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Contingency Plan for Combating Gyrodactylus salaris in England

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1 Introduction

1.1 Gyrodactylus salaris Contingency Planning

a. This document sets out the Defra contingency plan for combating *Gyrodactylus salaris* (G.s) in England. Separate but parallel contingency plans are being produced for Scotland, Wales and Northern Ireland to reflect the different likely impact of the parasite to those areas, and to reflect the different domestic legal and administrative structures that operate in the regions. An overview of G.s contingency planning for Great Britain is attached Appendix 1: Flowchart 1.

b. This contingency plan reflects the strategic approach to taking action in the event that G.s is suspected or confirmed in England. It is part of a package of interlinked contingency and action plans. The other parts of the overall contingency package have been drawn up by the Centre for Environment Fisheries and Aquaculture Science (Cefas) laboratory in Weymouth, and by the Environment Agency (EA). These deal with the strategies to be followed by the National Control Centre (NCC) (attached at Appendix 4: Annex 1) and by the EA for combating an outbreak of G.s (attached at Appendix 4: Annex 2).

1.2 Background

a. *Gyrodactylus salaris* (G.s), is parasite found in Scandinavia and other parts of Europe. It causes the serious fish disease Gyrodactylosis that infects the skin, gills and fins of salmon, trout and some other species of freshwater fish. The disease is one of the biggest threats to the wild salmon population in the UK and has the potential to cause widespread losses in the UK's valuable stocks of both wild and farmed freshwater Atlantic salmon. If introduced here it would be difficult to eradicate because of the very diverse nature of our river ecosystems. There is, however, no risk to human health

b. The UK is recognised by the EU as being free of the disease and stringent additional fish health guarantees were negotiated in 2004 to safeguard against the introduction of the disease through legitimate trading links.

1.3 Defra Objectives

The G.s contingency planning process contributes to the following Defra objectives:

A thriving farming and food sector, with farming making a net positive environmental contribution

Viable farm based businesses

Economy and society resilient to environmental risk and adapted to the impacts of climate change

Public health and the economy protected from animal diseases

A healthy, resilient, productive and diverse natural environment

1.4 Policy objective

In the event of identification of G.s in either farmed or wild freshwater fish stocks our objective is to take action to contain and, if possible, eradicate the parasite. This will be achieved principally through:

- the imposition of movement restrictions over whole catchment areas within which G.s is suspected or confirmed (affected catchment);
- the establishment of buffer zones with the imposition of movement restrictions in catchments adjacent to the catchment containing the site of infection. (The purpose of a buffer zone is to separate the infected area from the rest of the country to help reduce further the chances of spread of the parasite); and
- a major publicity drive to make as many people as possible in the affected catchment, as well as the public at large, aware of the problem and the steps which they need to take to prevent any further spread of the disease.

1.5 Legal framework

National legislation

a. G.s is a notifiable disease under sections 4(5) and 4A(5) of the Diseases of Fish Act 1937 ("DoF Act 1937") (G.s was added to the list of notifiable diseases laid down in the definition of "infected" in section 10(1) of the DoF Act 1937 by the Diseases of Fish (Definition of "Infected") Order 1988).

b. Legal powers to control G.s are contained in the Diseases of Fish Act 1937, as amended by the Diseases of Fish Act 1983, which allows the imposition of movement restrictions on registered fish farms, on other waters, and on entire catchment areas.

c. Where the presence of a notifiable disease is suspected or confirmed a Designated Area Order (DAO) may be made and placed on the site or area. When making a DAO, the Secretary of State may prohibit or regulate the movement into or out of a designated area of live fish, eggs of fish or foodstuff for fish, or regulate the movement within the designated area of these things. Any person who knowingly moves fish etc. in contravention of the provisions of a DAO shall be guilty of an offence. DAOs may be made in respect of farmed or non-farmed waters and, where one is in place, the Secretary of State may, by written notice, require fish farmers to remove dead and dying fish from their waters and dispose of them in a specified manner. In addition, the EA can be authorised to remove dead or dying fish from non-farmed waters by the Minister under Section 3 of the DoF Act 1937. A DAO is the only means of placing movement restrictions on non-farmed waters.

