris* may exist on the premises of (***insert name and address if a fish farm or name of the water if in wild salmon***)and were unable to rule out the presence of the parasite. They served restrictions on the premises and submitted samples to the Diagnostic Laboratory at FRS. The laboratory has now confirmed the presence of *Gyrodactylus salaris* and samples have been despatched for final confirmation by the OIE reference laboratory as is standard procedure in such cases.

Head of DSG

Date

Ext

Copy List

PS/Minister ERAD

Special Advisors

Press ERAD

Branch Heads Fisheries

Appendix 5

Annex 3 Letter to Enforcement Bodies (See Appendix 2) and Local Authorities.

Dear

Suspicion/ Confirmation of *Gyrodactylus salaris*

Fisheries Research Services (FRS) has investigated a suspect case of *Gyrodactylus salaris* at the premises of (*insert name and address if a fish farm or name of the water if in wild salmon*). They have been unable to rule out disease and have submitted samples to the Diagnostic Laboratory at FRS **OR** samples submitted to the Diagnostic Laboratory are positive and an outbreak of *Gyrodactylus salaris* is confirmed.

Gyrodactylus salaris is a Notifiable disease of salmonids and is reportable under The Diseases of Fish Act 1937.

Gyrodactylus salaris is an external parasite of Atlantic salmon with the potential to cause widespread severe loss to the salmon fishing industry in Scotland. The parasite is widespread in Norway and has caused substantial loss both in fish stocks and in financial income to dependant communities.

Investigations are continuing into how widespread the disease is in Scottish waters and into the source of this outbreak. Findings from these investigations will advise on the decision as to whether to eradicate the disease or whether containment is the only practical option. As an interim measure consideration is being given to imposing a national standstill on the movement of fish and fish products until the exact extent of the disease is known. This decision is likely to have a major impact on Enforcement Bodies, Local Authorities, the freshwater fisheries and ancillary industries and on commercial, public utility and leisure users of Scottish waters.

Enforcement Bodies and COSLA were involved in compiling a Contingency Plan to deal with an outbreak of *Gyrodactylus salaris* in Scotland. All Local Authorities and Enforcement Bodies have been provided with a copy of this plan and I would be grateful if you can now implement that part of the plan that applies to your organisation. The current version of the plan is ????. If you do not have this version please contact:-

Freshwater Fisheries and Aquaculture Branch 3
Room 414
SEERAD
47 Robb's Loan
Pentland House
EDINBURGH
EH14 1TY
Tel: 0131-244-6225

To obtain an up to date copy electronically.

SEERAD will be organising the first meeting of the National Stakeholder Group shortly. The aim will be to up date participants on the disease situation and to take soundings on our proposals to deal with the disease. Representatives of the freshwater fisheries industry and other users of water will also be present. It will be helpful if your representative(s) are briefed on your specific roles in the plan (Appendix 2). In addition the details in Appendix 3 together with the results of investigations, described above, will guide our plan to deal with this disease outbreak.

Whatever course of action Ministers decide upon the containment and/or eradication of this disease is likely to be a long term project probably spread over several years.

A media briefing will be held shortly and arrangements are in place to carry out a mail shot, enclosing leaflets, to all affected organisations detailed in Appendix 2 of the plan. I would be pleased if you could give this matter wide publicity within your own organisation and through contacts. If you require posters or leaflets please contact Branch 3 at address given earlier in this letter. We will also put details on the SE website (*insert web address*) and are setting up a helpline at FRS Aberdeen (*Insert telephone number*).

Yours sincerely

Appendix 5

Annex 4 Letter to Stakeholders

Dear

Outbreak of *Gyrodactylus salaris*

An outbreak of *Gyrodactylus salaris* has been confirmed at (*insert name and address if a fish farm or name of the water if in wild salmon*). SEERAD are investigating this outbreak to determine the distribution of the parasite and to trace its source. Until the results of this investigation are known we have to assume a worst case scenario that the parasite is widespread throughout Scottish waters. In view of this Ministers are considering imposing a national standstill on the movements of live fish and fish eggs until the distribution of the parasite is known.

Your organisation assisted in the production of a Contingency Plan to deal with this disease. Appendix 2 of the plan lists the roles and responsibilities of each organisation and what each could do in the event of an outbreak. Appendix 7 lists the stakeholders and the details of what will be expected of the two groups of stakeholders. The current version of the plan is ????. If you do not have this version please contact:-

Freshwater Fisheries and Aquaculture Branch 3
Room 414
SEERAD
47 Robb's Loan
Pentland House
EDINBURGH
EH14 1TY
Tel: 0131-244-6225

We will be contacting you shortly to arrange the first meeting of the National Stakeholder Group to discuss the disease situation and to seek views on our proposals to combat this disease. Thereafter I envisage that the group will meet regularly.

I enclose some leaflets on *Gyrodactylus salaris* which you may find useful. A mail shot is being prepared to circulate these more widely but your assistance in circulating these leaflets within your organisation would be appreciated. Further copies may be obtained from the contact point above. We will expect to keep you updated at stakeholder meetings and will issue regular media briefings.

We will be posting details on the SE website (*insert web address*) and are setting up a helpline at FRS Aberdeen (*Insert telephone number*).

Yours sincerely

Appendix 5

Annex 5 Draft letter to fish farmers, riparian owners, angling clubs and organisations in the infected area confirming disease and the extent of the infected and buffer zones

Dear

Outbreak of *Gyrodactylus salaris*

An outbreak of *Gyrodactylus salaris* has been confirmed at (*insert name and address if a fish farm or name of the water if in wild salmon*). Your property is within the infected catchment and no movements of live fish or fish ova are now permitted. Consideration may be given to the movement of other items under licence. I appreciate that this may cause difficulties for you but unless we can contain this disease quickly irreparable damage may be done to the whole Scottish salmon industry.

SEERAD are investigating this outbreak to determine the distribution of the parasite and to trace its source. Until the results of this investigation are known we have to assume a worst case scenario that the parasite is widespread throughout Scottish waters. In view of this Ministers are considering imposing a national standstill on the movements of live fish and fish eggs until the distribution of the parasite is known.

I enclose a leaflet explaining what *Gyrodactylus salaris* is and the measures that need to be taken to reduce its spread. SEERAD will be posting details of the disease, of its progress and preventative measures that need to be taken to limit its spread on the SE website (*insert web address*) and are setting up a helpline at FRS Aberdeen (*Insert telephone number*). Please use both these sources of information to keep up dated on developments.

The Stakeholder Group will meet regular to disseminate information and to bring concerns to the notice of SEERAD. They will also be able to offer advice on emerging issues.

Yours sincerely

Appendix 5

Annex 6 Draft letter to affected persons/parties explaining containment and eradication policies

Dear

Outbreak of Gyrodactylus salaris

An outbreak of *Gyrodactylus salaris* has been confirmed at (*insert name and address if a fish farm or name of the water if in wild salmon*). Your property is within the infected catchment and I am writing to you to outline our intentions in dealing with this disease and how it might affect you.

SEERAD are investigating this outbreak to determine the distribution of the parasite and to trace its source. Until the results of this investigation are known we have to assume a worst case scenario that the parasite is widespread throughout Scottish waters. In view of this Ministers are considering imposing a national standstill on the movements of live fish and fish eggs until the distribution of the parasite is known.

I enclose a leaflet explaining what *Gyrodactylus salaris* is and the measures that need to be taken to reduce its spread. SEERAD will be posting details of the disease, of its progress and preventative measures that need to be taken to limit its spread on the SE website (*insert web address*) and are setting up a helpline at FRS Aberdeen (*Insert telephone number*). Please use both these sources of information to keep up dated on developments.

We are currently considering two options to deal with the parasite. The first option is to deal with the parasite by strict movement controls on susceptible fish species and their products. The disease will eventually die out over time as the salmon stocks are depleted. The alternative is to try to eradicate the parasite by using chemical treatment of the watercourse destroy the parasite. Both methods will have financial consequences for all the users of water and will need careful consideration with stakeholders and enforcement bodies.

It may be possible to deal with this outbreak with minimum disturbance to industrial users of water, to service industries and to the leisure industry. However you should be prepared to look at alternative ways of carrying on your activities in the event that the controls that we impose will affect your activities. Once our initial investigations in to the extent of the disease are completed we will have a clearer picture of what needs to be done to contain and to eradicate the disease.

We may have to consider banning certain recreational uses of water to prevent disease spreading. It may be necessary to stop water transfer activity or if this is not possible, to include all the catchments involved in one water transfer system, declared an infected area and impose restrictions over the whole area. Hydro electric power stations may have to be closed for a short period to permit treatment of the water intakes to destroy the parasite.

Once a decision has been made on how best to deal with this disease outbreak we will contact all the individual companies who may be affected to discuss our plans. In the meantime please view our web site or contact our helpline (see para 3 above) for further information.

Yours sincerely

Appendix 5

Annex 7 Draft Agendas for DSG and Stakeholder Meetings

AGENDA

1. Introductions
2. Apologies
3. Minutes or Action Points from Last Meeting
4. Disease Control Issues
5. Resource Issues
6. Communications Issues
7. Policy and Legislation Issues
8. AOCB
9. Resume of Actions Agreed
10. Date, Time & Place of next meeting.

Appendix 5

Annex 8 Draft Press Release

It is not possible to detail all the information that might be included in a Press Release as the precise detail will vary depending on the news being released.

Press releases are likely to be issued in the following circumstance:-

- In advance of any Ministerial statements
- To announce suspicion of disease
- To announce confirmation of disease
- To announce negative results on suspicion
- To announce imposition of restrictions either on a Scotland-wide basis or in specific areas.
- To announce removal of restrictions.
- To give a general overview of the spread of disease and the measures being taken to tackle it.
- To announce setting up of DSG, NDCC and stakeholder groups
- To announce decisions on containment and/or eradication plans.
- To announce the provision of advice to the fishing and leisure industries, commercial water users and general public.
- To announce any restrictions placed on trade by EU, UK or Scottish legislative action
- To advertise telephone help lines, web sites etc where information maybe posted.
- To advertise any closures of specific areas, footpaths etc.
- To advertise general disease control measures and to seek co-operation from the public in supporting the measures.

The Communications Co-ordinator will be responsible for drafting any press releases, including the notes for editors, and agreeing them with Press Office.

The Press Office will be responsible for issuing press notices and for advising the Communications Co-ordinator of any further areas where a press release would be useful.

Appendix 5

Annex 9 Specialist Groups who may be targeted with G.salaris publicity material on regular basis.

1. Specialist Angling tour operators operating to/from Scandinavia and other European countries,
2. Other travel service providers to/from same countries e.g. ferry operators and airlines,
3. High risk airports and seaports,
4. Salmon fishing proprietors,
5. District Salmon Fishery Boards,
6. Fisheries Trusts,
7. Commercial Still Water Fisheries,
8. All Angling Clubs and Associations,
9. Online booking angling websites,
10. Angling Hotels,
11. Registered fishing guides,
12. Sporting agents,
13. Aquatic research establishments, and
14. Holders of electro-fishing licences
15. Visit Scotland.

It is envisaged that each organisation be contacted annually and provided with up-to-date publicity. In the event of an outbreak each could be asked to implement disinfection and other preventative measures within their areas of responsibility.

Appendix 6 - Command and Control

1. This Appendix deals with the management structures in place within SE that will be used to manage any outbreak. The Appendix also identifies key post holders and the job descriptions of members of the DSG. Job descriptions for key post holders at FRS are given in the Operations Manual at Appendix 11.

2. The SE response will be led and managed by FFA (see Annex 1 & 2) who will rely on SE departments listed in Appendix 2 Section A to provide specialist support and to manage that support. DSG will also draw on expertise and advice from External Enforcement and Advisory Bodies listed at Section B of Appendix 2. Individual members of these organisations may be invited to attend meetings of DSG to deal with specific issues.

3. Key Post Holders

3.1 FFA Head of Division will take on the role of Head of DSG.

3.2 The Communications Co-ordinator will be appointed by Head of FFA Division.

3.3 The Head of NDCC will be the Programme Manager from FRS.

3.4 The Head of any LDCC will be a Senior Fisheries Inspector from FHI.

4. Membership of DSG

4.1 The following post holders (responsibilities in brackets) will form the DSG:-

FFA Head of Division (Head of DSG)

Branch Head FFA 3 (Disease Control, welfare and disposal issues)

Branch Head FFA 2 (Cross Border issues, hydro-electric issues and gene banking and restoration.)

Branch Head FFA 4 (Policy issues, environment and planning consents)

Branch Head FFA 5 (Legal issues. Liaison with OSSE)

Communications Co-ordinator

Programme manager FRS (Head of NDCC)

Chief Press Officer (Media liaison)

Head of Finance (Budget and payment issues)

Head of Human Resources (All staff matters)

Procurement Branch Officer (Provision of resources)

SEPA (Environmental issues and consents)

SNH (Impact on wildlife and Habitats)

4.2 It will be for Head of DSG to decide when individual members need to attend meetings and to co-opt other officials as required. Members of DSG may nominate deputies to attend in their place provided they have necessary expertise.

5. Job Description of Key Post Holders in DSG and NDCC

5.1 Head of DSG will:-

- Ensure that Minister is kept fully briefed on all aspects of outbreak
- Liaise with Defra and devolved administrations
- Liaise with relevant enforcement agencies
- Set up and manage DSG
- Receive reports from NDCC and decide on surveillance, containment and eradication campaigns
- Ensure that communications strategy is implemented
- Chair meeting of National Stakeholder Group
- Ensure that FFA and NDCC have sufficient staff, accommodation and equipment to deal with outbreak
- Make arrangements for additional finance as required
- Ensure that monitoring and audit procedures are in place
- Ensure that freedom of information procedures are followed.

5.2 Communications Co-ordinator will:-

- Support the Head of DSG in ensuring that information flows are in place and will actively manage them
- Ensure that all required responses are received by deadlines
- Arrange media briefings in consultation with Chief Press Officer
- Agree the content of media briefings/press releases with the Chief Press Officer and ensure that all staff involved in media briefing have adequate training and are fully briefed
- Ensure that stakeholders and other interested groups are kept fully updated
- Ensure that the instructions in Appendix 5 are followed and the draft letters are despatched as agreed with Head of DSG.
- Establish and maintain links with similar post holders in the enforcement sector to ensure that best use is made of communication resources

- Ensure that publicity material is kept up to date and circulated/despached to relevant individuals/ bodies
- Maintain contact lists
- Arrange for SE web sites to be up dated
- Prepare progress reports for Scottish Parliamentary Information Centre
- Ensure that all communications received are logged and responded to in such a way that information is readily retrievable.

5.3 Head of NDCC will:-

- Set up and manage NDCC
- Represent NDCC on DSG
- Decide on the composition of the management group
- Take responsibility for ensuring that Operations Manual is used and its procedures are followed
- Ensure that staff are kept fully briefed on instructions and developments.
- Provide reports to DSG outlining events in the field and providing advice to inform policy decisions.
- Receive reports from DSG and implement the instructions on surveillance, containment and eradication campaigns
- Ensure that communications strategy is implemented on the NDCC
- Act as spokesperson for NDCC in consultation with Press Office, when required
- Chair meetings of Local Stakeholder Group
- Ensure that there are sufficient staff, accommodation and equipment to enable the NDCC to deal with outbreak
- Make arrangements for resources as required
- Ensure that monitoring and audit procedures are in place
- Ensure that FOI procedures are followed.

5.4 Head of LDCC will:-

- Be responsible for setting up and managing the LDCC and reporting to Head of NDCC
- Ensure that all field operations in respect of disease investigations, tracings, sampling and epidemiology are carried out to the standards set in the relevant SOPs.
- Ensure that necessary sampling kit is available and a transport system, to take samples to the laboratory, is in place
- Keep LDCC staff fully briefed on new instructions and developments
- Assess staff and resource needs and advise Head of NDCC of any variations required.
- Ensure that relevant Health and Safety procedures are followed
- Ensure that systems are in place to ensure that the LDCC and all its equipment are kept in a secure state.
- In the event of eradication being implemented, either lead the work or provide support for external contractors
- Ensure that wall charts, maps etc are kept up to date.

6. Responsibility for Policy Issues.

It is not possible to for see all the policy issues that may arise in an outbreak of a new disease and if issues arise that are not covered in this section it will be the responsibility of the Head of DSG to delegate responsibility to a senior member of FFA. The major policy issues will be allocated as follows:-

6.1 Branch Head FFA 3

- Disease Control matters liaising with Head of NDCC and Epidemiology
- Welfare issues both due to imposition of restrictions and to slaughter methods in liaison with State Veterinary Service
- Disposal issues in relation to dead fish, waste from processing plants and chemical disposal liaising with SEPA and relevant local authorities.

6.2 Branch Head FFA 2

- Cross Border issues liaising with Defra and DSFBs for Tweed and Border Esk
- Hydro-electric and other water transfer issues liaising with Scottish Water, Electricity generating companies and Distilleries
- Gene banking and restoration in conjunction with FRS Faskally

6.3 Branch Head FFA 4

- General Policy issues.
- General environment issues in liaison with SEPA, Scottish Water and ERAD policy divisions
- Planning consents for building of barriers in liaison with SEPA and relevant Local Authorities.
- Discharge consents in liaison with SEPA.

6.4 Branch Head FFA 5

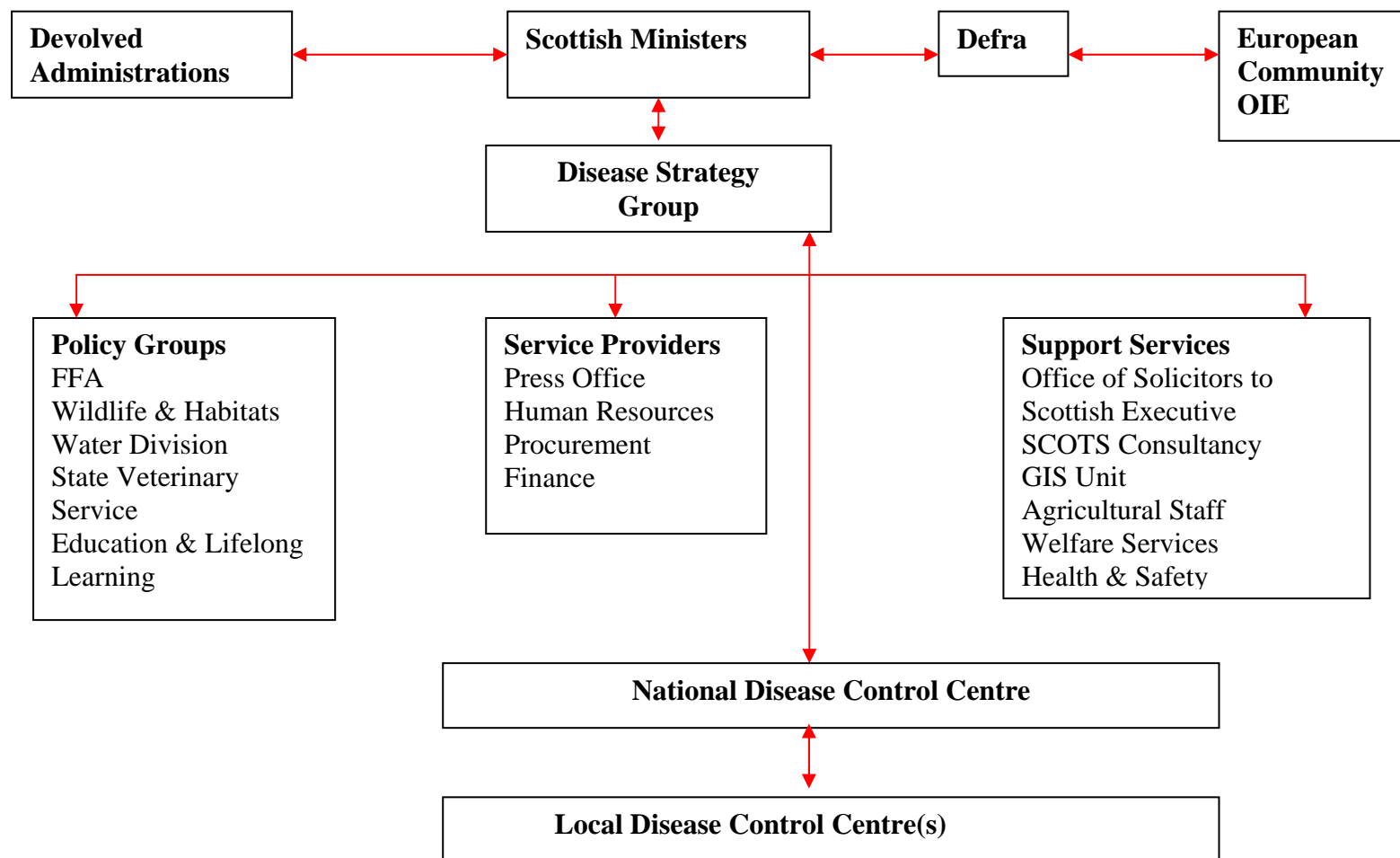
Legal issues including dealing with policy issues on any claims that may be pursued.

Liaison with OSSE on issues relating to restriction and enforcement notices.

7. Content, distribution and frequency of Key reports

- It will be the responsibility of the Head of DSG in consultation with Head of NDCC to determine the frequency of Key Reports.
- Reports should deal with unresolved issues from previous report, should update current knowledge, detail likely additional work and staff requirements and make recommendations for further action.
- Head of DSG should liaise with other senior management colleagues to determine what other information they may need.
- Each LDCC should submit reports to Head of NDCC highlighting the main issues and outstanding work.

Appendix 6 Annex 1 Command and Control— SE Management Structure



Appendix 6 Annex 2 Structure and responsibilities of Management in FFA

Head of Division – Gordon Brown

| <p>Dr Philip Balls Branch Head FFA 1 Fisheries Research Requirements FIFG</p> | <p>David Dunkley Branch Head FFA 2 Salmon and Freshwater Fisheries</p> | <p>Dave Wyman Branch Head FFA 3 Aquaculture and Health Welfare</p> | <p>Phil Gilmour Branch Head FFA 4 Aquaculture Policy & Development</p> | <p>David Ford Branch Head FFA 5 Fisheries Bill Team</p> |
|---|---|---|---|---|
| <p>Co-ordination of Fisheries and Rural Development Group customer requirements for science and technology (S&T), including liaison with Environment Group.</p> | <p>Wild salmon and freshwater fisheries policy.</p> | <p>Farmed fish and shellfish disease control, including Welfare of farmed fish and shellfish waste disposal; and R&D.</p> | <p>Fish and shellfish farming policy (aquaculture), Strategic Framework for Aquaculture.</p> | <p>Progressing aspects of Fisheries Bill in relation to aquaculture and freshwater fisheries.</p> |
| <p>FIFG.</p> | <p>Aquatic conservation, ecology and wildlife policy.</p> | <p>Sea lice initiative.</p> | <p>Tripartite Working Group.</p> | |
| | <p>Fisheries (Electricity) Committee.</p> | <p>Secretariat for the Aquaculture Health Joint Working Group.</p> | <p>Sponsorship of industry, economic Ministerial engagements/ brief</p> | |
| | <p>Predation by piscivorous birds and seals.</p> | | <p>Environment and planning coordination escapes and R&D.</p> | |

Appendix 7 - Composition and Roles of National & Local Stakeholder Groups

1. National Stakeholder Group

1.1 The National Stakeholder Group will have, as its main function, the remit to discuss and act as a sounding board on national policy being used and developed to contain and/or eradicate the outbreak. To this end the members will be speaking as representatives of the organisations that they represent and will be expected to act as primary channels of communication to their own organisation. It is not the function of the group to deal with individual case issues unless there are national policy considerations in play. The group has a major role to play in establishing a consensus opinion, in developing a publicity/media strategy to deal with the developing outbreak and in bringing the concerns of their members to SEERAD's notice.

1.2 The Head of DSG, in consultation with group members, will decide on the frequency and venue of meetings. It is likely that meetings will be in Edinburgh although video conferencing could be used if members of the group have access to such facilities.

1.3 The National Stakeholder Group will comprise those organisations and groups that have an influence Scotland wide and can make comment on behalf of their members on emerging policy and statutory issues.

1.4 It will be the responsibility of the Head of DSG to decide on the composition of the National Stakeholder Group and to decide whether it would be appropriate to form sub groups to discuss specific issues eg movement controls. It is likely that in most circumstances the National Stakeholder Group should contain representatives of the following bodies:-

1.4.1 External Enforcement and Advisory Bodies

Local Authorities

Police

Scottish Environment Protection Agency (SEPA)

Scottish Natural Heritage (SNH)

Association of Salmon Fishery Boards

Scottish Water

Drinking Quality Water Regulator

1.4.2 Other Groups

Fish Veterinary Society

Rivers and Fisheries Trusts Scotland (RAFTS)

Scottish Salmon Producers Organisation

British Trout Association

Scottish Anglers National Association (SANA)

Scottish Federation for Coarse Angling

Atlantic Salmon Trust

Salmon and Trout Association

Scottish Fisheries Co-ordination Centre
Ordinance Survey
Hydro Electric Industry
Scotch Whisky Industry
sportscotland representing Leisure Industry
Scottish Canoe Association
Visit Scotland
Scottish Society for the Prevention of Cruelty to Animals (Scottish SPCA)

1.5 In order to achieve a focussed discussion the number of representatives from each organisation will be limited to two.

1.6 The SE will be represented by delegated members of the management group who are responsible for controlling the outbreak. The Head of DSG will also be able to co-opt members of Scottish Executive Groups listed in section 3.10 to provide information to the National Stakeholder Group as and when necessary.

2. Local Stakeholder Groups

2.1 The Local Stakeholder Group will have, as its main function, the remit to discuss and resolve issues being dealt with by the NDCC at local level to contain and eradicate disease. Members should have a good knowledge of local conditions and be able to act on behalf of their members. They may wish to comment on national issues if their experience in dealing with the disease at local level suggests that changes to national policy would be beneficial in the resolution of the outbreak.

The Group has a role to play in developing a local consensus and progressing publicity campaigns at local level.

2.2 The Head of NDCC, in consultation with group members, will decide on the frequency and venue of meetings. It is likely that meetings will be held within the local infected catchment.

2.3 The Local Stakeholder Group will probably comprise representatives of those organisations and groups, listed in Section 1 above, who operate in the infected area. Thus it will be appropriate for the local DSFB, local angling club, local distillery etc to be represented rather than their national bodies (should representatives of the local network office of VisitScotland/local tourist accommodation providers also be included as there will be an ability to influence visitors via their hosts.)

2.4 It will be the responsibility of the Head of NDCC to decide on the composition of the Local Stakeholder Group but it is likely that in most circumstances it should contain representatives of the groups listed in 1.4 above. In order to achieve a focussed discussion the number of representatives from each organisation will be limited to two.

2.5 The Head of NDCC will decide on who should represent the NDCC.

3. **Other Delegates**

3.1 The Head of DSG and the Head of NDCC may co-opt other members to deal with specific issues as they arise.

Appendix 8 - Resources

1. Procurement of Accommodation, Stores and Equipment.

1.1 Scottish Procurement Directorate (SPD) within SE will be responsible for organising the purchasing and/or supply of additional accommodation and stores and equipment that will be necessary to deal with an outbreak of disease. Payments will be channelled through FFA budgets or such other budgets as DSG may arrange.

1.2 It is essential that SPD are kept informed of any changes to this plan especially in regard to provision of accommodation etc as they are made. A member of SPD should be dedicated to provide support to the Disease Strategy Group and be prepared to attend its meetings as required. This person will also be a key member of the team tasked with developing any eradication campaign.

1.3 SPD can supply resources via immediate purchase, through framework agreements/call off contracts and, in slower time, via the advertising and tendering process.

1.4 To enable SPD to respond effectively to requests for resources a list of likely requirements should be kept updated. It will also be useful to list sole suppliers against the request where such information is known. For the audit trail SE require justification for dispensing the competition and SPD can advise on this matter. Current policy allows non-competitive action for work of exceptional urgency caused by unforeseeable circumstances where competitive tendering would cause unacceptable delays.

1.5 SPD and other public sector bodies already have contracts in place for sourcing many of the routine requirements of SEERAD units eg:

- Mobile phones
- IT
- Office furniture and supplies
- Utilities
- Interim staff
- Hotel booking agents
- Car Hire
- Travel management
- Project & property management
- Design and print
- Media

and it can respond very quickly to requests for such resources from the appropriate department. Staff should be aware that setting up of Local Disease Control Centres in remote locations may limit SPD's ability to provide the quality required if, for example, local services are limited

1.6 It is normal practice to use competition procedures based on contracts and/or tendering to source supplies for SE and staff should normally follow these procedures. However, there are facilities for going outside normal practice to obtain emergency supplies when needed (see 1.4 above).

1.7 The Purchasing Officer at FRS has arrangements in place to source all the routine supplies needed for FRS staff to carry out their functions. However, if excessive amounts of equipment etc are required SPD should be consulted and will be able to help. SPD should also be consulted when additional accommodation is required for staff or laboratories at FRS. They will be able to source portacabins and furniture and equipment to fit them out if required. FRS may be in best position to source specialist laboratory equipment.

1.8 A list of resources required for dealing with an outbreak of *G.salaris* is provided in Annex 1 to this Appendix.

2. Overnight accommodation and refreshments

2.1 When developing containment and eradication plans consideration must be given to the numbers of staff that will need to be relocated to the area and how their accommodation and refreshment needs can be met.

2.2 SPD can source accommodation in Edinburgh and elsewhere for any staff that may be brought in on secondment to assist either DSG or FFA. The Purchasing Officer at FRS should maintain a list of hotels that could provide accommodation, in the Aberdeen area, in an emergency. In both cases it would be desirable to arrange for B&B bills to be paid centrally on receipt of invoice from hotel. If this is not possible staff will reclaim expenses through normal channels.

2.3 Staff are normally expected to provide their own food during working hours BUT in emergency work this is not always practical and Head of NDCC will need to take responsibility for ensuring that these needs are catered for.

3. Security Issues

3.1 A large amount of routine and specialist equipment will be deployed during a campaign to deal with *G. salaris* and large amounts of sensitive and confidential papers and IT information will be collected. It is essential to ensure that tight security procedures are followed at all the locations involved.

3.2 The manager in charge of each unit must make arrangements to ensure that all buildings and contents are secured before premises are left unattended. If it is deemed to be necessary security firms may be employed to carry out this function. Any recommendation to employ security firms must be agreed with Head of DSG or NDCC as appropriate and SPD asked to source a suitable firm.

3.3 Special care must be taken when using chemicals and local Health and Safety officers consulted on the level of security required.

3.4 Care must be exercised to ensure that visitors to any centre are accompanied or kept in public areas. Media briefing facilities should be placed, if possible, so that media personnel do not have unfettered access to operational areas. Any request from Media personnel to access operational areas should be cleared with senior manager on site.

3.5 It is expected that normal procedures will be followed in permanent offices to ensure that security and back up protocols for IT are followed. In stand alone temporary centres the manager must make arrangements for these procedures or like ones agreed with Scots Consultancy (Appendix 2, Section 5), to be implemented.

4. Contractors

4.1 When a campaign is mounted to eradicate *G.salaris* from a catchment it will usually involve the building of barriers at points within the catchment. This work is outside the scope of FFA or FRS staff and will require contractors with specialist plant and machinery.

4.2 In planning a campaign, SPD will need to be advised of the specifications for the barriers so that they can mount a tendering exercise. It would be prudent for FFA to appoint a Project Manager, with experience in this type of Civil Engineering work, to oversee the project. SPD will be responsible for tendering this work and contacting suitable contractors who are able to supply plant and machinery.

5. Specialist skills

5.1 Management of ERAD and FRS will identify staff with the specialist skills necessary to deal with an outbreak of *G. salaris* and ensure that their skills are kept up to date. They will also identify staff who have the ability to learn the extra skills required and ensure that they are given time to acquire such skills.

5.2 Management of ERAD and FRS will co-operate in providing training in the skills required either internally or by the use of trainers from abroad who have the experience and skills required. Consideration will be given to inviting suitable staff from the organisations listed in Appendix 2 to attend training/ updating sessions to prepare them for their roles in dealing with an outbreak.

5.3 Consideration will be given to allow staff to gain skills in affected countries by means of short term secondments.

5.4 Resources will be made available both to test this plan and to update it on a regular basis.

6. Mapping

6.1 Maps will be required to delineate infected catchments, identify location of fish farms and wild fish populations and water transfer activities at the suspect/ confirmed stage of an outbreak. Information on environmental and water parameters, geographical features and socio-economic aspects will be required when planning containment and/or eradication campaigns.

6.2 Data sets exist in various units from which maps can be produced. The responsibility for providing the information rest with FRS. A list of the various data sets and their location is contained in the Operations Manual at Appendix 11.

7. Contact Lists

7.1 Each organisation involved in operating this plan will keep an up to date contact list which should also indicate which groups have to be informed of decisions/actions at each stage of an investigation/outbreak.

ANNEX 1 - ROTENONE APPLICATION EQUIPMENT (AND SOME POINTERS TO WIDER REQUIREMENTS)

NB

1. **The listings below enable one to copy equipment developed by VESO and who have design rights.**

2. **Shore base needs provision for:**

- Secure storage for rotenone concentrate
- Means of decanting rotenone from 200 litre drums to 20 litre plastic containers
- Simple workshop for assembly of drip stations, vehicle and boat maintenance
- Reception for GS contaminated boats and vehicles
- Field laboratory for dealing with fish mortalities
- Clean vehicle parking
- Under cover storage for boats and loose gear
- Separate clean and dirty entrances

Two Portacabins for offices plus an impervious standing for boats and vehicles would probably suffice provided the site was secure.

Much larger storage facilities will be required to provide secure storage for vehicles and equipment.

DRIP STATIONS

Hire of suitable vehicle for the terrain

Operator safety personal kit

Visor & Respirator
Rubber gloves
Wellington boots
Weather gear
Life jacket
Torch
First aid kit in vehicle

Operators communications equipment

Hand held VHF
Cellphone
(Essential equipment for coordination and calling for back up in case of equipment failure)

Pumped application from shore – 200 litre “drip station”

Submersible Pump (Top 3 Pedrollo) http://www.pedrollo.co.uk/ped_top_desc.htm

Flow meter/regulator (Danfoss – now owned by Siemens)

Bespoke frame to hang flow meter/regulator on side of 200L drum 200 litre drum with end cut off

1.6 KVA Portable generator set (Honda / Yamaha)

Spare generator as above

Four way extension lead for generator (generator powers submersible pump and flow meter/regulator)

20 litre Petrol jerry can with filler spout

Lubrication oil for generator (4 stroke/2 stroke depending on set)

Bucket on a rope

Large measuring jug for rotenone concentrate

Plumbing accessories to make up drip station including:

- 15mm stop cock
- 0.5m x 15mm copper pipe
- 15mm compression fittings - various
- 15mm 90° elbow
- 15mm hose pipe spigots
- 10m x 15mm bore reinforced flexible hose
- worm drive hose clips

Tool box including:

- adjustable spanners (2)
- medium size straight screw driver
- medium cross head screw driver
- small electrical test screw driver
- plug spanner for generator
- spare spark plug for generator
- PTFE thread tape
- Junior hacksaw
- Small half round file
- Spare 240v 13Amp fuses

Pumped application from shore - Mid river booster station – equipment required plus two 200 litre pumped drip stations

200 metres of 12 mm steel wire rope

Tirfor hand winch with appropriate size jaws

<http://www.kk.org/cooltools/archives/000070.php>

Bulldog grips of appropriate size

Boat to get rope across river

100 metres of 15 mm reinforced perforated flexible hose– *bespoke component – calibration knowledge required*

25 Shackles to slide on steel wire rope

200 metres of fibre

Anchorage for Tirfor (

15 mm Y junction for hoses

200 Litre gravity feed drip station

Intact 200 Litre drum with key for bung

Wooden trestle - *bespoke*

Either prior calibration or measuring cylinder and stop watch to calibrate

Short length of 15 mm flexible hose to direct out flow

Worm drive hose clip

20 Litre gravity feed drip station

20 Litre plastic container with screw top , threaded spigot for tap and tap

Either prior calibration or measuring cylinder and stop watch to calibrate.

ROTENONE APPLICATION BY BOAT

Operator's personal kit – 2 sets per boat

- Waders
- Life jacket
- Canoeists hard hat
- Gloves
- Torch

Crew's communications equipment

Water proof hand held VHF radio

Cellphone

Boat and its gear

Polythene RIB e.g. Steady 260 <http://www.boat.no/asp/boats/show.asp?id=17044>
(In Scotland Fusion Marine make a suitable equivalent.)

Towing pick up truck with road trailer

Oars & rowlocks

Anchor & warp

Painter

Mooring warp also used for shore control when under weigh

Bailer/bilge pump

(Gael Force supplier to much of the Scottish fish farming industry is one possible source for boat gear.)

Application equipment

2 stroke pump
5 Litre petrol containers – 2 stroke oil ready mixed.
Rotenone concentrate tank
Rotenone tank to pump connection and means of regulation.
Length of fire hose
Fire hose spray nozzle
Worm drive hose clips

Shore support

Tools – plug spanner
Medium straight screw driver
Cross head screw driver
Spare spark plug
Spare pump ready to work
Large measuring jug for rotenone

MICRO SCALE ROTENONE APPLICATION EQUIPMENT FOR SMALL SEEPS

Personal protection equipment for operator as for drip stations

Hydraulic knapsack sprayer (Hardi or similar)
Bucket on a rope for filling sprayer
Watering can

BIOASSAY FOR DEEP POOLS

Floating cages for bioassay fish
Means of transporting test fish

MORTALITY COLLECTION

Net to stretch across river
Rope
Fully equipped boat and crew as for deep pool spraying
Long handled landing nets
Plastic bags and plastic crates for mortalities
Shore support with pick up truck

Landing nets and personal kit for river bank walkers

Weather gear
Life jackets
Wellington boots

Landing nets
Plastic bags
Data labels

DIRTY VEHICLE RECEPTION AT SHORE BASE

Hydraulic knapsack sprayers to apply Virkon or similar disinfectant to boats and vehicles
Wheel baths – *bespoke trays* with disinfectant soaked foam rubber
Fire hose with spray jet to wash Virkon off vehicles
Trestles / chequered tape to funnel dirty vehicles to reception area

FIELD LABORATORY DATA COLLECTION EQUIPMENT

Operator's protective clothing

Disposable overalls
Wellington boots
Rubber gloves

Laboratory equipment for each technician:

Weighing machine - large spring balance or similar
Bench
Angle poise lamp
Steel tape measure
Measuring block for fish - *bespoke*
Wheelie bins
Plastic crates for sorted fish
Boning knife
Recording sheets on clip board
Pathology sampling equipment, scalpels, forceps, containers, labels etc.
Brown craft paper to cover bench tops and measuring blocks
Sticky tape

LOCAL DISEASE CONTROL CENTRE

4 Portacabins—Office, Store, Laboratory & Mess Room
Office furniture
Office equipment
Telephone system (say 6 lines plus fax and IT connections)
Laptops
Laboratory benches and equipment
Tables and Chairs
Microwave, hot plate, kettles, pans, crockery and cutlery
Car park with washing and disinfection facilities.
(NB This relates to a stand alone centre)

Appendix 9 - Gene Banking and Restoration

1. The aim of this appendix is to set out the criteria to be followed when populations of salmon are depleted either through an outbreak of *G. salaris* or the treatment of a catchment that destroys the salmon stocks or through a combination of both. The assumptions used in preparing this appendix are detailed in Annex 1.

2. Gene banking, as an aid to restoration, will be required when the parasite is eradicated by the use of rotenone. Gene banking may also need to be considered when rotenone is used in conjunction with aluminium sulphate or when containment only is practiced as both methods are likely to deplete salmon stocks.

3. The aim will be to restore populations of a range of genetic sub groups of salmon. The need for the restoration of other species will be assessed based on the genetic make up of the species and whether or not similar populations exist in other Scottish waters. If all the individuals of a species in Scotland are of similar genetic make up they can be replaced from other rivers without the need for gene banking. If SACs are in place for specific species e.g. freshwater pearl mussels consideration will need to be given to a restoration programme involving gene banking.

4. Restoration

4.1 The restoration objective will be to re-establish healthy, self-sustaining native populations of salmon and species covered by para 3 above to a river system that is recovering from an outbreak of *G. salaris*.

4.2 The requirements to restore *G. salaris* infested rivers will be determined by:

The method and time scale required for eradication.

The number of species and genetic populations impacted; the latter will vary with location, the physical nature of a river and its size.

5. Gene Banking

5.1 The aim of gene banking is to support the restoration of healthy, self-sustaining populations of native fish in affected river systems. See Annex 2 for schematic plan of gene banking.

5.2 Where eradication is attempted, gene banking operations will aim to conserve inter- and intra-specific fish diversity and provide ova/fish for restocking of native populations. The use of rotenone may require the gene banking of all affected populations of native fish species in the treated river system; this may not be necessary in the case of migratory species if eradication can be achieved quickly whilst most of the adults are at sea and the populations can be naturally restored by returning migratory adults.

5.3 Gene banking will be necessary when barriers are used in eradication programmes. The eradication time frame will be 3-4 years to ensure all salmon and residual *G. salaris* on other fish species have been eliminated.

5.4 Gene banking needs may be minimal if aluminium sulphate treatment is used, as populations are not eliminated. Some gene banking may be useful to protect biodiversity in depleted Atlantic salmon populations and support a more rapid restoration of populations to a healthy, self-sustaining state.

6. Treatment Methods

6.1 Exclusion Barriers for Atlantic salmon

6.1.1 Barriers can be used alone if they can be installed at the head of tide so that there is no salmon habitat downstream. Barriers may have to be in place for long periods to ensure that all juvenile salmon have migrated out of system and there are no remaining *G. salaris* on temporary hosts such as brown trout, rainbow trout and Arctic charr

6.1.2 The impact on resident fish and invertebrate species, where barriers are placed at the head of tide, are likely in most cases to be temporary and restricted to area immediately upstream of barrier. The main impact will be on migratory fish populations including Atlantic salmon, sea trout (*Salmo trutta*), eels (*Anguilla anguilla*), lamprey (*Petromyzon marinus*, *Lampetra fluviatilis*), shad (*Alosa fallax*), and sparring (*Osmerus eperlanus*).

6.1.3 Gene banking will be required for Atlantic salmon, sea trout and other migratory species such as shad, lamprey in river systems where these species occur. Depleted eel stocks may be able to be restored by transfer of eel elvers from adjacent river systems as eels in all Scottish river systems are likely to belong to the same genetic population.