d. Movements to and from fish farms may also be controlled through the issuing of 30 Day Notices (TDNs). These are temporary movement restriction notices issued on the spot by a Fish Health Inspector on suspicion of the presence of G.s. As their name suggests, they last for 30 days, although they may be extended for a further 30 days if necessary. They are intended to provide enough time for confirmation of the presence of the disease or to allow time for the site to be cleared and disinfected. The EA can restrict movements from that site to any other inland water through Section 30 of the Salmon and Freshwater Fisheries Act 1975, as amended by the Salmon Act 1986. In addition, EA Regional Byelaw fish removal consents can (in some regions) also be used to prevent the removal of fish, which could be subsequently held at dealer premises. If G.s were confirmed, the TDN would be replaced by a DAO. TDNs cannot be placed on non-farm sites.

e. Section 30 of the Salmon and Freshwater Fisheries Act 1975 requires the written consent of the EA before any fish or spawn of fish can be moved to non-farm waters. In deciding whether to give its consent the Environment Agency will consider whether the ecology of the receiving waters will be harmed by any such introduction. Health checks on the fish in question may be required. (Under the Salmon Act 1986, the definition of a fish farm for section 30 exemption purposes requires sites to be connected to a water source by a man made conduit e.g. cage sites and stews (artificial oyster beds) in rivers are covered by section 30 procedures.)

EU legislation

f. In recognition of the UK's disease free status, the EU has granted additional fish health guarantees to safeguard against the introduction of the parasite through trade in live fish (Commission decision 2004/453). The guarantees, in effect, only allow movement of susceptible species of fish from EC areas that are considered free of

G.s The same rules apply in respect of imports from third party countries.

g. Further information on relevant legislation is attached at Appendix 2.

1.6 Chain of command

National and Local Government bodies involved in implementing Contingency Plan include **Defra, Cefas, and EA.**

Defra

a. The Aquatic Animal Health Unit (AAHU**)** which is part of Defra's, Food and Farming Group (FFG) is responsible for the development of policy for the control, containment and eradication of G.s in England.

b. **The AAHU** will establish a **Disease Control Committee (DCC),** which will, under its direction, maintain and oversee implementation of this Contingency Plan. The **DCC** shall comprise the following:

Deputy Director FFG
Head of AAHU
Director of the National Control Centre (Director NCC)
Head of the Fish Health Inspectorate (Head FHI)
CEFAS (epidemiologist)
CEFAS (salmon adviser)
Defra Marine and Fisheries Directorate
Animal Health*
Representatives of devolved administrations*
Environment Agency *
Stakeholders *
[* - as required]

(The **DCC** will work closely with industry organisations e.g. representatives from the Atlantic Salmon Trust, NASCO and British Trout Association; as well as with representatives of affected local authorities via LACORS, as the situation requires.)

c. The **DCC** will meet, as necessary, during any suspected or confirmed outbreak and shall convene once a year in May to review preparedness of these contingency arrangements and to assess the likely risk of G.s introduction into the UK. The **DCC** will be chaired by the **Deputy Director FFG** or in his absence the **Head of the AAHU**.

d. The specific responsibilities of the **AAHU**, under the direction of the DCC, include:

- liaison with Defra Legal Department, including issuing DAOs and warrants for Inspectors;
- liaison with devolved administration;
- liaison with the EC, OIE and other Member States, including filing of all necessary reports;
- ensuring Ministers, Press Office, devolved administrations, other parts of Defra (e.g. AH), EA and other relevant organisations (including those representing industry) are kept fully informed, and seeking their views as necessary;
- producing and regularly updating press briefing and a Q&A brief for use by Press Office;
- maintaining an internet website with information on the emergency (to be set up on the Defra website and linked to the e-fishbusiness site);
- securing additional financial and other resources necessary for the implementation of the Contingency Plan; and
- ensuring meetings of the DCC are accurately recorded and minutes circulated within 24 hours to **Director NCC** and Head FHI.