6.2 Rotenone

6.2.1 Gene banking will be required for all resident fish populations if this is deemed necessary under the Water Framework Directive or the Habitats Directive and for salmon especially if populations are depleted and there is likely to be limited numbers of adults returning from the sea.

6.2.2 Gene banking of sea trout may be required where treatment occurs over a number of years and natural restoration by returning or straying adults is absent or limited.

6.2.3 Gene banking of other migratory species such as shad and sparring may be needed if rotenone treatment has an adverse effect on these species in the river systems where they occur

6.2.4 The use of rotenone in combination with upstream exclusion barriers may reduce the impact on resident fish communities, speed up recovery of invertebrate communities on which fish depend, and reduce gene banking needs. There may, however, still be significant impacts

from upstream barriers on populations of freshwater resident fish, including brown trout and Arctic charr (*Salvelinus alpinus*).

6.3 Aluminium sulphate

6.3.1 Aluminium sulphate has little or no impact on fish and invertebrate populations.

6.3.2 Limited short-term gene banking of affected native Atlantic salmon stocks may be desirable to provide material for supplemental stocking to speed up stock recovery. It may also be advisable to gene bank freshwater pearl mussel and other important threatened aquatic species within SAC.

7. Operational Issues for Restoration

7.1 DSFBs have powers to restore salmon stocks but are under no legal obligation to do so. There is no defined responsibility for restoration work on other fish species. In the absence of legally defined responsibilities it will be for Scottish Ministers to decide who should take the lead in dealing with restoration and who will pay for the cost of restoration work.

7.2 Local restoration committees should be set up to oversee restoration work and link with the gene banking programmes. These committees will be set up after local consultation and could include representatives from the local proprietors, Trusts and DSFBs as well as SNH, SEPA and SEERAD. FRS may be best placed to oversee the gene banking programme.

7.3 Restoration work is likely to take several years before it is completed. SEERAD will implement regular reviews with the local restoration committees to ensure that plans are sound and delivering the benefits expected.

7.4 Scientific Expertise for salmon and sea trout restoration currently exists within FRS, DSFBs, Trusts, and the farming industry, and will be drawn upon in developing and auditing restoration plans. Expertise in the restoration of some other fish species exists in other UK agencies and can be utilised.

8. Operational Issues for Gene Banking

8.1 To protect biodiversity, gene banks should:-

- Be stocked wild caught adults screened to avoid using non native fish
- Genetically screen any juvenile fish used to ensure that they derive from a large number of different wild families;
- Maximize number of adults/families used but, where possible, use at least 25 males and 25 females;
- Be based on equal numbers of males and females in each gene bank family;
- Cryo-preserve sperm from additional males for use in the production of ova/fish for restocking;

- Minimize number of generations and mortalities in the gene bank to avoid random intergeneration losses of genetic diversity;
- Consider gene banking the species most under pressure first especially if facilities are limited.
- Implement a rigorous disease control policy to minimise mortalities;
- Reduce generational changes by using kelt reconditioning and repeat spawning; and
- Use low energy specialised diets to extend generation times and increase the time frame of repeat spawning.

8.2 To avoid disease, gene banks should :-

- Be established in locations with high volumes of high quality freshwater sources devoid of migratory fish stocks and with only limited resident fish stocks e.g. using water from upland, oligotrophic lakes or reservoirs;
- Be maintained entirely in freshwater;
- Be established using eggs from crosses derived from disease free fish; this can be achieved by keeping eggs from wild fish in quarantine while fish are tested for disease; and
- Adopt a rigorous disease exclusion regime within the gene bank facility.

8.3 Gene banking should involve the use of central facilities to allow diversity and disease to be most effectively controlled, and to keep costs down. The costs of gene banking additional stocks in a facility is marginal compared to the basic set-up and running costs. The risks associated with a central facility will be small and acceptable if proper disease control and husbandry are practiced.

8.4 The numbers of brood fish needed to maintain biodiversity may be relatively small but the numbers of brood fish kept in gene banks may need to be much larger to meet the needs of the restoration programme. This will require advanced co-ordinated planning given that and it may take up to 4-5 years to produce additional brood fish.

8.5 The risk of mechanical failure or the introduction of disease into a gene bank must be considered when planning facilities. A minimum of two gene banks will be required to provide a contingency against failure for whatever reason.

9. **Organisational issues**

9.1 Responsibility for restoration for fish species is not defined in law though organisations such as SEPA and SNH will, through the EU Habitats and Water Framework Directives, and other national legislation have interests as will proprietors.

9.2 Legislation does not define who would pay for gene banking and Scottish Ministers will need to make a decision on this issue before gene banking can be commenced.

9.3 The rigorous requirements for disease control and a specialised low-density rearing environment mean that many locations currently used for hatcheries and smolt rearing would not be suited for gene banks. A review of suitable sites and existing facilities for setting up

centralised gene bank facilities will be carried out so that these sites can be targeted immediately for development if the need arises.

9.4 Current legislative requirements are unlikely to present an obstacle to establishment of gene banks e.g. setting up gene banks will require discharge consents from SEPA.

Appendix 9

Annex 1- Background Assumptions to Gene Banking and Restoration

- Scottish Atlantic salmon (*Salmo salar*) populations are highly susceptible to *G. salaris*. The presence of *G. salaris* will result in the extinction of up to 98% Atlantic salmon populations in infected river systems.
- The eradication of *G. salaris* from infected river systems is the preferred option. Norwegian experience shows that success in the eradication of *G. salaris* is reasonably high.
- Current approaches to eradication are based on elimination of Atlantic salmon from infected rivers using rotenone, or rotenone in combination with barriers to the return of migratory adult salmon. The use of rotenone and barriers will lead to the loss of native Atlantic salmon populations, and potentially to populations of other migratory and freshwater fish species, and will severely impact invertebrate faunas.
- The rapid restoration of sustainable native fish populations post-eradication will depend on natural re-colonisation and/or the reintroduction of locally adapted native fish.
- Natural re-colonisation is likely to be limited and a slow way back to healthy sustainable fish populations in most cases.
- Reintroduction of native populations of Atlantic salmon and other impacted species such as freshwater pearl mussels (*Margaritifera margaritifera*) will require their protection in living gene banks.
- Aluminium sulphate treatment, currently being trialled, may offer an alternative and would be preferred as it does not require elimination of Atlantic salmon and does not appear to severely impact on native populations of freshwater species.
- If eradication is not possible, the potential management options available are:
 1. Do nothing and accept the impact on the native salmon and other fish and invertebrate populations. A particular concern in this respect in many river systems will be the loss of pearl mussel populations which are parasitically dependent on the Atlantic salmon.
 2. Gene bank native populations and develop a supportive breeding programme to introduce heritable resistance into the native, locally adapted populations.
 3. Carry out supplemental stocking of infected river with a resistant, non-native Atlantic salmon aimed at evolving new locally adapted resistant populations in the long-term.
- Current options for dealing with a *G. salaris* impact will threaten the survival of native populations of Atlantic salmon, and potentially other species, and programmes for restoring healthy, sustainable native populations will be needed.

- Restoration aims can only be realistically achieved by setting up gene banks of native populations and these need to be an integral part of the management response to *G. salaris* infestations of Scottish rivers

Appendix 10 - Plans or Projects – Competent Authority Issue of Consent or Permission

Requirements of the EC Habitats and Birds Directives and the associated Conservation (Natural Habitats, &c.) Regulations 1994 -

1. When giving consideration to the issue of any consent or permission associated with a plan or project (either alone or in conjunction with other plans or projects) all competent authorities must determine whether the proposed consent/permission would result in a likely significant effect on Natura interests (designated Natura sites, European Protected Species or effects on wider conservation status within a species/habitat's natural range). The competent authority shall for the purposes of assessment consult the appropriate nature conservation body – Scottish Natural Heritage.
2. If the competent authority is not able to determine that there would not be a likely significant detrimental effect then an Appropriate Assessment must be undertaken by the authority responsible for issuing consent/permission. It is usual for the competent authority to request the necessary information from the applicant. On request, SNH may provide guidance on what the Appropriate Assessment should encompass. At this stage the competent authority may also choose to seek the opinion of the general public.
3. If the Appropriate Assessment is unable to determine that there will not be a damaging effect on the integrity of a Natura site and its conservation interests, then the competent authority must demonstrate that there are no alternatives that would allow the plan/project to take place without, or with less, damage to the Natura interests. There are also licensing implications where the disturbance of European Protected Species may occur.
4. If there is no alternative then the competent authority must prove that there are imperative reasons of overriding public interest that warrant consent for the plan/project to take place. These can be of a social or economic nature, except where a site has been designated for a European priority habitat or species. If a priority interest is involved, then consent cannot be legally issued unless the plan/project is overriding for reasons such as public health or safety, or for other reasons that the European Commission consider justifying (written request necessary).
5. If all of the above can be justified, and the consent is to be issued, with resulting damaging effects on Natura interests, then the Member State must ensure that compensatory measures are taken to ensure the overall coherence of the Natura network is protected. This may consist of recreating habitat on a new or enlarged site to be incorporated into the Natura network, improving habitat on part of the site or another Natura site proportional to the loss due to the plan/project, or in exceptional cases, proposing a new site for designation.

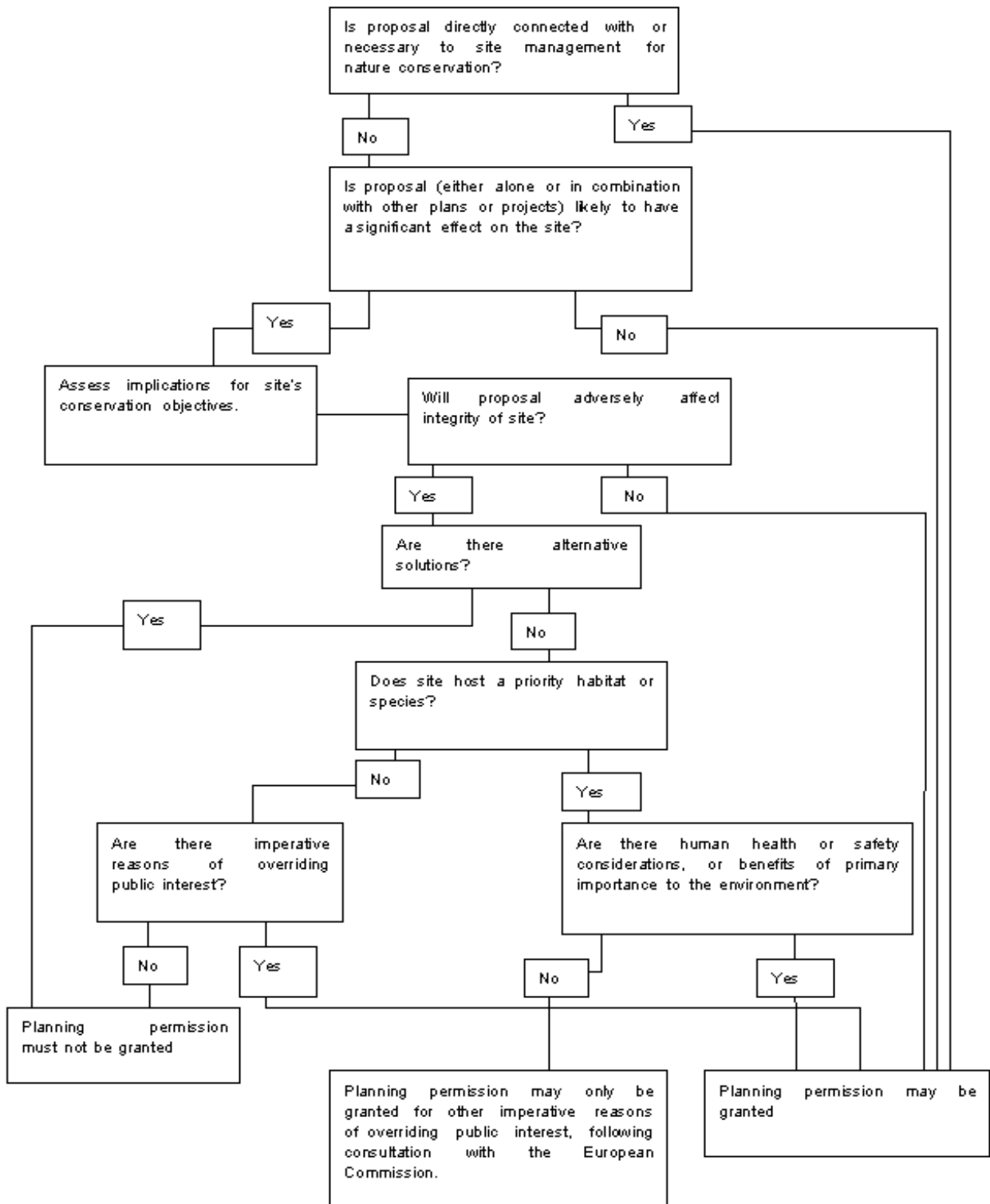
More detailed European Commission Guidance on the requirements of Article 6 of the Habitats Directive (this applies equally to the Birds Directive) can be found at:

http://europa.eu.int/comm/environment/nature/art6_en.pdf

Scottish Executive Guidance on the Habitats and Birds Directives can be found at:

<http://www.scotland.gov.uk/library3/nature/habd-00.asp>

CONSIDERATION OF DEVELOPMENT PROPOSALS AFFECTING SPAs AND SACs



Appendix 11 - Operations Manual

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Annex 7. List of SOPs cited within the Operations Manual

Flow chart 1. Overview of procedures in relation to suspicion and confirmation of *G. salaris*

Flow chart 2. Placing movement restrictions on suspect sites

Flow chart 3. Procedures for sampling sites

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Flow chart 4a. Epizootic investigations – Live fish movements

Flow chart 4b. Epizootic investigations – Other risks

Flow chart 5. Eradication

1. **Introduction - Aim of the Operations Manual**

1.1 **This Operations Manual will function as part of the *Gyrodactylus salaris* Contingency Plan and it forms Appendix 11 of that document.**

1.2 The continental waters of Great Britain are classified as a disease free zone with respect to *Gyrodactylus salaris*. Additional Guarantees provide protective measures against imports of infected fish and rely upon a programme of control and eradication in relation to disease outbreaks. Additional Guarantees were granted in 2004, these are detailed within Commission Decision 2004/453/EC.

1.3 This Operations Manual (hereafter referred to as ‘the manual’) has been drawn up by Fisheries Research Services (FRS), an Agency of the Scottish Executive. It is designed to deal with an outbreak of gyrodactylosis caused by the freshwater parasite *Gyrodactylus salaris*. This manual is the field and office operations guide directed at the actions of the National Disease Control Centre (NDCC) and staff at FRS. The manual will:-

- Form the core instruction to FRS staff on how to deal with suspicion and/or confirmation of the disease within Scotland;
- Highlight the necessary actions to be taken in relation to containment and eradication;
- Provide instruction on diagnosis and epizootic investigation; and
- Define some of the roles and responsibilities of the key players at FRS who will be involved in making decisions in relation to both the control and eradication of the disease.

1.4 These instructions are essential to help both permanent and temporary staff members function efficiently in the event of an outbreak.

1.5 The manual will work with and incorporate a number of Standard Operating Procedures (SOPs) which give detailed operational instructions. All SOPs referred to within the manual are held at FRS.

1.6 The policy is to be based upon a strategy of eradication. However, it has been identified that this may not always be achievable. In such circumstances, a strategy of containment will prevail.

1.7 The Diseases of Fish Acts 1937 and 1983 are the underpinning pieces of legislation for the manual. Reference must also be made to Appendix 1 of the Contingency Plan (hereafter referred to as ‘the plan’) which identifies other pieces of legislation that are important to operations.

1.8 This manual is a ‘working document’ and will require annual, or if necessary more frequent, review. It will be subject to change, as necessary, following the implementation of new legislation and scientific advances in relation to *G. salaris*, its control, diagnosis and eradication.

2. **Suspicion and Confirmation of Gyrodactylus salaris**

2.1 Sections 2.14 to 2.26 of the plan refer to suspicion and confirmation of *G. salaris* and should be referenced in relation to this section.

The origins of suspicion

2.2 The suspicion of *G. salaris* may arise from a number of sources. The origin of suspicion will determine how we proceed with containment, sampling and epizootic investigations. Flow chart 1 identifies some of the possible routes by which suspicion may arise.

2.3 Initially *G. salaris* may not be immediately obvious but suspicion may result following:

1) Routine inspection and sampling or general diagnostic testing of freshwater salmonids, preceding laboratory analysis and the identification of gyrodactylids.

In this instance we may advance quickly to confirmation through laboratory analysis. However, this situation may be a result of gyrodactylids other than *G. salaris*;

2) Unexplained mortality or sudden loss of freshwater Atlantic salmon populations and the absence of juveniles in an area where they were previously present.

This may be related to many other disease pathogens, environmental or recruitment factors (such as the number of returning adults, food availability and increased predation pressure) which can influence the population size.

2.4 The above situations would result in routine diagnostic sampling with a view to screening for all notifiable disease pathogens (including *G. salaris*). In addition, fish may be sampled for other pathogens and histopathology would normally be carried out on fixed material. The presence of gyrodactylids may then give rise to official suspicion of *G. salaris*, if for example this was associated with mortality within an Atlantic salmon population. The identification of *G. salaris* would give reasonable grounds for confirmation.

2.5 Initial suspicion may also be obtained prior to a site visit or inspection by any of the following means:

3) Reported mortality with the presence of gyrodactylids;

4) A claim of mortality being attributed to *G. salaris* (the source of the claim may influence our immediate actions);

5) The introduction of fish from a farm or area infected with *G. salaris*, illegal or otherwise.

2.6 Instances 3, 4 and 5 may give an initial suspicion prior to sampling. The level of suspicion will be assessed by the National Disease Control Centre (NDCC) the role of which is described within section 3.5 of the plan.

2.7 As soon as sufficient evidence for official suspicion has been obtained, measures will be taken to implement a programme of containment. This will involve the enforcement of movement restrictions upon the grounds that the suspect sites or locations may become infected with *G. salaris*; a sampling and surveillance programme to determine the presence and distribution of *G. salaris*; and an epizootic investigation to attempt to ascertain the origin of infection and the extent of disease and pathogen spread. These actions are covered within further sections of this manual; Section 4 – Movement Restrictions; Section 5 – Field Investigations; Section 6 Epizootic Investigation.

2.8 In addition to the containment procedures, the option of eradication will also be considered throughout the containment period. Appendix 3 of the plan examines the criteria for making this decision. Section 7 of the manual highlights some of the operational procedures involved.

2.9 Flow chart 1 details the main scenarios that could amount to suspicion and confirmation and actions to be taken from this point.

Actions upon suspicion and confirmation

2.10 Paragraphs 2.11 to 2.17 below, give an outlined overview of the procedures to be adopted in the case of suspicion and confirmation of *G. salaris*. These responses are represented in Flow chart 1.

Suspicion

2.11 If it is considered that there are reasonable grounds for suspicion then the following actions will be implemented:

- 1) Establish the Disease Strategy Group (DSG) and the NDCC;
- 2) Movement restrictions will be applied to all suspected sites and catchments. If legislation is in place a National Standstill may be enforced. The decision to issue movement restrictions will be the responsibility of Freshwater Fisheries and Aquaculture (FFA) division of the Scottish Executive Environment and Rural Affairs Department (SEERAD). The application of movement restriction will be the responsibility of the Fish Health Inspectorate (FHI) at FRS. Section 4 of the manual details this procedure;
- 3) DSG will inform relevant bodies or parties;
- 4) FRS will undertake diagnostic investigation and statutory sampling at the suspect location(s). Section 5 of the manual details this procedure;

5) FRS will commence an epizootic investigation. Section 6 of the manual details this procedure.

2.12 The results from diagnostic investigations and statutory sampling will determine the next step in relation to the suspected case.

2.13 If a negative result is obtained then further testing and investigation may be considered. Suspicion may be ruled out. If so, movement restrictions will be revoked. This will be a decision made by the DSG with advice from the NDCC.

2.14 If a positive result is obtained then samples will be required to be sent to the relevant OIE Reference Laboratory for confirmation, in the case of first positive. Containment procedures will be maintained and epizootic investigations will continue to assess the extent of disease distribution. The following actions as listed in paragraph 2.15 will be completed.

Confirmation

2.15 Actions following confirmation are detailed below:

- 1) Establish DSG and NDCC (if not done so already);
- 2) Apply movement restrictions (if not in place already);
- 3) Continue with or commence an epizootic investigation;
- 4) Inform all necessary government agencies and other stakeholders at a meeting at FRS, organised by the head of the NDCC;
- 5) Issue a press release confirming the presence of *G. salaris*;
- 6) Maintain containment measures, including adequate education, regular meetings and disinfection stations;
- 7) The epizootic investigation will advise on the decision to contain or eradicate the parasite.

2.16 Depending upon the location under suspicion or confirmation, and the results of the initial epizootic investigation, movement restrictions may need to be applied in other parts of the UK. In such a situation, close communication with the Fish Health Inspectorate at Cefas (Centre for environment, fisheries and aquaculture science) and the Department of Agriculture and Rural Development in Northern Ireland (DARDNI) will be necessary. There may also be implications for other countries which have received live fish and/or eggs of fish from Scotland.

2.17 Section 1.18 of the plan identifies the requirement for a cross border response should an outbreak of *G. salaris* be associated with any part of the River Tweed or Border Esk catchments.

3. **Structure, Organisation and Communication**

3.1 The strategic management of the disease will be undertaken by the Disease Strategy Group (DSG) assisted by the National Disease Control Centre (NDCC) which will provide tactical and operational management. The Expert Group on *G. salaris* will provide an advisory function in relation to scientific research and development into the parasite and the disease. This will be beneficial to the development of the plan and the policy, along with the operation employed in dealing with an outbreak.

The Disease Strategy Group (DSG)

3.2 The DSG will be responsible for the overall control of the outbreak in Scotland. Details of its role are defined within section 3.3 of the plan.

3.3 One member of the DSG will be responsible for liaising directly with the head of the NDCC on both field and policy issues.

The National Disease Control Centre (NDCC)

3.4 The NDCC will be established immediately following official suspicion and will be based at FRS. The role of this group is defined within section 3.5 of the plan.

3.5 An FRS management structure will be adopted to form the nucleus of a management structure for the NDCC and will operate as follows:-

- The head of the NDCC will be the Director of the Aquaculture and Aquatic Animal Health (AAAH) Programme of the FRS. He or she will consult with other members of the Management Board as necessary;
- The NDCC will include relevant Group Leaders, or their representatives, from the AAAH Programme and other Programmes as necessary;
- The Assistant to the Director of FRS or his/her deputy will also be a member of the NDCC and will attend meetings of the NDCC to oversee all administrative functions;
- Other FRS staff may be co-opted onto the NDCC as required.

3.6 The exact composition of the NDCC will be determined by the head of NDCC. A suggested structure of the NDCC, with associated staff, is detailed in Annex 1 of the manual.

The Local Disease Control Centre (LDCC)

3.7 The NDCC, in consultation with the DSG, may consider the establishment of Local Disease Control Centres (LDCCs). These will be under the control of the NDCC and will be located remotely from FRS.

3.8 Remote locations may present logistical issues associated with sampling, surveillance and eradication programmes. The establishment of remote LDCCs will depend upon the geographical location of the outbreak(s) and consideration of the logistical and financial implications of running such a unit(s), compared to the regular travel to and from the area for sampling and surveillance. Enlarged LDCCs will be necessary where eradication is undertaken.

3.9 It is perceived that the administrative functions of the LDCC will be limited. These units will act as sampling, inspection and eradication bases. One person (a Senior Fish Health Inspector or Area Manager) will be responsible for running the office and disseminating information passed on from the NDCC to field staff as necessary.

3.10 Each LDCC will maintain a detailed map of the catchment(s) under surveillance for *G. salaris*. This map will identify all fish farm sites and put-and-take fisheries as well as the location of privately owned ponds and fish holding facilities. It will contain summarised data in relation to disease testing and disease status. There will be information detailing natural and man-made barriers, water extraction points and potential problem areas in terms of sampling or eradication e.g. – large expanses of open water. A similar map, detailing treatment points, will be required when carrying out eradication procedures.

3.11 Guidance on the establishment of the LDCC should be conducted in accordance with Annex 1 of the manual.

Communications internal and external

3.12 Appendix 5 of the plan details the strategy to be adopted and the issues to be addressed in relation to communication. Within the NDCC, an internal communications chain or information flow must be established. It will be necessary to ensure that regular meetings are held to aid a focused, efficient sampling and surveillance programme. The frequency of meetings will be determined by the head of the NDCC and will be dependent upon the location, distribution and evolution of a suspected or confirmed outbreak.

3.13 Initially, meetings of the NDCC should be held daily. The head of the NDCC will decide subsequently on the frequency of meetings depending on the issues to be managed. Video conference facilities can be used to facilitate meetings between the NDCC and the DSG.

3.14 It will be the responsibility of all members of the NDCC to disseminate information to the Group level and to receive reports back from their staff and notify the NDCC as necessary.

3.15 All staff members have the responsibility to report any findings or additional information, to their Group Leader, which could impact on the response in relation to an outbreak of *G. salaris*. Group Leaders will be responsible for communicating such information to the head of NDCC.

3.16 Communication links within the NDCC and between the NDCC and the DSG are represented within Annex 1 of the manual. This also highlights the potential internal staff

movements within AAAH. The communications co-ordinator based at the DSG will liaise with the NDCC to ensure effective communication throughout.

Wall and floor plans

3.17 A wall plan, comprising of Flowcharts 1-5, will be drafted showing the procedures to be implemented following suspicion and/or confirmation of *G. salaris*. A floor plan showing the location of personnel operating within the NDCC, DSG and LDCC(s) may also be drafted, if necessary, following an outbreak. Wall and floor plans will be produced following official suspicion of *G. salaris* and displayed at the NDCC and the LDCC(s).

3.18 Job descriptions highlighting the roles and responsibilities of all the FRS staff who will be involved in an outbreak of *G. salaris* are located in Annex 2 of the manual.

4. Movement Restrictions

4.1 The powers for issuing movement restrictions are provided by the Diseases of Fish Acts 1937 and 1983. Under these Acts, areas can be designated for the purpose of disease control. The movements of live fish, eggs and gametes of fish, along with feedstuffs for fish, into, out of and within designated areas, are prohibited without the permission of the Scottish Ministers.

4.2 The DSG will be responsible for providing policy advice on the placement of all movement restrictions. It will be the responsibility of FRS to ensure that movement restrictions are imposed, in line with the current policy.

Placement of movement restrictions

4.3 Movement restrictions can be imposed on a defined area following sufficient evidence of suspicion or confirmation of disease. A Thirty Day Notice (TDN) is an immediate standstill notice which can only be served upon the occupier or owner of a fish farm site. Waters that are suspected or confirmed as being infected may be designated as infected by the making of a Designated Area Order (DAO). There is a legal requirement to publicise all DAOs (served within Scotland) within the Edinburgh Gazette. The DAO can only come into force following publication, which occurs twice weekly on a Wednesday and Friday. As a result, the making of a DAO may take several days.

4.4 Following suspicion or immediate confirmation at a fish farm site, put-and-take fishery or wild freshwater fishery, the entire freshwater catchment will be placed under suspicion. Neighbouring catchments will act as Buffer Zones and will have movement restrictions applied. Suspect catchments will comprise of all water catchments which are deemed to be linked through water movements. The same criteria will be applied to the Buffer Zones.

4.5 Geographical Information Systems (GIS) will aid the identification of the area in relation to a suspected catchment(s) and buffer zone(s). The location of all fish farm sites within these areas will be identified, along with other data and information crucial to containment and eradication. Section 10 of the manual gives greater detail on the role of GIS.

4.6 A Thirty Day Notice (TDN) will be served on all fish farm sites:-

- Within the water catchment(s) where suspicion or confirmation has been identified;
- With epidemiological connections to the suspected site or suspect catchment(s);
- Within the Buffer Zone(s).

Standard Operating Procedure (SOP) FHI Admin 024 details the necessary procedure for serving TDNs.

4.7 All suspect freshwater catchments will be designated by Order. The DAO will cover all waters holding susceptible species, within that catchment. This will include all fish farms, put-and-take fisheries, and any other fish holding facilities, as necessary. SOP Admin 025 details the necessary procedure for making a DAO.

4.8 The immediate response may warrant the designation of all freshwater catchment areas in Scotland if initial suspicion and/or investigations suggest the possibility of the disease being widespread.

4.9 The size of the control zone will depend on the receipt of positive laboratory results and advice from investigations led by the Epidemiology Group.

Revocation of movement restrictions

4.10 As catchments are declared free from the parasite then movement restrictions will be revoked by making a Revocation Order. SOP Admin 026 details the procedure to be adopted when revoking movement controls. In many situations the decision to revoke an order may be based around a programme of testing, devised by the Epidemiology Group, which demonstrates freedom from *G. salaris*.

4.11 In considering the revocation of movement restrictions the following parameters must be taken into account:

- Whether the disease has been confirmed within a suspect catchment;
- Whether eradication has been deemed to be successful;
- What epizootic links exist;
- In the case of negative results, whether sufficient sampling has been conducted within the suspect area;

4.12 Section 8 of the manual looks at further criteria for demonstrating freedom from infection and should be consulted when considering the revocation of all movement restrictions for *G. salaris*.

Fish movements

4.13 In accordance with SOP FHI Admin 016, applications to move live fish, eggs and gametes of fish, along with feedstuff for fish, which are subject to movement restrictions for *G.salaris*, will be assessed by the FHI Duty Inspector (DI), or deputy. The DI should seek the advice of colleagues and discuss the application with Senior Fish Health Inspectors or Area Managers, as appropriate.

4.14 Scientific advice, based on the results of the risk assessment described in Appendix 4 of the plan will be passed to the policy branch (FFA) by the DI. In addition to the perceived disease risk, FFA will consider all other implications related to the movement application.

4.15 Examples of movement restrictions are contained within their respective SOPs. Annex 7 provides a list of all SOPs referred to within the manual.

4.16 Flow chart 2 provides an overview of the procedures involved in placing movement restrictions.

5. **Field Investigations**

5.1 The Fish Health Inspectorate field operations are laid down in the 'Fish Health Inspectorate Standard Operating Procedures' (FHI SOPs), many of which are accredited by the United Kingdom Accreditation Scheme (UKAS). Reference is made to many of the FHI SOPs, particularly within this section of the manual.

5.2 Following initial suspicion and/or confirmation, it is envisaged that a number of sites will need to be inspected and sampled, depending on the findings of the epizootic investigation.

5.3 An overview of the procedures involved in sampling sites is given in Flow chart 3.

Preparations to inspect and sample

5.4 Prior to proceeding with any inspection and sampling, a number of actions will be required to be undertaken by the Inspector before commencing his/her field work. It is possible that the actions described below in relation to 'Arranging an inspection' and 'Collection of sampling equipment' may be completed by the Fish Health Inspectors deputy, especially in the situation where operations are being run from an LDCC.

Arranging an inspection

5.5 Field Inspectors should refer to SOP FHI Field 001 which lays down the necessary steps required in planning visits to fish farm sites. Much of this application will also be relevant in planning visits to put-and-take fisheries and wild fisheries. The wild fish file on the FRS S-drive holds contact information for Scotland's District Salmon Fishery Boards (DSFB).

Collection of sampling equipment

5.6 In order to conduct sampling for *G. salaris*, equipment, as detailed within the Fish Health Inspectorate Checklist FHI 010, should be collected. In addition to what is specified for *G. salaris*, the inspector should ensure that he/she has all necessary equipment to conduct diagnostic sampling, as necessary, during field work.

5.7 In the event that extra provisions need to be sourced, contact details for suppliers are held by FRS. Section 10 of the manual details the procedures necessary for obtaining extra resources.

Disinfection of equipment on site

5.8 Inspectors will follow SOP FHI Field 029 which instructs the cleaning and disinfection of protective clothing and equipment when moving on and off sites. These procedures should be applied to all visits to fish farms, put-and-take fisheries and wild fisheries.

5.9 All disposable sampling equipment taken onto site and into the sampling area, should be classed as contaminated and must not be used at a different site or sampling location. This equipment should either be disposed of on site, appropriately, or stored within the inspectors vehicle in a sealed container away from samples and clean sample equipment. The equipment should then be disposed of appropriately at FRS Marine Laboratory.

Site inspection and information collection

5.10 It may be necessary for inspectors to work in pairs or teams when collecting samples from wild fish or when collecting a large number of samples. In such situations, the work will be agreed and shared accordingly. For auditing purposes records must be maintained which detail the actions of all inspectors involved.

5.11 Fish farm site managers, put-and-take fishery owners, biologists from DSFBs and Fisheries Trusts may also be able to provide assistance in the collection of fish from sample locations. In some situations they may be able to assist with sampling, provided adequate training has been given in accordance with SOPs FHI Admin 017, FHI Admin 018 and FHI Admin 019, as necessary.

Case sheets

5.12 A case sheet should be completed in accordance with SOP Field 012 for each field visit. When sampling fish farm sites or put-and-take fisheries, record sheet FHI 001 should be completed. When sampling wild fisheries, record sheet FHI 011 should be completed. Case sheets should be amended as necessary to include required fields.

Movement records

5.13 Movement records should be checked on site in accordance with SOP FHI Field 002. This SOP specifies the legislative requirement for fish farmers to maintain records and which

information to document. For put-and-take and wild fisheries there are no legal requirements to record fish movements made either on or off site. As part of the investigation, and to provide valuable information to the Epidemiology Group (EG), enquires must be made to establish if any movements have occurred on or off put-and-take or wild fisheries. In accordance with the SOP, the inspector must obtain copies of any records that are kept

Mortality records

5.14 Mortality records will provide essential information to aid the epizootic investigation. Under the current legislation, fish farmers are obliged to keep mortality records. These records must be analysed in accordance with SOP FHI Field 003.

Medicine records

5.15 Under the Animal and Animal Products (Examination for Residues and Maximum Residue Limits) Regulations 1997, Fish Health Inspectors have the power to inspect medicine records held by a fish farmer. Analysis of these records is important when conducting statutory inspection and sampling for residues of veterinary medicines. Examination of these records will also be a crucial factor when selecting which fish to sample for *G.salaris*. FHIs should request inspection of these records during any visit in relation to an outbreak of *G.salaris* and avoid sampling fish recently treated with formalin or other anti-parasitic medicines, where possible.

Sampling programme

5.16 The sampling programme for *G. salaris* will aim to establish the presence and distribution of the parasite. It will aid the EG to determine the origin of the disease and to demonstrate freedom from disease.

5.17 The priority to focus sampling and investigation will be as follows:

1. Suspect or 'index' case;
2. All sites with epizootiological links to the index case (e.g. fish movements, transporter connections);
3. Establish the disease distribution within infected catchments;
4. Consideration given to increasing the national sampling program – in non-suspect areas.

5.18 The first aim will be to confirm or rule out the presence of *G. salaris* in relation to a suspected case (index site). If sufficient suspicion remains, or *G. salaris* is confirmed, then an epizootic investigation will be conducted to establish the disease origin and spread – Section 6 of the manual gives details of this procedure.

5.19 All sites with epizootiological links to the index case will be targeted. Following this, it will be necessary to conduct sampling within the buffer zones to establish the disease status there. Subsequent revision of the infected areas and buffer zones will follow if additional positive results are obtained, this, in turn will lead to further epizootic investigation.

5.20 It will then be necessary to establish the disease spread within an infected catchment. All fish farms, put-and-take fisheries and wild fisheries will be sampled. Sites within an infected catchment, with an epizootic link to the index case will be targeted first, followed by all remaining sites within the catchment. Test results and data from these cases will be crucial to the eradication strategy, should this route be considered and chosen. Consideration should be given to distribution changes of the parasite over time, primarily due to fish migration and water movements. Environmental conditions may play a major role in parasite distribution.

5.21 Consideration should be given by epidemiologists and the NDCC to the possibility of increasing the level of surveillance for *G. salaris* at a national level. This will be dependent upon the individual situation and the pattern of disease and pathogen spread.

5.22 A management plan will be established for each area to ensure that all the necessary samples are taken and examined. All samples submitted will be identifiable by catchment. Once a site has been confirmed positive, then the entire catchment will be considered positive. From this point sample analysis should be concentrated on other suspect catchments, where the presence of *G. salaris* is unknown, to help establish pathogen distribution. Sample analysis will then focus on establishing pathogen distribution within an infected catchment.

Selection of fish for sampling

5.23 Initially, the survey will be designed to detect the presence of *G. salaris* and not estimate its prevalence. Therefore, at this stage the focus will be on the highest risk groups present on the farm.

5.24 SOP FHI Field 040 describes the procedures to be adopted when inspecting fish on site, this should be followed along with SOP FHI Field 028 which lists the criteria to be considered when choosing which fish to sample for *G. salaris*. Two separate scenarios are identified. The first relates to routine surveillance (Table 5) conducted in accordance with the Viral Haemorrhagic Septicaemia (VHS)/Infectious Haematopoietic Necrosis (IHN) sampling program. The second relates to surveillance associated with a suspected or confirmed outbreak (Table 6).

Method of sampling

5.25 In the event of suspicion or confirmation, then the method of sampling will be based on the OIE guidelines for sampling for *G. salaris*. The procedures required are detailed within SOP FHI Met 007, which may be summarised as follows:-

Whole fish should either be:-

- Examined on site for gyrodactylids. All observed gyrodactylids will be collected and preserved in alcohol; or
- Preserved in alcohol and returned to the laboratory at FRS for analysis; or
- Transported live to FRS or other laboratory as agreed.

5.26 It is recognised that these methods may not be practical in some situations. For example, where a large number of rainbow or brown trout are required for sampling and the life stages on site are deemed too large for preservation in alcohol, or for live fish movement. In such cases an alternative method of sampling may be appropriate - all fins (pectoral, pelvic, anal, caudal, adipose and dorsal) may be collected for the screening method.

5.27 Where the species of fish can be positively identified as Atlantic salmon (such as on an Atlantic salmon farm site) then samples of the pectoral fins only will be sufficient for analysis.

Sampling wild fish populations

5.28 Samples of wild fish populations will be sourced mainly by electro-fishing and gill netting according to SOPs FHI Field 046 and FHI Field 047. Where practical and possible, electro-fishing should be the preferred method of wild fish capture as gill netting may dislodge *G.salaris* prior to sampling. Fish passes, and fish ladders may be adapted to help catch fish for sampling.

5.29 The number of sample locations on a river system will be determined by the NDCC with input from the EG. Factors which will influence this will be:-

- The estimated Atlantic salmon population size and structure;
- The size and area of the catchment being studied;
- The presence of barriers (natural and man made) which can delineate the boundaries of different epizootic units within a catchment; and
- Environmental conditions which may influence the spread of *G. salaris*. This includes water temperature (influencing *G. salaris* reproductive rate) and water flow (controlling the dispersion of the parasite downstream and influencing fish movement upstream).

Transport of samples to the laboratory

5.30 Samples must be returned to the laboratory in accordance with SOP FHI Field 011. Samples for *G. salaris* do not require to be kept in cold storage but could be kept in the same box as other samples or in an additional box or bag. All samples should be secured in a sealed polythene bag and maintained in an upright position. To aid this, tube racks could be used, if necessary.

5.31 It should be noted that the transport of alcohol by Royal Mail is not permitted. As a result, a private courier service for the transportation of samples and paperwork should be considered. It may be necessary to establish an 'FRS courier service', especially in the situation where an LDCC has been established. The FRS Procurement Group has a list of courier services.

5.32 The FHI DI, or deputy, will be responsible for unpacking and logging-in samples according to SOP FHI Admin 004. SOP FHI Admin 005 details the requirements necessary for distributing samples. The Fish Health Inspector will be responsible for his/her samples when returning with them, from the field.

6. **Epizootic Investigation**

6.1 The Epidemiology Group (EG) will lead the epizootic investigation. Field reports, data and results from inspector's cases will be crucial to identifying the hazards and risk of spread of disease.

6.2 The EG will provide advice on defining suspected catchments, buffer zones, sampling and surveillance programs designed to detect the presence and/or demonstrate freedom of *G. salaris* within certain catchments during both the initial investigation and following treatment of a river system.

6.3 The head of the EG will be a member of the NDCC and be responsible for sharing information obtained from epizootic investigations with the group. Such information will be a crucial factor in the decision making responsibilities of both the NDCC and the DSG.

6.4 There will be a requirement for a direct communications link between the EG and:

- Laboratory staff – in the interpretation of results;
- The FHI regarding the interpretation of case notes, movement records and details of the sampling programme.

6.5 Following the establishment of a suspect or confirmed infected catchment, the EG should consider all links to other water catchments through the following:

- Fish movements between catchments;
- Water movements between catchments;
- Fish processing activities;
- Recreational activities.

Establishing the point of infection

6.6 The EG will attempt to determine the origin(s) of *G. salaris* present within a suspect or confirmed catchment and the likely time that the parasite may have been on site. It is anticipated that this may not always be possible and will often be extremely difficult, especially where *G. salaris* is associated with a rainbow trout site where no mortality or clinical signs of disease have been observed. In these circumstances, a practical approach should be to prioritise

the links with the highest risk, as determined from case data, although all possibilities of infection must be considered.

Fish movements

6.7 The movement of live infected and/or susceptible fish will pose the greatest risk with respect to the spread of *G. salaris*. This includes:

- 1) The intentional movement of farmed or wild stocks (legal or otherwise);
- 2) The unintentional movement of farmed or wild stocks (e.g. via water movements);
- 3) The natural movement and migration of wild fish species up and downstream and between catchments via brackish waters; and
- 4) Escapes from fish farms and sport fisheries.

Movements of fish farm stock

6.8 In accordance with SOP FHI Field 002, movement records are inspected, checked and copies are obtained for analysis at the NDCC. The rapid analysis of such records is essential as live fish movements are the greatest risk factor for the spread of *G. salaris*. The analysis of movement records will be completed by the FHI and EG jointly.

Wild fish movements

6.9 Although *G. salaris* cannot survive full strength seawater, it can survive in brackish waters. The movement of wild fish between catchments may provide sufficient risk to include these areas under suspicion. Jansen, Hogasen and Brun (2005) identify the migration of infected fish in brackish water as a major factor relating to the spread of *G. salaris*. In Norway, it has been reported that river systems up to 20 km away have been infected by this means. It is perceived that this situation may be more common on the west coast of Scotland due to the relative proximity of river mouths in sea lochs within that area. This risk may be reduced somewhat, in relation to some east coast rivers.