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Cefas

a. **Cefas** will be responsible for establishing a National Control Centre (**NCC)** at its Weymouth Laboratory if there are reasonable grounds to suspect, or confirmation has been obtained, that G.s is present in England. The purpose of the **NCC** will be to co-ordinate the control measures necessary to implement the Contingency Plan under the overall direction of the DCC.

The Director NCC

a. This will normally be the Chief Adviser for Fish and Shellfish Health. He/she is responsible for ensuring that all necessary control action outlined in this contingency plan is taken. In the **Director NCC's** absence, the **Head FHI** will deputise and nominate an acting head of the Fish Health Inspectorate**. Director NCC** will, among other things, have specific responsibility for:

- ensuring the contingency plan for dealing with a G.s outbreak is activated on suspicion or confirmation of an outbreak;
- the strategic organisation of the **NCC**. (This must include a strategic plan for the establishment and efficient functioning of the NCC. **Director NCC** must also take account of resource needs and plan for the redeployment of non-Inspectorate Cefas staff and diagnostic services to assist with the emergency ;)

- providing scientific advice to the AAHU, DCC and Head FHI, for example:

  1. risk assessment of disease spread, containment and eradication;

  2. the delineation of DAO areas and buffer zones;

  3. the control measures to be deployed including movement restrictions on fish in, out and within DAO areas and buffer zones; and,

  4. keeping all three fully informed of major developments at all times;

- ensuring in particular that the **NCC** has an effective communications centre with adequate telephone help lines, fax, e-mail and database facilities. The centre must have the capability to deal with enquiries on the full range of technical matters associated with the disease outbreak and be able respond quickly to requests for contributions to Defra's internet website;
- providing briefing to the media (if necessary on camera) and otherwise acting as the Government's spokesperson on the technical/scientific aspects of the disease outbreak; and
- ensuring all meetings of the NCC are accurately recorded and minutes produced within 24 hours and circulated to the **AAHU** and the Head of the FHI; and
- ensuring, so far as reasonably practicable, that there are sufficient resources available to collect and analyse the number of samples likely to be required in any probable disease scenario.

The Fish Health Inspectorate

a. The Inspectorate is responsible for implementing and enforcing fish health legislation in England (and Wales). In the event of suspicion or confirmation of G.s, the Head FHI and his team will (among other things) be responsible for:

- investigating suspected outbreaks of G.s;
- taking samples and submitting them for laboratory analysis according to standard protocols, and informing the **Director NCC, DCC** and the **AAHU** of the results and proposed action;
- applying and enforcing disease control measures (including TDNs);
- initiating **immediate** contact tracing to help minimise spread of an outbreak;
- supervising clearance and disinfection programmes;
- liaising with the EA to secure the use of EA facilities and staff if necessary (in consultation with **Director NCC**);

- keeping the AAHU**, DCC** and **Director NCC** informed of progress and problems (including resource and manpower problems) encountered and seeking advice when necessary.
- Ensuring that communications recording new developments are sent simultaneously to the AAHU**, DCC** and **Director NCC**.

Environment Agency

The EA will assist the Inspectorate as necessary to implement this plan. EA will develop a strategy in consultation with the **AAHU** and Cefas for reorganising its resources, in the event of an outbreak, to assist Defra on the matters identified in this Contingency Plan to help contain and eradicate G.s; **and, specifically, it will**:

- report any suspicion that it may have of infection to the Head FHI;
- provide information to the Head FHI and the **AAHU** on owners or occupiers of non-farmed waters and users of such waters such as angling/wind-surfing/rowing/sailing/sub-aqua/diving/clubs etc.;
- remove dead and dying fish from non-farm waters, and ensure their safe disposal (see Para 3.6);
- if authorised by the Secretary of State under the DoF Act 1937, remove healthy fish from non-farm waters and ensure their safe disposal (see Para 3.6);
- if warranted as Fish Health Inspectors, provide support to the Inspectorate through inspection of fish farms and non-farm sites for disease and/or compliance with any movement restrictions (making full use of live fish movements database);
- assist the **Head FHI/Director NCC** in the delineation of DAO areas and buffer zones;
- assist with publicising control measures and movement restrictions; and
- assist with contact tracing through the use of records of consents under Section 30 of the Salmon and Freshwater Fisheries Act 1975 and EA Regional Byelaw Consents.