6.10 There is also a risk from anglers moving live bait and water from one catchment to another. Where this activity has been identified to have occurred, a risk assessment should be conducted and consideration given to further actions including sampling and official suspicion based on the level of the activity and the associated level of risk.

Escapes of fish

6.11 Where escapes are known to have occurred, the infection pressure upon wild fish in a catchment system may be increased. However, suspicion or confirmation will immediately apply to the entire catchment following initial reports, so fish farm escapees will not change the immediate response in terms of the epizootic investigation.

6.12 Extra bio-security measures must be taken to prevent fish escapes and the risk of increased spread of *G.salaris*. Advice should be passed on to fish farmers by Inspectors during routine inspections.

Water movements

6.13 Water movements between and within water catchments are necessary within the hydro electric and water supply industries. With respect to the spread of *G. salaris*, this activity is perceived as a lower risk than that associated with fish movements. However, the risk associated with this activity will automatically increase should infected/susceptible fish be transported through water movement to areas where Atlantic salmon populations exist.

6.14 It will be necessary to consider water movements from an infected (suspected or confirmed) catchment to an uninfected catchment and vice versa, as fish are able to swim against the current. The risk associated with this activity will increase with increasing frequency and volume of water being moved.

6.15 The EG should provide recommendations on whether to apply for revocation of water abstraction consents regarding water transfers, water to distilleries, power stations and fish farms. If this is not possible or refused, then the NDCC will require a recommendation from the EG on whether to extend the infected area and how far.

Angling and other risks

6.16 In relation to recreational activities, the greatest risk is perceived to result from fishing nets, fishing boats and fishing waders (especially with felt soled boots) that have been in contact with infected fish. Lower levels of risk are associated with other pieces of fishing tackle such as fly lines and flies etc.

6.17 Canoeists may also pose a risk through the movement of equipment between catchment areas and areas within a catchment. It is perceived that this risk is relatively low, although it may increase if the equipment has been in direct contact with infected fish.

6.18 It may be impossible to determine where the risks associated with these, and other leisure activities, lie following a *G. salaris* outbreak. No recorded system for the movement of anglers or leisure pursuits currently exists. Where there are reports of movements between catchments without adequate treatment measures taking place, then these should be investigated. The EG should assess the risk of any report and, if necessary, request that inspection and sampling should be conducted.

6.19 In the event of an outbreak, investigations into leisure activities will be risk assessed and efforts concentrated on those with the greatest perceived risk.

Processing activities

6.20 Under the current control programme for *G. salaris* there are no powers to restrict the movement of dead fish – killed for harvesting or culling purposes. There are controls over the removal and disposal of mortalities.

6.21 There is a risk associated with processing establishments processing fish from a suspected or infected zone and discharging untreated effluent back into a water course containing susceptible species. A number of fish farms, including rainbow trout farms, process fish on site.

Epizootiological split of catchments

6.22 There may be strong epizootiological evidence that could support a proposal to split an infected catchment into areas that can be considered discrete with respect to the control of fish disease. This needs to be assessed at the catchment level and will be a key factor in an eradication plan. The process of constructing barriers will be a crucial component to splitting catchments. The EG will make recommendations to split a catchment if it is thought to be appropriate. Movement restrictions will remain on the entire catchment (even after splitting) until sampling and demonstration of freedom from *G. salaris*. Following sampling which demonstrates freedom from disease, consideration may be given to the revocation of movement controls from the epizootiologically separate area.

6.23 Flow charts 4a, 4b, and 4c detail the procedures involved in conducting an epizootic investigation.

7. **Diagnosis**

7.1 Diagnostic methods should be based on those laid down in the relevant chapters of the current OIE guidelines ‘Manual of Diagnostic Tests for Aquatic Animals’. The current version is available at www.oie.int.

7.2 Procedures in relation to the method of sampling for *G.salaris* are detailed within the manual.

7.3 Laboratory staff processing samples for *G.salaris* should give consideration to any recommendations relating to sample processing.

7.4 All samples will be examined for *Gyrodactylus* parasites which will be identified using the methods described in the following SOPs:

- SOP Hist 027 - Sampling Procedures for *Gyrodactylus*;
- SOP Mol-gen 060 - *Gyrodactylus* Morphological Examination
- SOP Mol-gen 061 - *Gyrodactylus* PCR
- SOP Mol-gen 062 - *Gyrodactylus* RFLP
- SOP Mol-gen 063 - *Gyrodactylus* Gel

7.5 All SOPs in relation to the diagnosis of disease are held by the Histopathology and Molecular Genetics Groups.

7.6 A Decision Tree for the diagnosis of *G. salaris* is located within Annex 4 of the manual. This document should be consulted when interpreting results.

Notification of Results

7.7 Results are recorded on a *Gyrodactylus Morphological and PCR/RFLP* sheet (for laboratory use only). An *FHI Gyrodactylus Report* is completed and is issued to the Duty Inspector.

7.8 As part of the confirmatory diagnosis procedure, the first identification of *G. salaris* in Scotland will be required to be confirmed by the relevant OIE Reference Laboratory. The head of the NDCC will be responsible for ensuring material is sent to the OIE Reference Laboratory. Subsequent cases may be confirmed by the National Reference Laboratory without reference to the OIE Reference Laboratory. The address of the relevant OIE Reference Laboratory is as follows.

Dr T.A. Mo
National Veterinary Institute
Ullevålsveien 68
P.O. Box 8156
Dep., 0033 Oslo
NORWAY
Tel.: (47.23) 21.61.10, Fax: (47.23) 21.61.01
E-mail: tor-atle.mo@vetinst.no

8. Eradication

8.1 The policy aim is to eradicate *G. salaris*. However, in some situations this may not be achievable. In this case, a policy of containment will prevail.

8.2 The decision to implement an eradication programme will be made by the Scottish Ministers. They will consider a report from the DSG, which will highlight the main issues regarding the possibility of treatment – see section 5.11 and 5.12 of the plan. Appendix 3 of the plan details many of the factors that the DSG will consider when determining the feasibility of eradication.

8.3 If eradication is deemed possible, then a number of surveys will be required to be conducted. All necessary equipment must be obtained and a plan, containing a detailed time frame of events, should be drafted prior to a treatment. The decision to eradicate may be reviewed at any point, should additional information reveal further difficulties or issues.

8.4 At the point of first detection, an immediate treatment to eradicate *G. salaris* may be applied. Experiences from Norway suggest that this could prove beneficial to the long term eradication of *G. salaris* and help restrict the spread of the parasite.

8.5 Eradication protocols and/or SOPs will be drafted in the event of an outbreak of *G. salaris*. These will be specific to the catchment(s) concerned and will highlight the activities of FRS in:-

- Assessing the possibility of treatments;
- Surveying;
- Planning treatments; and
- Conducting treatment(s).

8.6 Flowchart 5 details the procedures involved in implementing and conducting an eradication programme.

Project Manager

8.7 A Project Manager (PM) will be appointed by the DSG. The PM will provide advice and expertise in relation to eradication. Practical experience of eradication programmes for *G. salaris* will be an essential requirement for this post. The PM may be involved at an earlier stage on a consultation basis when assessment is made into the feasibility of eradication.

Surveying

8.8 Prior to any treatment programme, it will be essential to conduct thorough and detailed surveys to identify the characteristics of the water catchment (or section of water catchment) under examination. Surveys will be required to gather information on:-

- Hydro-geography and water chemistry, to include drinking water supplies and large bodies of water to be conducted by SEPA and Scottish Water;
- Fish populations, to be conducted by FFL and SNH;
- Significant populations of invertebrates, to be conducted by FFL and SNH;
- Any sites of special interest, advice to be provided by SNH;
- All potential sites for permanent and temporary barriers. This will include fish passes, dams, fish counters, lades and salmon ladders. To be conducted by FFL and DSFBs with assistance from Fisheries Trusts;

- Sites where permanent barriers currently exist, to be conducted by DSFBs and FFL, advice to be provided by the GIS group.

8.9 It may be necessary to survey at various times of the year in order to determine seasonality ranges especially in relation to hydrology, water chemistry and changes in freshwater fauna populations.

8.10 The information obtained from surveying will be crucial to the development of an environmental impact assessment. This will be completed to establish the impact of any chemical treatment upon the catchment and wider environment. It is perceived that SEPA will facilitate with this role.

8.11 Appendix 9 of the plan identifies the options, requirements and further research in relation to Gene Banking. Gene banking will play a vital role in the preservation and restoration of wild Atlantic salmon stocks, along with other fish species, in the event that eradication measures involve the use of a piscicide.

Equipment

8.12 Equipment requirements must be identified. The sourcing of equipment associated with eradication, will be the responsibility of the Scottish Procurement Directorate (SPD). Consideration must be given to equipment required for:-

- Setting up and operating a LDCC (if not already established);
- Building permanent and temporary barriers;
- Chemical storage, chemical dispatch stations and drip stations;
- Additional personal protective clothing – waders, dry suits, life jackets or flotation aids, gloves, face masks, protective goggles;
- Boats, nets, hand-nets, bags and bins to collect and transport dead fish;
- Consumable equipment required to collect biological material from dead fish, inclusive of gloves, bags, dustbins or similar containers;
- Suitable vehicles to transport people, equipment and dead fish;
- Facilities to store and treat dead fish (located at the LDCC);
- Disinfection facilities, to be established throughout the operation;
- Additional electro-fishing equipment, could be sourced from Fisheries Trusts and DSFBs;
- Plant and machinery equipment to allow barrier construction;

- Rotenone or alternative piscicide.

8.13 Further details of equipment required for a rotenone application treatment are given in Appendix 8, Annex 1, of the plan.

Planning

8.14 The location of existing barriers and potential areas for barrier construction (both temporary and permanent) must be identified. In addition, the number, location, distribution and type of treatment station to be deployed, must also be established, based on hydro-geographical data and water chemical analysis.

8.15 The GIS mapping system will supplement hydro-geographical data and aid identifying the location of treatment and barrier points. Large scale maps will be produced displaying these locations and will be held at both the LDCC and the NDCC.

8.16 Advice from the EG will be necessary to determine where and if water catchments can be split using barriers, to aid the treatment of a water catchment.

8.17 Teams will be required to be built and trained in their specific roles. These will include: chemical application; the collection of all mortalities; and sampling to collect biological information. The PM will play a crucial role training all staff members within their roles, specific to eradication.

8.18 As part of the planning process, all water extractors must be identified and kept up to date with the proposals of the treatment plan. During the treatment period additional water supplies may be required to be sourced. Consideration will be given to notifying pet owners and farmers whose animals are in contact with an infected catchment undergoing treatment.

Treatment

8.19 Treatment should be conducted when the water level is at its lowest point and ideally when few adult salmon are within the river system. If possible, treatment should follow the spring smolt migration to sea. Consideration must be given to weather conditions which could impact upon the success of a treatment. Postponing a treatment would have consequences in relation to wasted time, effort and money and additional planning associated with a new treatment plan.

8.20 Following and during treatment, dead fish will be collected from the river system using nets where necessary. Advice will be required from local knowledge source(s) to identify where mortalities are most likely to be found. Sampling to gather biological information will be considered and conducted at the LDCC or a laboratory which is approved by FRS.

8.21 Mortalities and waste material must be disposed of in accordance with the Animal By-Products Regulations 2003.

8.22 Following treatment, the section of river will be electro-fished to determine the success of the treatment. If live fish are caught then the treatment must be considered to have failed. Consideration to the timing of further treatment(s) must be made taking into consideration the failures of the initial plan. If the treatment is deemed to have been a success then all equipment must be cleaned and disinfected before being moved out of the area and into the next section of river to be treated.

8.23 Where fish farms containing susceptible species, or species which could act as carriers of *G. salaris*, are present, then these facilities must be cleaned, disinfected and fallowed before treatment and not re-stocked until after a successful treatment has been administered.

Restocking

8.24 Restocking, possibly with sentinel salmon parr populations, will be conducted. Stocks held within gene-banking facilities could be used for this purpose. A testing programme will be implemented which will, at least, meet the requirements of Commission Decision 2004/453/EC. If there is no evidence that *G. salaris* is present following this, then consideration will be given to declaring the catchment as being free from *G. salaris*.

9. Demonstrating Freedom from *G. salaris*

9.1 Following confirmation of *G. salaris* and investigations into the distribution and pattern of disease spread, consideration will be given to establishing or demonstrating freedom from the disease for certain areas of Scotland. The following areas will need to be considered:-

- Non-suspect sites (fish farm, put-and take fishery and catchment);
- Sites within Buffer Zones;
- Suspected, but unconfirmed sites and catchments;
- Confirmed sites and catchments.

9.2 Non-suspect sites with no epizootiological links and no indication of disease can be declared free of *G. salaris* in accordance with Commission Decision 2004/453/EC section B, point 1, which outlines the conditions to enable declared freedom. No additional screening or testing is required. However, the decision for a national testing programme in accordance with disease free declaration will be made by the NDCC with input from the EG, DSG and the Expert Group on *G. salaris*, as necessary.

9.3 Sites within Buffer Zones surrounding infected catchments must be tested regularly whilst the catchment remains infected. Provided that their status remains negative, then these sites and catchments can be declared free following successful eradication within the confirmed catchment which they surround.

9.4 Suspected but non-confirmed sites and catchments will be declared free from *G. salaris* following adequate sampling and negative test results. The level of testing will be determined by the EG.

9.5 Confirmed sites and catchments can be declared free following the completion of an eradication programme, re-stocking of Atlantic salmon populations, and re-testing with negative results. The use of sentinel salmon populations may be considered for this purpose. The site(s) and catchment(s) must, at least, meet Commission Decision 2004/453/EC section B, point 2, and the sampling conditions of 2001/183/EC to be declared disease free.

9.6 Where there are no wild salmonids associated with an infected site, then a programme to demonstrate freedom could begin following the removal of all infected stocks, cleaning and disinfection of fish farm tanks and ponds and re-stocking. This situation may apply to a freshwater fish farm discharging water effluent direct to the sea. Consideration may be given to testing non-susceptible species which may be harbouring the parasite.

9.7 The level of testing required to demonstrate freedom from *G. salaris* will meet the requirements of Commission Decision 2004/453/EC. In addition, the EG will advise on the level of testing in consultation with the FHI and Expert Group on *G. salaris*.

The use of sentinel salmon parr populations

9.8 The use of sentinel Atlantic salmon parr populations may be considered when developing a sample programme. Since Atlantic salmon are more susceptible to *G. salaris* then it is more likely that the parasite will be detected upon this species in a situation where infection may be low, for example:

- On a rainbow trout fish farm or fishery;
- At wild fisheries where salmon populations are small (it could be argued that in such circumstances a population of *G. salaris* will not be able to be sustained).

9.9 In addition, the use of sentinel Atlantic salmon populations may be a valuable tool in determining the success of an eradication program.

9.10 Should this option be implemented, care must be taken to ensure that disease is not inadvertently spread between water catchments, fisheries and farms. It is suggested that certified disease-free stocks are used.

9.11 Gene banking facilities could be utilised in providing stocks for sentinel population studies.

10. **Resources**

Staff recruitment

10.1 Depending upon the scale and size of the outbreak and the subsequent epizootic development, additional staff may be required to aid with field and laboratory investigations from initial suspicion through to eradication.

10.2 FRS has an approximate total of 320 staff of which ~70 are based within the Aquaculture and Aquatic Animal Health (AAAH) programme. It is reasonable to assume that many laboratory staff within AAAH will be involved in sample processing and diagnosis, the larger the outbreak the more so. Groups which are not actively involved in processing *G. salaris* samples and the diagnosis of the parasite may be able to provide a supportive role in both laboratory and field operations. This is highlighted within Annex 1 of the manual.

10.3 Consideration with respect to staff recruitment should be given to the following groups who could provide assistance during an outbreak:-

- Former staff with relevant experience;
- FRS Freshwater Laboratory (FL) staff;
- Cefas staff
- State Veterinary Service (SVS);
- Local and National Veterinary Inspectors and Practices;
- Water Bailiffs;
- Fisheries Trust Biologists;
- University biologists and veterinarians;
- Suitable Government Laboratories;
- Suitable Private Laboratories.

10.4 FRS staff should be given training in *G. salaris* investigation techniques within the first six months of their appointment. This should be reinforced as required. A similar training programme will be given to seconded staff. Consideration should be given to providing a regular programme of training for veterinarians and biologists in preparation for an outbreak of *G. salaris*.

10.5 A list of trained personnel is maintained by FRS with relevant contact details. The training programme will be required to be on-going with regular refresher courses for all relevant staff.

10.6 Training SOPs (FHI Admin 017, 018 and 019) are available for new Fish Health Inspectors. Relevant sections from these will be applied to the training of new staff in the event of a *G. salaris* outbreak.

10.7 Induction training will be required for all personnel seconded to laboratory duties inclusive of the processing of samples and identification of gyrodactylids.

Equipment

10.8 FRS Transport Group can supply transportation (pool or hire cars) for inspectors, as required. In addition, stocks of equipment which could be used for *G. salaris* sampling are held at FRS, along with an inventory detailing the amount and type of equipment. A list of suppliers of further equipment is held by FRS.

10.9 In the event that extra or alternative transportation is required and extra equipment needs to be sourced, then the Purchasing Group of FRS will deal with this in the short term. Requests will be made to the Scottish Procurement Directorate (SPD) for long term supplies of equipment, as necessary. This will be the responsibility of the head of NDCC.

10.10 FRS FL will be able to provide access to additional sets of electro-fishing equipment which could be used to supplement a wild fish sampling programme. Additional sets may also be provided by Fisheries Trusts and DSFBs. Extra electro-fishing equipment may need to be purchased in the event of an outbreak.

10.11 Consideration must be given to other statutory and operational duties of the whole of FRS when designating equipment and resources to a containment and/or eradication programme for *G. salaris*.

Geographical Information Systems (GIS) mapping

10.12 As part of the containment and eradication programmes, GIS mapping tools will play an essential role in the delineation of suspected water catchments and the location of fish farms and put-and-take fisheries.

10.13 The GIS Group at FRS Marine Laboratory will be responsible for providing maps and information to the NDCC, FHI, DSG and to the Press Office, as necessary. A number of Fish Health Inspectors have a limited level of training in the GIS procedures. These Inspectors may be able to assist in map production.

10.14 A suitable GIS system will encompass a number of datasets. It should consider the following issues:-

- **Fish Farm Location** - including current status in terms of operation, water supply information and stock details;
- **Geographical Information** – river network, terrain (including altitude and impassible barriers to salmon movement), river flow information, location and volume of water transfers within and out-with the catchment;
- **Environmental Information** – biological information such as habitats, species that are present, including transport hosts;

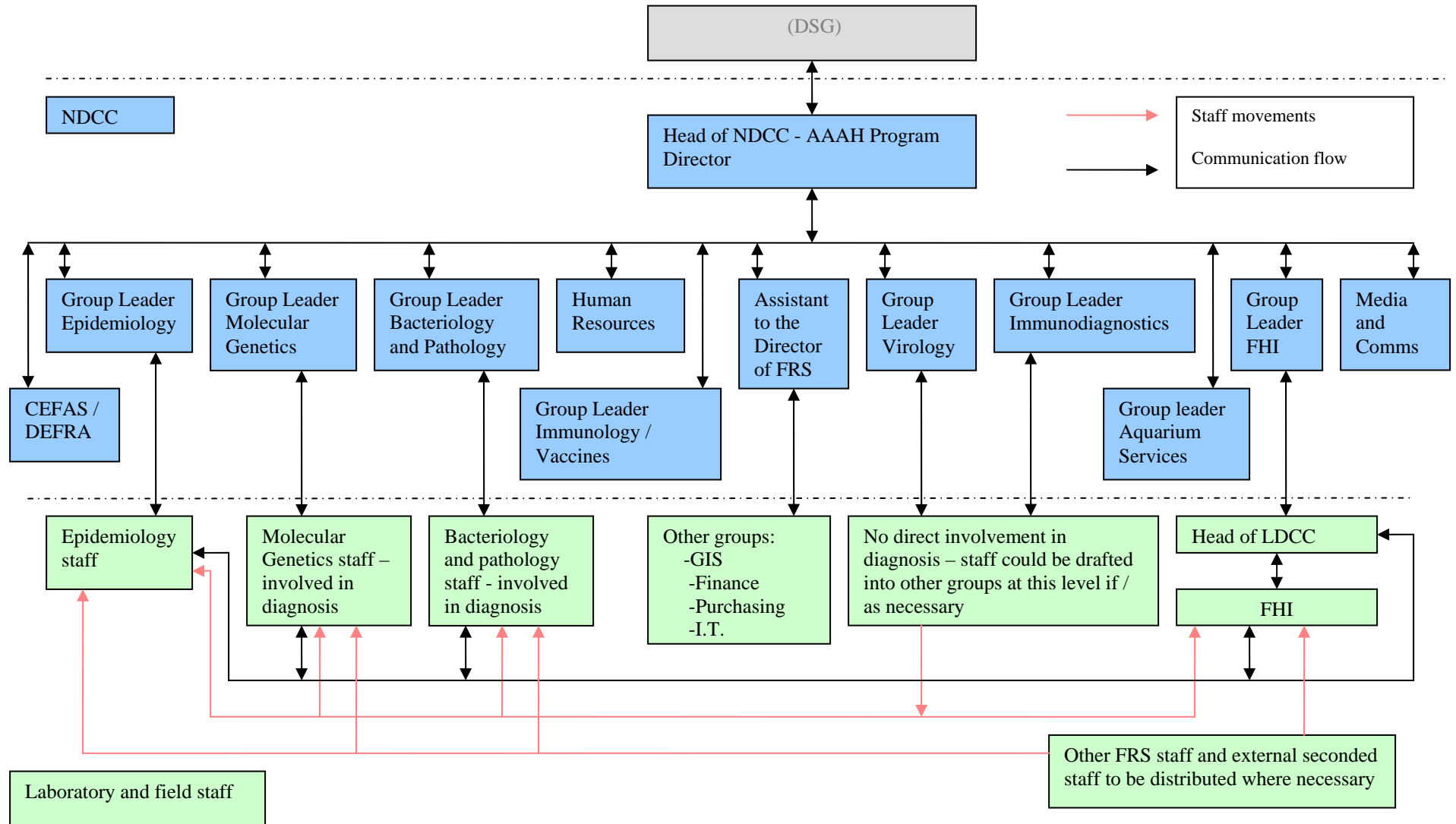
- **Socio-economic Information** – settlements (villages, towns, cities), domestic and commercial water supply information;
- The method is to include river catchment delineation, downstream river delineation, volumetric calculations and a suite of treatment options for different GIS points.