Other DEFRA Services

Animal Health (AH) is responsible for:

- general advice on implementation of contingency arrangements in the light of experience dealing with animal disease emergencies; and

- specific advice on fish welfare issues and the disposal of infected fish and fish waste under Article 3 of the EC Waste Directive No 90/667/EEC.

Local Authorities

Local authorities maybe asked to assist in the disposal of fish mortalities in landfill sites; in the event normal disposal methods prove inadequate.

2 Action in the event of identifying G.s

2.1 Suspicion and confirmation

For the purposes of this Contingency Plan there are two levels of suspicion (Alert Levels 1 and 2) that may lead to confirmation of the presence of G.s (Alert Level 3) and the arrangements in the Contingency Plan can, depending on the strength of available evidence, be activated in response to either one of the levels. Though this will normally only occur at Level 2. At the highest level of alert (Alert Level 3) the Contingency Plan will be activated automatically on confirmation of the presence of G.s. The responses to the various levels of alert are set out diagrammatically at Appendix 1, Flowchart 2.

2.1.1 Alert Level 1 – Initial Suspicion

Describes a situation where there is some evidence to suggest that G.s may be present but which may not be strong enough to warrant the imposition of legally binding movement restrictions. Initial suspicion of a site will prompt further investigation. Information giving rise to initial suspicion may come from:

- significant reduction in numbers of wild salmon, parr and smolts in rivers;
- claim by a person without particular knowledge of fish disease that G.s has been found or is suspected;

- any other unsubstantiated suspicion of the presence of G.s.

2.1.2 Alert Level 2 – Reasonable grounds for suspicion

Describes a situation where the available evidence may be sufficient to warrant the immediate imposition of movement restrictions, but where OIE laboratory confirmation of the presence of G.s has not yet been received. Evidence giving rise to reasonable grounds for suspicion could be:

- discovery of an illegal importation of fish from a G.s affected country;
- observation of clinical signs or mortalities combined with satisfactory evidence from preliminary laboratory/field observations of high numbers of gyrodactylids on salmon in freshwater; and
- positive laboratory results at CEFAS prior to confirmation by the OIE Reference Laboratory for Gyrodactylosis (this will automatically trigger the immediate imposition of movement restrictions)

2.1.3 Alert Level 3 – Confirmation

Describes a situation where CEFAS has made a positive laboratory identification of G.s from one or more samples of fish and there has been subsequent corroboration by the OIE Reference Laboratory. In this case, movement restrictions would be imposed immediately if not already imposed at Alert Levels 1 or 2**.**

2.2 Action to take on initial suspicion

a. If anybody has <u>any</u> suspicion that any waters are infected with G.s, they must inform the Inspectorate immediately.

b. The Head FHI will alert the Director NCC, and the AAHU, and will immediately despatch a Fish Health Inspector to inspect the site. If justified, the inspector will take samples for laboratory examination.

c. No further action will be taken unless the strength of the evidence available suggests to the Head FHI and Director NCC that G.s is present (i.e. if there are reasonable grounds for suspicion, Level 2).

2.3 Action to take when reasonable grounds for suspicion and confirmation

a. If the Head FHI is satisfied that there are reasonable grounds for suspicion (even before the results of any laboratory tests), he/she will immediately alert the Director NCC, the AAHU, and the EA. And if the

suspected site is a fish farm, the FHI will issue a TDN to prohibit the movement of fish and fish eggs to and from that farm.

b. If the Director NCC confirms that there are reasonable grounds for suspicion (or has received positive laboratory test results) he/she will immediately recommend the AAHU to:

- convene the DCC and activate the Contingency Plan; and
- arrange for a DAO to be placed on the affected site or area (after having considered the extent of the catchment area likely to be affected by the disease outbreak).

c. The results of any UK laboratory examination are likely to be available within 3 days of the date of sampling. Formal confirmation of the disease outbreak following consultation with the OIE Reference Laboratory in Norway is likely to be available within 5 days from the date of sampling.