10.15 The GIS system for Scotland requires some development in order to encompass all of the necessary data as detailed above. The FRS GIS Group will identify the necessary steps and data holdings in order to construct a suitable system. Input from other agencies and bodies such as SEPA and Scottish Hydro-Electric may be essential to aid development.

10.16 Scottish Executive GIS (SEGIS) may also provide input in the event of an outbreak of *G.salaris*.

10.17 Procedures for the development and production of GIS maps are held by the FRS GIS Group.

Annex 1 - Set up and communication links between the DSG, NDCC and within the NDCC



Annex 2 - Responsibilities and job descriptions

NDCC

Within FRS there will be both supportive and active roles for staff members. Supportive roles are those in which staff within one team or group will aid or support staff members within an active group, who will have a defined role in relation to the operation.

Head of NDCC – Please refer to Section 3.5 of the plan which gives details of the main responsibilities of this role.

Members of the NDCC

Members of the NDCC, as identified in Annex 1 of the manual, will:-

- Provide advice in relation to suspicion, confirmation, epizootic investigations, surveillance, sampling, application of control measures,
- Advise on decisions that will impact on FRS operations, and be responsible for disseminating information from the NDCC to relevant staff members.

Group Leader of FHI (or deputy) will:-

- Be a member of NDCC and will be responsible for reporting upon developments and progress in relation to field work, surveillance and sampling. They will input knowledge in relation to the practicalities of a field investigations program. They will be responsible for prioritising the processing of samples.

FHI Area Managers will be responsible for running Local Disease Control Centres (this responsibility may be delegated to a senior fish health Inspector). One may act as deputy for the Head of the FHI and fulfill his/her functions as required. They may also be required to take on the duties of a Fish Health Inspector.

Fish Health Inspectors will:-

- Conduct administrative tasks in relation to the placing of movement restrictions,
- Conduct inspection sampling at all appropriate sites,
- Be responsible for training other organisations or staff in relation to taking samples,
- Operate out of an LDCC as required and be responsible for the maintenance and upkeep of such a centre,

- Be responsible for notifying Area Managers and Head of FHI of all results from cases, information obtained during field work, clinical signs of disease observed or obtained when conducting inspection and sampling,
- Be responsible for implementing eradication procedures in consultation with experts in this field,
- Be responsible for acting as Duty Inspector when required and dealing with all queries in relation to *G. salaris* from staff, industry, wild fish interests and members of the public. (NB Any queries from newspaper, radio and television journalists must be directed to the FRS Press Officer who will liaise with Communications Co-ordinator) and
- Act as FRS Duty Inspector and assist to man a helpline which provides information for industry and general public.

The Assistant to the Director of FRS will be a member of NDCC and have responsibility for organising the administrative functions of the NDCC to ensure that:-

- Telephone calls, faxes and correspondence are dealt with appropriately,
- Paper and electronic filing systems are maintained in such a way to ensure that the systems are fully auditable,
- Support is provided to the NDCC to record notes, minutes and actions, and to issue and distribute reports to all relevant staff members, and
- Other Groups, including GIS, IT, HR and Finance provide appropriate support.

Group Leader Epidemiology (or deputy) will be a member of the NDCC and provide advice on:-

- Epidemiological issues – surveillance, buffer zones, catchments connected through fish movements, water movements and other risks,
- Statutory sampling in relation to both the number of fish and type of samples to be taken,
- The location of sample points on a river system, and
- Epidemiological separation of areas of a catchment in relation to treatment and the construction of fish barriers, and
- Priority processing of samples.

Epidemiology staff will:-

- Assist in providing advice to the head of Epidemiology and the DSG in relation to the roles and responsibilities of the Epidemiology Group as detailed above,
- Assist in statutory and diagnostic sampling and may be trained to conduct and aid field investigations.

Group Leader Bacteriology and Pathology (or deputy) will be a member of the NDCC and provide advice on:-

- The morphology of *G. salaris* as appropriate and pathology of fish infested with *G. salaris*,
- Case results and diagnostic methods.

Histopathology staff Parasitologists will:-

- Process and examine samples for gyrodactylids,
- Be responsible for passing material to the molecular genetics group, and

Group Leader Immunodiagnosics (or deputy) will be a member of the NDCC.

Group Leader Virology (or deputy) will be a member of the NDCC.

Group Leader Molecular genetics (or deputy) will be a member of the NDCC and provide advice on:-

- Case results and diagnostic methods,

Molecular genetics staff will be responsible for:-

- Conducting morphological analysis and processing samples for molecular genetic analysis,
- Reporting results to the head of Molecular Genetics.

Human Resources staff will be responsible for briefing managers of the NDCC and LDCC on staff rules, employment law, salaries and travel and subsistence rules.

FRS Press Officer will:-

- Be responsible, in conjunction with the Communications Coordinator for handling local media enquires and placing information onto the FRS website. FRS PO must work in direct, close contact with representatives from POs from SE and other relevant agencies to ensure

the delivery of a consistent message and response. Be responsible for dealing with interview requests of various members of staff.

Communications Co-ordinator – will be a senior member of the DSG and will ensure that communication is maintained between the DSG and the NDCC as well as within both of those groups. They will liaise directly with the press office representatives to ensure external communications (to public and press) are maintained as necessary.

Other Staff members

Some AAAH Groups will have no direct role in relation to the processing of statutory samples for *G. salaris*. These include Immunology and Virology staff. Such staff members will have a supportive role to play in the event of an outbreak of *G. salaris*. In addition other Programmes within FRS may be able to provide staff resources, along with external bodies and stakeholders (refer to section 10 of the manual).

With appropriate training such staff may assist in:-

- Supporting laboratories processing incoming samples,
- Statutory sampling and may be trained as field inspectors, and
- Administrative duties.

Consideration must be given to current workloads and a decision will be made by the head of the NDCC in consultation with the Management Board with respect to the deployment of staff to different Groups.

Cefas and DEFRA - Following an outbreak of *G. salaris* in Scotland it is possible that fish farm sites, fisheries and subsequently freshwater catchments in England could be affected. An outbreak of *G. salaris* involving the river catchments of the Tweed and/or Border Esk (refer to section 1.18 of the plan) will also involve English waters. In these situations it maybe useful for staff from Cefas and DEFRA to assist in controlling the outbreak. The Head of NDCC in consultation with FFA will decide on requesting assistance from these and other bodies.

Annex 3. Considerations for establishing the LDCC

These instructions highlight some of the necessary steps and considerations to be made when setting up a Local Disease Control Centre (LDCC). The LDCC may be a crucial component to the containment and eradication programmes conducted in response to an outbreak of *G.salaris*.

The NDCC, in consultation with the DSG, will be responsible for establishing any/all LDCCs, in conjunction with Scottish Procurement Directorate (SPD) and FRS Purchasing Group as necessary. Appendix 8 of the plan and Section 10 of the manual details this further. The control of the LDCC will be the responsibility of the NDCC.

The LDCC will be run by a member of the Fish Health Inspectorate, either a Senior Fish Health Inspector or an Area Manager. They will be responsible for briefing and informing field staff of any decisions, operational changes or information which will impact upon their work. The Head of the LDCC will maintain close contact with the NDCC and Expert Group, as necessary.

Considerations

Prior to the establishment of the LDCC considerations must be given to the following:

1. Location

The location of the LDCC is crucial and this must benefit and facilitate the operation of field staff during containment and eradication programmes. DSFBs and Fishery Trusts along with other stakeholder groups and organisations may be able to assist in providing or identifying suitable accommodation, or sites for accommodation for the LDCC.

2. Facilities

The facilities of the LDCC should:

- Allow staff to wash and dry protective clothing and clothes;
- Include a hot and cold water supply with sink/drainage system and electrical power supply;
- Include a sampling or post mortem area to deal with fish submitted for differential diagnosis;
- Have adequate car parking facilities for the number of staff operating from the centre (consideration should be made for visitors and seconded staff);
- Have telephone and network connections to allow adequate communication links with the NDCC; and
- Maintain adequate security to ensure the protection and safety of all staff and equipment.

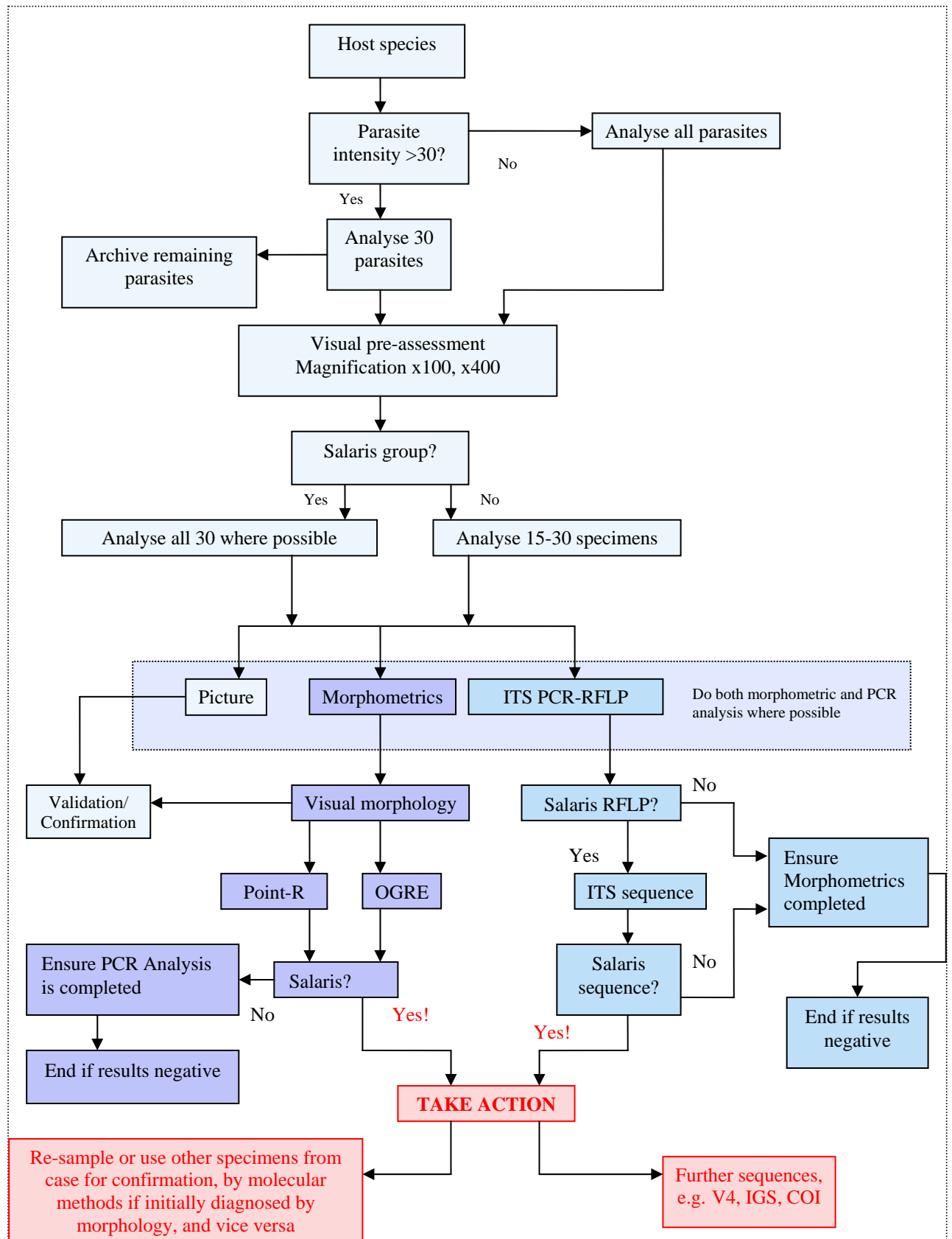
In addition to the above, the LDCC, assisted by SPD, should be able to provide adequate accommodation for staff or be situated in close proximity to adequate accommodation. This may be either in the form of B&Bs, local hotels, hostels or equivalent. Arrangements must be made to ensure that adequate food provisions are provided at meal times for all staff working out of the LDCC. These may be provided by the LDCC or by an external provider.

Each LDCC will maintain a detailed mapping system (provided by the GIS group) showing the catchments it is associated with. The mapping system will highlight:

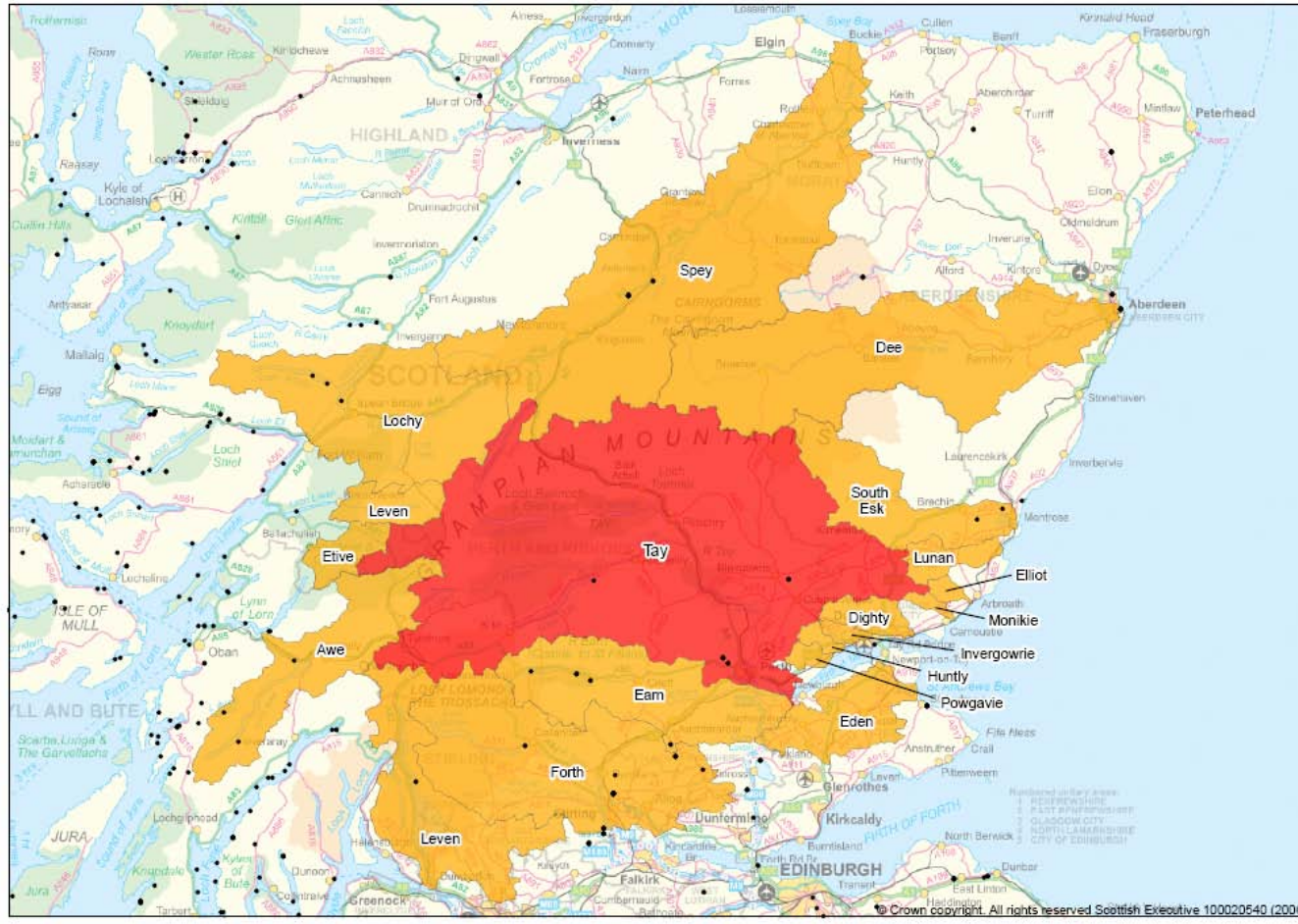
- The location of fish farms, put-and-take fisheries and other fish holding facilities;
- The location of sampling points;
- Details of result summaries from all areas sampled;
- The location of fish counters, fish passes, lades and barriers (natural and man-made) with photographs and information relating to their current status.
- Problematic areas such as large bodies of water.

Where present, the local DSFB may be able to assist with the production of some of the above data. Appendix 4 Annex 2 of the plan details an example of the information required in relation to catchment characteristics for the River Dee. Section 10 of the manual gives detail of GIS mapping.

Annex 4 - Decision tree for diagnosis



Annex 5. Example of suspect/confirmed catchment with buffer zones



Example of an infected freshwater catchment (Tay) represented in red. This is surrounded by 18 further freshwater catchments acting as Buffer Zones. Black dots represent the location of active fish farm sites.

Annex 6a - Question and answer brief

The following questions may be asked following a case of suspicion or confirmation of *G.salaris*. It is envisaged that the responses will be modified to suit the individual suspected or confirmed outbreak. These questions and answers will be posted on the *G.salaris* Website which will be established by FFA. They will be regularly reviewed and updated. The question and answer brief will evolve with input from DSG, NDCC, the Expert Group on *G.salaris*, Stakeholders, FFA, FRS and other necessary parties.

Q1. What is *G. salaris*?

G.salaris is a fish parasite which causes disease (known as gyrodactylosis) in wild and farmed Atlantic salmon parr and smolts (young fish ready to migrate to sea). A number of other salmonid species are susceptible to infection including rainbow trout, Arctic charr, North American Brook trout, grayling, North American lake trout and brown trout – although these species do not exhibit the clinical signs of disease. Other freshwater fish species of fish may also act as hosts and vectors for the spread of the parasite. As *G. salaris* can not withstand full strength saltwater, then seawater species or seawater life stages of fish are not affected by this parasite.

Q2. Where does/could it come from?

G. salaris is restricted in its distribution to Europe. It has been found in several (mainly northern) European countries within Atlantic salmon parr from rivers in Russia, Sweden and Norway. It can be common in rainbow trout without showing the characteristics of disease. As a result, the parasite may be more widely distributed than currently believed and the status of many European countries is unknown. Great Britain and Ireland are believed to be free from the parasite.

Q3. How could it get here? (or adapt for how did it get here?)

The greatest risk to the introduction of the parasite into the waters of Great Britain is through the importation of infected or susceptible fish from an infected area or an infected country. There may be a risk associated with the importation of fish eggs which have not been adequately disinfected (refer to OIE guidelines on egg disinfection). Leisure activities such as angling and canoeing may also pose a risk to the parasites introduction and subsequent spread, where contact with infected fish and/or infected water is made. Advice on measures to prevent introduction of the parasite can be obtained from the Scottish Executive Environment and Rural Affairs Department, Pentland House, Edinburgh.

Q4. How can I help to prevent *G. salaris* getting here?

Fish Farmers – Only source stocks from certified disease free sources. All imports of salmonid eggs must be disinfected following import and before lay-out (refer to current OIE guidelines). You must ensure that FRS Fish Health Inspectors are informed of your intention to import prior to the event taking place. Please give as much notice as possible. By law you are required to give at least 24 hours notice prior to importation.

Leisure Pursuits – The largest risk is associated with equipment which has come into contact with infected fish and/or infected water and the movement of this equipment, into or

between catchments. Such equipment may include fishing nets, waders and other angling equipment, boats, canoes and water craft. It is good practice to ensure all equipment is treated in a manner which helps to prevent the spread of disease when moving between any freshwater catchment, and especially when infected catchments have been visited.

Details of acceptable treatment methods are contained within the Scottish Executive advice leaflet 'Keep Fish Disease Out – A guide to protecting freshwater fish stocks from *Gyrodactylus salaris*'.

For more information on disinfection procedures please refer to the disinfection guide available at www.frs-scotland.gov.uk

Q5. Is there a risk to human health from eating fish either a) infested with *G. salaris* or b) from an area affected by *G. salaris*?

No. *G. salaris* is an external parasite which infests fish and only causes disease within Atlantic salmon populations. There are no known risks to human health from either eating fish infested with *G. salaris* or eating fish from a *G. salaris* infected zone.

Q6. Can I still access areas that are affected by *G. salaris*?

Yes. There will be no restrictions over the access of areas affected by *G. salaris*. Members of the public are requested to take all practical steps to help prevent the spread of the parasite and are requested to encourage other to do so where necessary.

Q7. Are there any effects upon pets (dogs, horses) accessing areas affected by *G. salaris*?

No. There is no scientific evidence to suggest that *G. salaris* poses any health risks to dogs, horses or any other terrestrial animals.

Q8. What should I do if I discover sick or dying fish at the river bank?

In the first instance please report the discovery to the Duty Inspector at FRS Marine Laboratory, Aberdeen. 01224 876 544, Fax 01224 295 620, email fishhealth@marlab.ac.uk. Advice will be provided regarding the collection and transportation of the fish to the laboratory for disease testing, as necessary. The relevant DSFB or Fisheries Trust could also be contacted and may be able to provide assistance in collection and transportation.

Q9. Can I access other areas after visiting an area infected with *G. salaris*?

Yes. Where the transfer of wet equipment – angling gear, waders, wellington boots, canoes, or boats is planned then please refer to the advice provided on reducing the potential spread of *G. salaris*. Anglers and water users are encouraged not to move between water catchments where at all possible, although there are currently no legal restrictions over such movements.

Q10. Can the parasite be observed by the naked eye, if so where will it be found on the fish?

G. salaris is small measuring just 1 mm in length and some 0.1mm in width, thus observation with the naked eye would be very difficult. The parasite will mainly infest the fins and gills of fish but may also be present over the body surface.

Q11. What are the signs or symptoms of gyrodactylosis?

Although *G. salaris* can infest all stages of freshwater salmonids and a number of non-salmonid freshwater fish species, the clinical signs of the disease gyrodactylosis, associated with *G. salaris*, are restricted to Atlantic salmon parr and smolt populations within freshwater environments. These include increased flashing, grey colouration of fish within the water column and white coloured, eroded fins. Infested fish will be prone to secondary bacterial and fungal infections.

Q12. What are the legal powers available to the official authority?

Under the Diseases of Fish Acts 1937 and 1983 the Scottish Ministers have the power to designate infected or suspect areas with respect to notifiable diseases. *G. salaris* is a notifiable disease and as such the current powers include the restriction of all movements of fish or gametes of fish along with feedstuffs for fish into and out of the designated areas without the permission of the Scottish Ministers.

Proposed legislation under the Aquaculture and Fisheries Bill may in future provide additional powers in relation to the control of *G. salaris*. Some of these proposals include the power to:

- Apply chemical treatment;
- Impose standstill notices;
- Erect barriers and close fish passes;
- Authorise the removal of dead and moribund fish from watercourses and fish farms for the eradication of *G. salaris*;
- Allow compulsory access;
- Clear fish farms; and
- Introduce mandatory disinfection of recreational equipment.

Q13. What is the current situation in Europe regarding *G. salaris* presence and/or spread?

G. salaris is present within a number of rivers in Norway, Western Sweden, northern Finland and Northern Russia. The status of other Western European stocks of salmon is unclear. Great Britain and Ireland are believed to be free from the parasite.

Q14. What bio-security measures can I take to prevent *G. salaris* entering my farm or fishery?

Increasing or maintaining a high level of bio-security on site will aid disease prevention.

Stock Source: By only sourcing stocks from certified disease free sources the risk of introducing *G. salaris* can be significantly reduced. All imports must meet the approval of the Additional Guarantees legislation covered under Commission Decision 2004/453/EC. All imports of salmonid eggs must be disinfected following import and before lay-out, in accordance with the current OIE guidelines.

Disinfection: The use of appropriate disinfectants for footbaths and general disinfection is encouraged, along with area and site specific clothing and equipment with disinfection facilities between each discrete area of the site. Disinfection facilities should be in place for all visitors to the site. All vehicles entering the site should be adequately cleaned and disinfected upon entry and exit to the fish farm.

Regular mortality collection and disposal should be made in an approved manner. The fallowing of ponds, cages and tanks along with cleaning and disinfection should be routine practice as part of a site management plan which highlights the need for sound bio-security.

Q15. What control over imports are present to prevent *G. salaris* entering?

Great Britain is classified as a disease free zone with respect to *G. salaris*. Additional Guarantees provide protective measures against imports of infected fish. No susceptible fish species are permitted for entry into UK without the appropriate certification from the official authority

Q16. What is Rotenone ?

Rotenone is a naturally occurring chemical which is obtained from the roots of tropical and sub tropical plants of the derris species. Rotenone has insecticidal, acaricidal and piscicidal properties and as a result, the chemical has been used as a pesticide and piscicide for a number of years.

Q17. Can I still access areas that are undergoing treatment for *G. salaris*?

There will be no restrictions regarding the access to areas undergoing treatment. However, the public are strongly advised not to access these areas and not to partake in any leisure pursuits that involve access to the water as rotenone can be toxic to humans and animals.

Q18. Is there any impact upon human or animal health during or following a rotenone treatment?

Rotenone can be toxic to both humans and animals in high concentrations or doses. The level at which Rotenone will be applied to treat an infected river catchment is not thought to pose a risk to human or animal health. However, it is advisable to stay out of and away from

the water and river bank during and following a rotenone treatment until you have been advised that it is safe to return.

Q19. Can I drink the water during a treatment / following a treatment of rotenone?

You should avoid drinking the water from a catchment which is undergoing or has undergone treatment until you have been advised that it is safe to do so by Scottish Water or the Local Authority responsible for the water supply.

Annex 6b. Recording and Logging Responses to Questions and Queries

Record form for dealing with queries in relation to *G. salaris* suspected or confirmed outbreak

File: Q+A brief.

Please complete all sections relevant and detail response given before filing.

Enquiry From

Organisation

Address:

Tel No:

Fax No:

Email:

Date Received:

Date of response:

**Detail Nature of
Enquiry**

Advice Given:

Annex 7. - List of SOPs cited within the Operations Manual

Movement Restrictions

FHI Admin 016 – Assessment of applications for permission to move live fish, eggs or gametes subject to movement restrictions.

FHI Admin 024 – Placing Thirty Day Notices (TDNs)

FHI Admin 025 – Serving Designated Area Orders (DAOs)

FHI Admin 026 – Revocation of a Designated Area Order (DAO)

Diagnosis

Hist 027 – Sampling Procedures for Gyrodactylus

Mol-gen 060 – Gyrodactylus morphological examination

Mol-gen 061 – Gyrodactylus PCR

Mol-gen 062 – Gyrodactylus RFLP

Mol-gen 063 – Gyrodactylus gel

Sampling and Field Investigations

FHI Field 001 – Fish farm site visit preparations

FHI Field 002 – Checking movement records in the field

FHI Field 003 – Checking mortality records in the field

FHI Field 011 – Transport of fish and shellfish tissue samples collected on site

FHI Field 012 – Completion of Fish Health Inspectorate Case Sheet

FHI Field 020 – Labelling of sample collection tubes

FHI Field 028 – Selection of fish on site for sampling for VHS & IHN, BKD and *G. salaris*

FHI Field 029 – Disinfection of protective clothing, boots and equipment on site

FHI Field 040 – Inspection of fish on site

FHI Field 041 – Completion of Site Records Sheet

FHI Field 045 – Method of sampling fish for *Gyrodactylus salaris*

FHI Field 046 – SOP Electro-fishing

FHI Field 047 – SOP Gill netting

FHI Admin 004 – Logging in cases

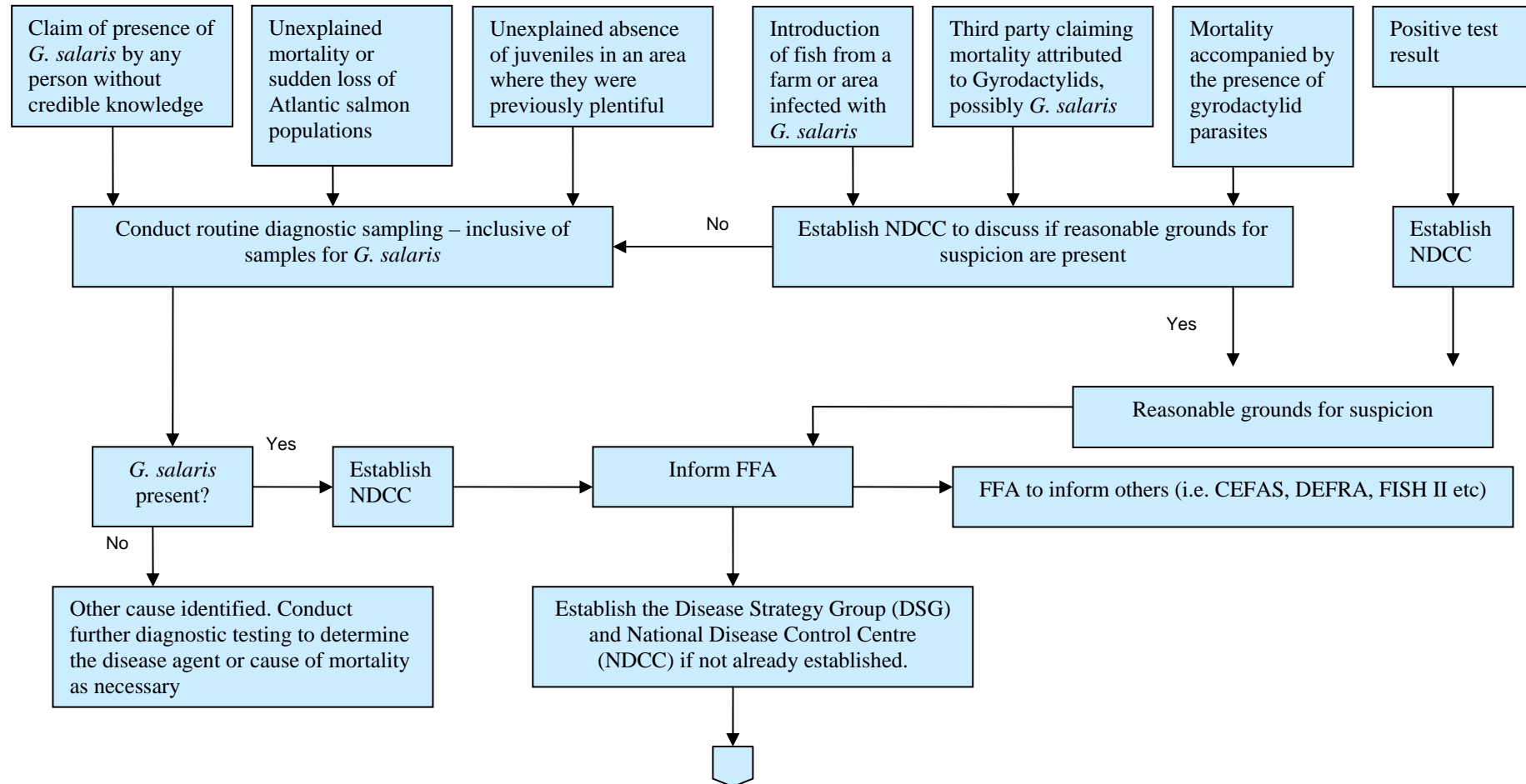
FHI Admin 005 – Distribution of incoming samples

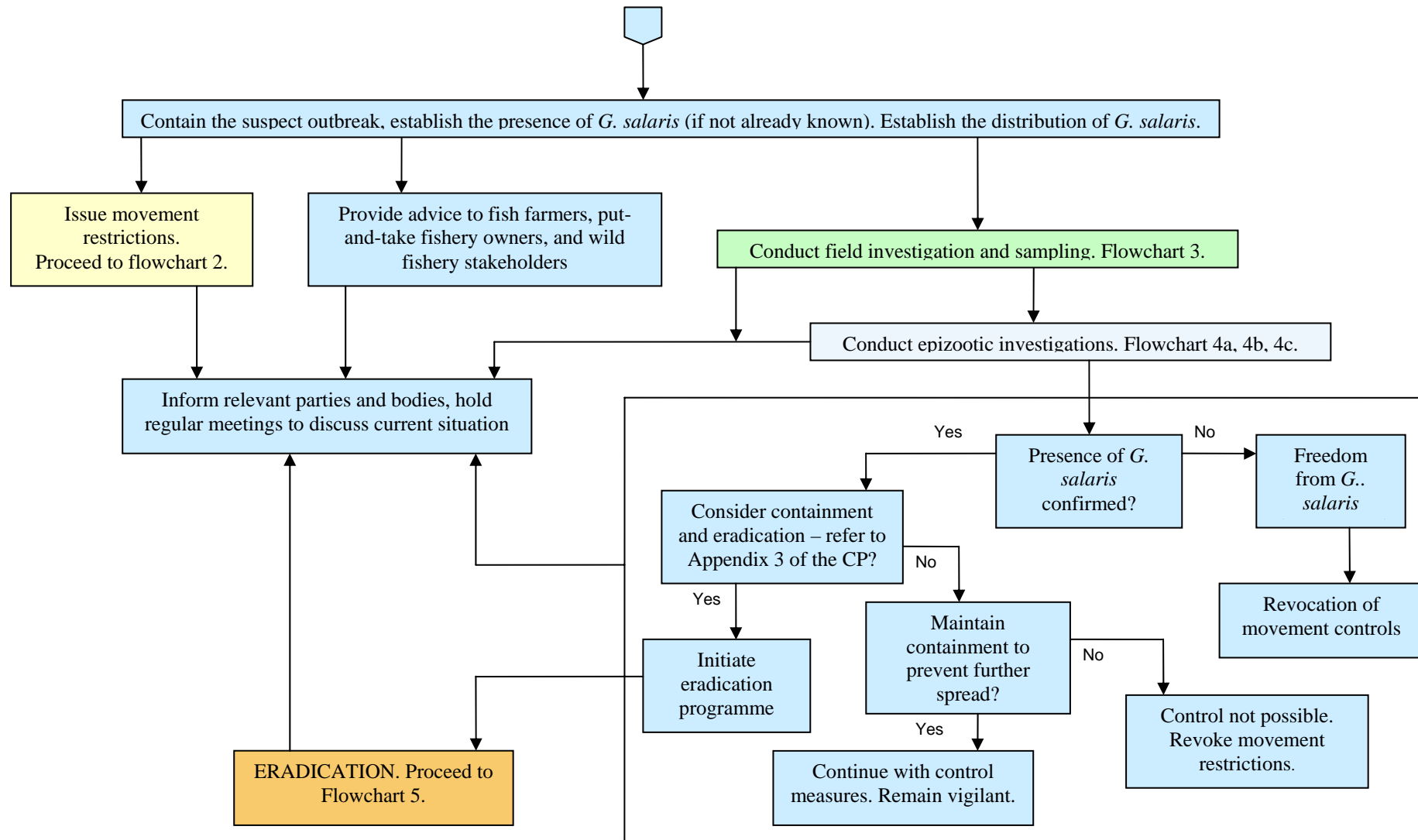
FHI Admin 017 – Training – Induction to FRS and FHI

FHI Admin 018 – Training – Fieldwork

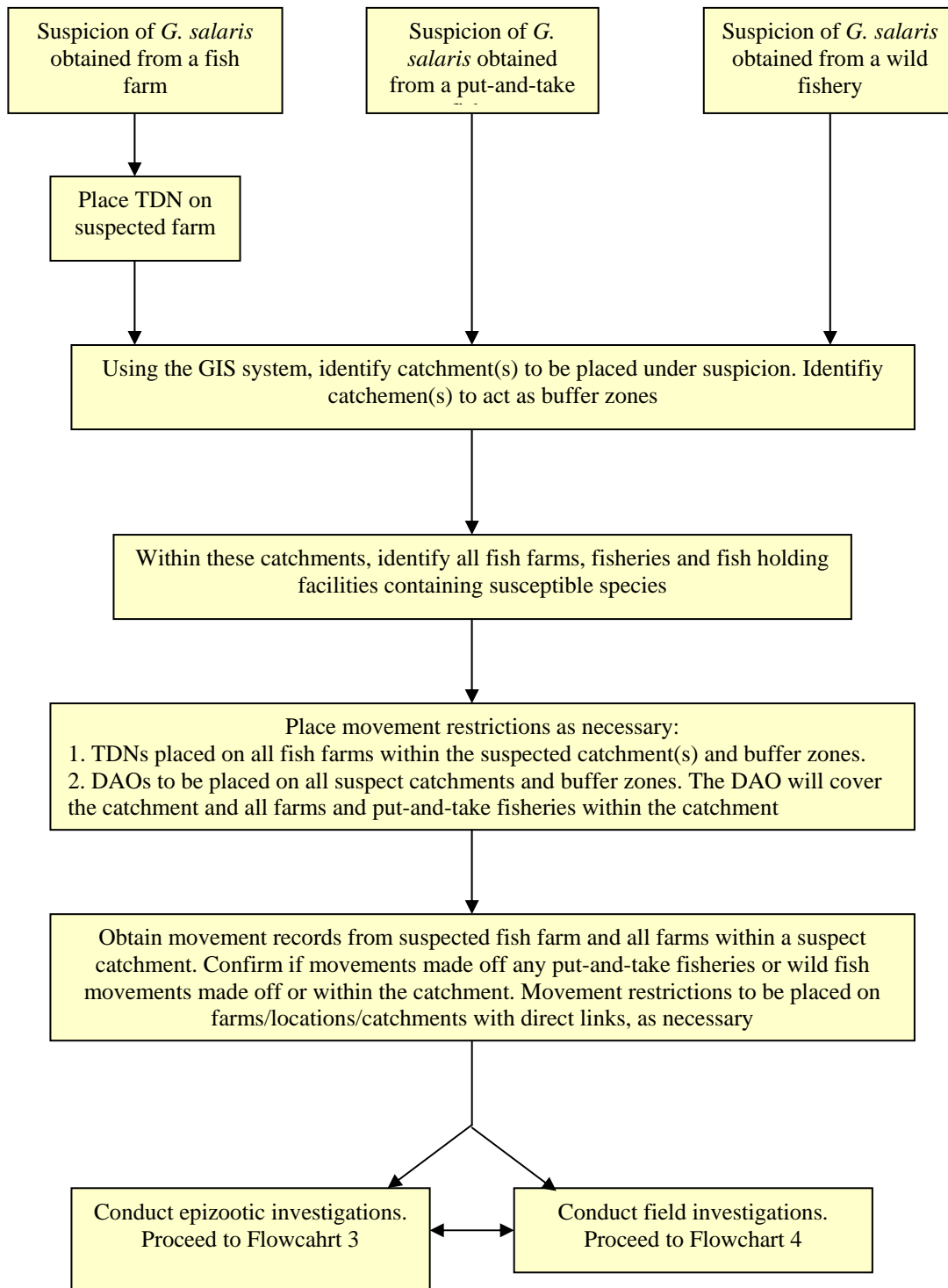
FHI Admin 019 – Training – Administrative Duties and General Training

Overview of procedures in relation to suspicion and confirmation of *G.salaris*

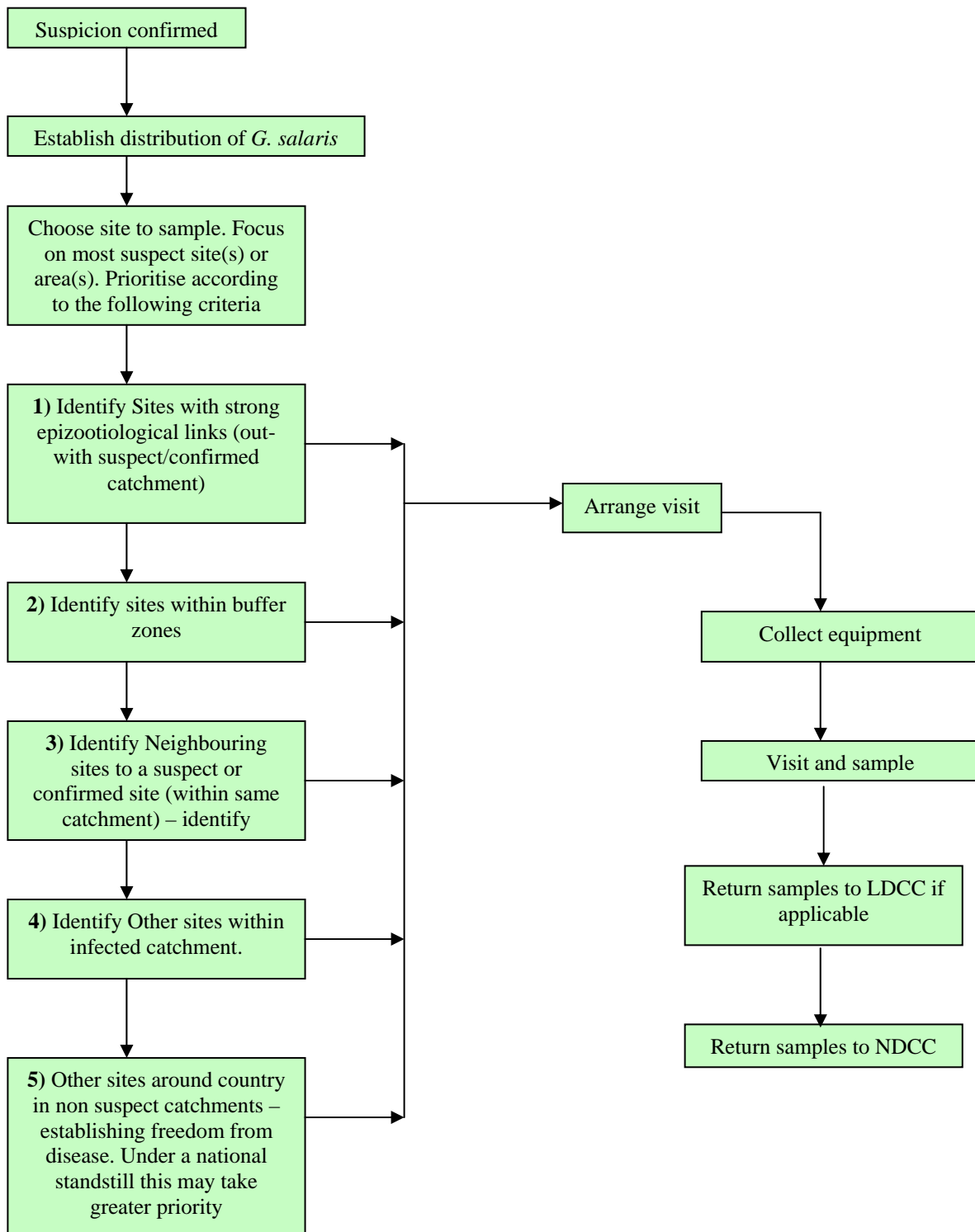




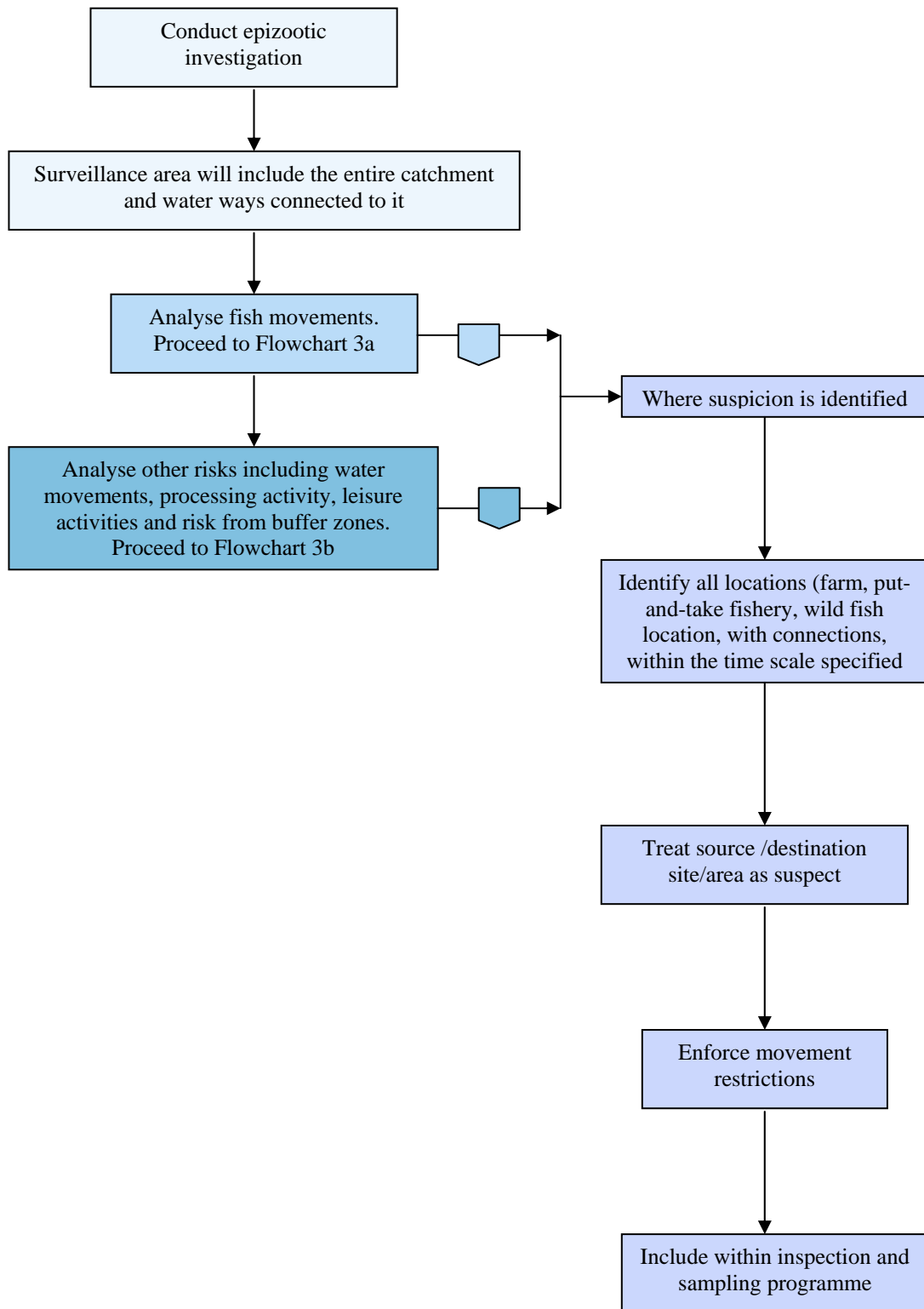
Flowchart 2. Placing movement restrictions on suspect sites



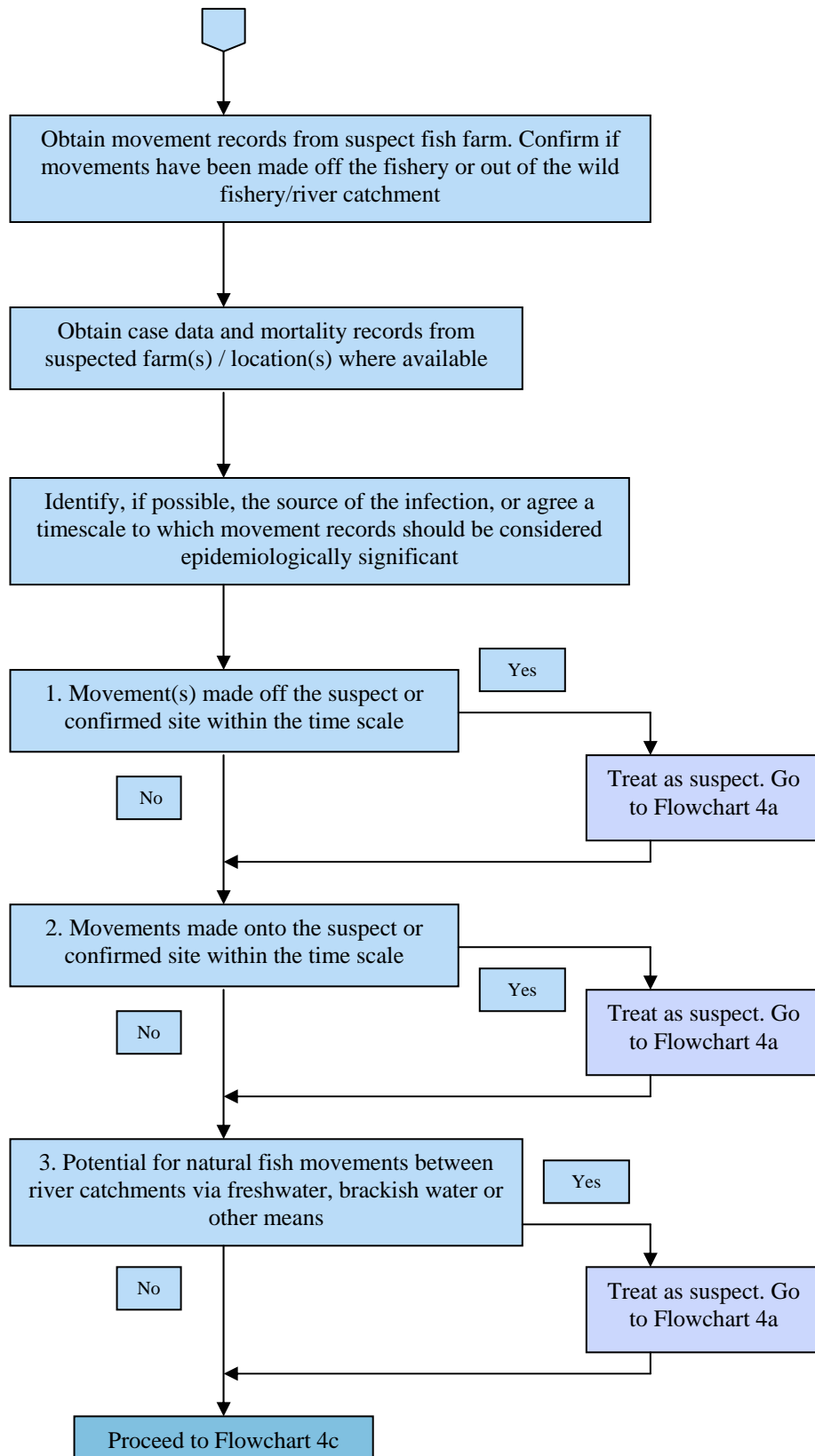
Flowchart 3. Procedures for sampling Sites



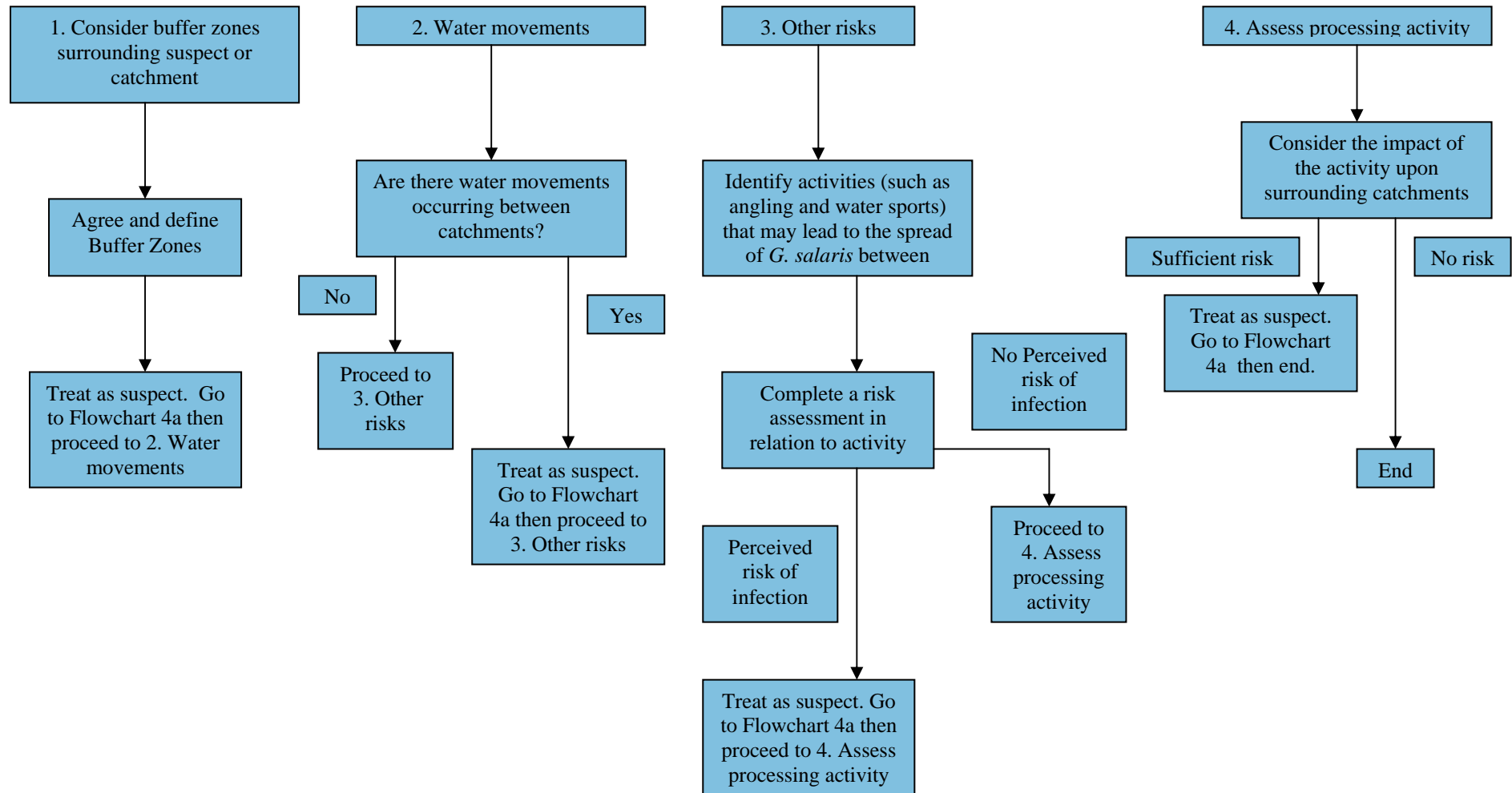
Flowchart 4. Epizootic investigations – Overview



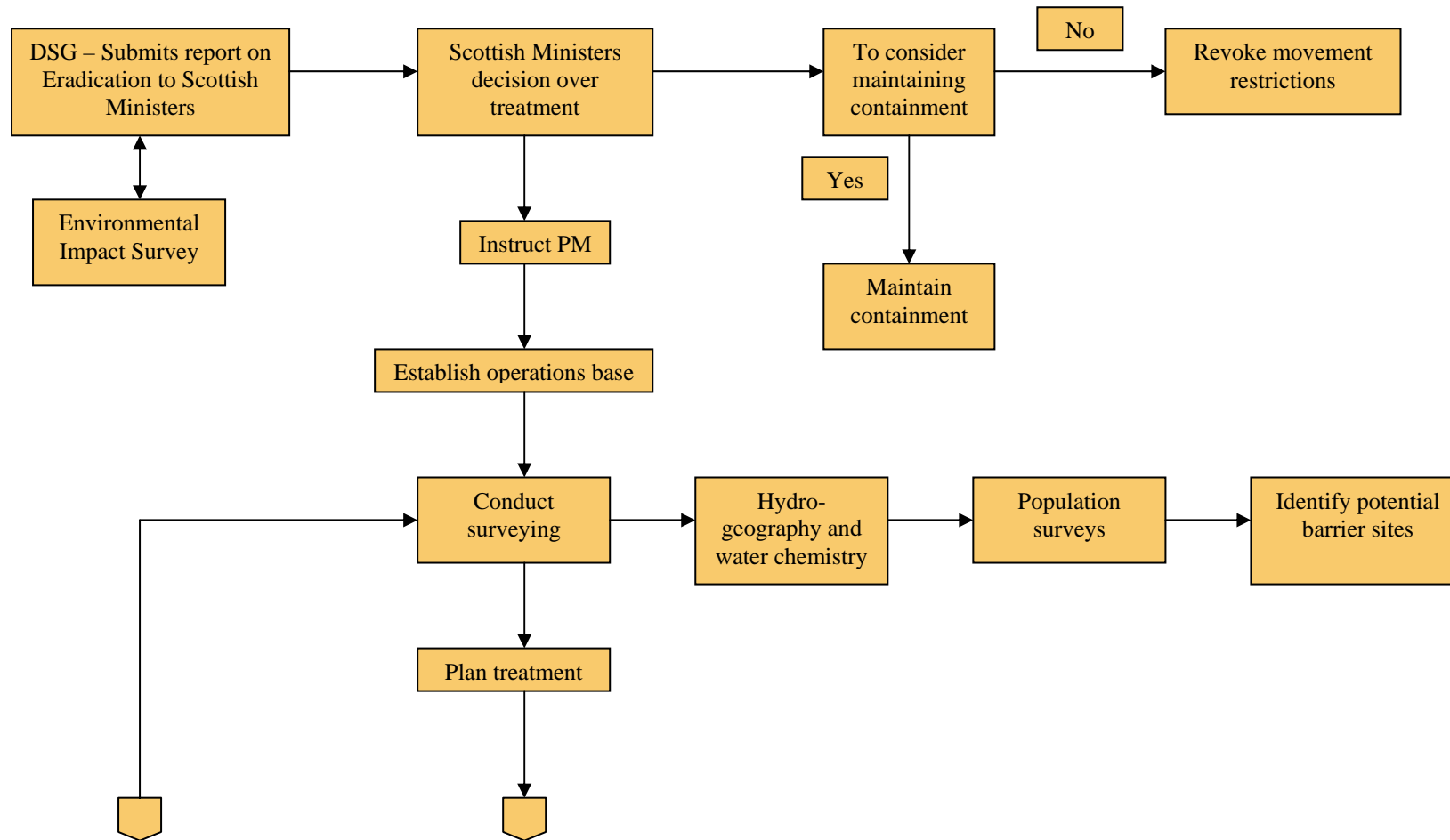
Flowchart 4a. Epizootic investigations - Live Fish Movements

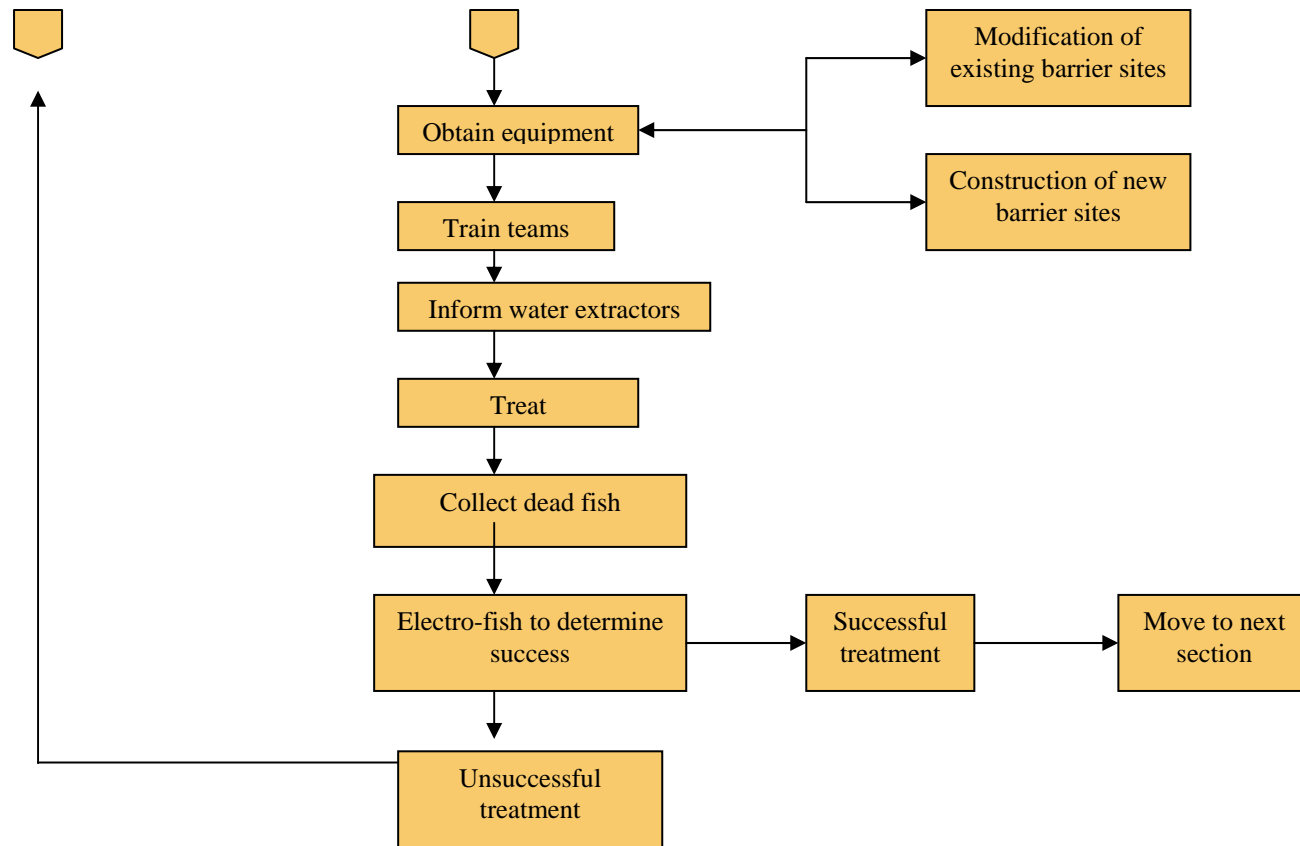


Flowchart 4b. Epizootic investigations– Other risks



Flowchart 5. Eradication





Appendix 12 Glossary

| | |
|--------|---|
| ASFB | Association of Salmon Fishery Boards |
| CAR | Water Environment (Controlled Activities) (Scotland) Regulations 2005 |
| COPA | Control of Pollution Act 1974 |
| COSLA | Convention of Scottish Local Authorities |
| DAO | Designated Area Order (to place movement of fish under control of the official service in the case of a notifiable disease) |
| Defra | Department for Environment, Food and Rural Affairs |
| DSFB | District Salmon Fishery Boards |
| DSG | Diseases Strategy Group |
| FFA | Freshwater Fisheries and Aquaculture Division of SEERAD |
| FRS | Fisheries Research Services |
| LDCC | Local Disease Control Centres |
| NDCC | National Disease Control Centre |
| NSG | National Stakeholder Group |
| OIE | Office Internationale des Epizooties |
| OSSE | Office of the Solicitor of the Scottish Executive |
| SE | Scottish Executive |
| SEERAD | Scottish Executive Environment and Rural Affairs Department |
| SEPA | Scottish Environment Protection Agency |
| SNH | Scottish Natural Heritage |
| SPD | Scottish Procurement Directorate |
| SSSI | Sites of Special Scientific Interest |
| TDN | Thirty Day Notice – this is a temporary standstill notice which is served on suspicion of a notifiable disease while tests are carried out. |
| WEWS | Water Environment and Water Services Act 2003 |