2.4 Follow up action

Cefas

The **Head FHI** will provide the **Director NCC, DCC and** the AAHU with the following information:

- details of all registered fish farms in the affected catchment covered by the DAO; and
- in consultation with EA and as available (this information will not be immediately available and will take time to assemble), details of all non-farm water interests in the area which could spread G.s or be affected by the measures being activated to control the disease (e.g. owners of ponds / reservoirs / stretches of rivers, anglers, wind-surfing / rowing / sailing / sub-aqua/diving clubs).

The Director NCC

Will consider all the information provided by the Head FHI and within 3 days of activation of the Contingency Plan make an initial report to the DCC and the AAHU, which should include:

- a brief history of the case (probable source, evidence for G.s, extent of spread, areas at risk);
- recommendation for action to control and eradicate the disease;
- an assessment of the likely disease consequences for farmed and wild stocks of fish in the affected area; and

- recommendation for the G.salaris monitoring that will be required on the infected river and neighbouring rivers.

Defra

The AAHU will, upon activation of the Contingency Plan:

- immediately convene a meeting of the DCC;
- advise the CVO, Ministers, devolved administrations, Defra Press Office, Emergencies (FCDE), the Food Standards Agency, ,and the EA of the action being taken;
- on confirmation of the outbreak only, officially advise the OIE and European Commission (though it is likely that earlier unofficial contact will be undertaken);
- arrange with Defra Legal for a DAO to be served within 3 working days. (The DAO will prohibit or regulate the movement to, from and within the designated area of any live fish or live eggs without the consent of the Minister);
- send copies of the DAO to all registered fish farms in the area, and all known owners and occupiers of non-farm waters ;
- write to all organisations using farmed and non-farmed waters to draw their attention to the requirements of the DAO (making use where appropriate/possible to e-mail directory and auto faxing facilities);
- produce, and regularly up date, a core script and Q&A briefing to be approved by the DCC and circulated to all those who are likely to have to deal with questions regarding the outbreak;
- issue a press release to ensure widespread coverage by the media and co-operation of specialist press in particular; and
- set up a disease website on the Defra website with a Q&A briefing and keep this up to date.

EA

The EA will:

- provide the Head FHI with details of all known non-farm water users in the affected catchment(s) (e.g. owners of ponds/reservoirs/stretches of rivers, angling/wind-surfing/rowing/sailing/sub-aqua/diving organisations) as a matter of urgency (NB: this information will not be immediately available and will take time to assemble);
- assist with publicity and the advertising of movement restrictions, for example by placing notices on the banks of rivers/lakes/ponds to alert anglers and other users; and
- provide support as necessary for the Inspectorate working in the affected catchment (and buffer zone).

2.5 Negative laboratory test results

a. If laboratory test results received after the activation of the Contingency Plan are found to be negative, the Director NCC will, in consultation with Head FHI, advise the AAHU whether to de-activate the Contingency Plan and revoke any DAO which may have been issued.

b. The AAHU will on de-activation of the Contingency Plan notify all relevant parties and reverse all the action taken.

2 Enforcement and related issues

a. In England (and Wales), lead responsibility for implementation and enforcement of fish health controls rests with the Inspectorate. Inspectors are warranted by Defra's Legal Department.

b. In the event of activation of this Contingency Plan and confirmation of the presence of G.s, DAOs will be placed on the affected area. It is likely that the DAOs will remain in place for a considerable period of time (perhaps years). It will be difficult to eradicate the parasite and efforts must be concentrated on preventing its spread to neighbouring catchments.

c. In the event of catchments in cross-border locations with Wales and Scotland the following action will be taken regarding the placement of DAOs:

- **Wales** – the DAOs made in respect of English sites will also cover cross-border Welsh sites, where appropriate. This is possible because the Secretary of State has concurrent powers with the National Assembly for Wales to impose DAOs under the Diseases of Fish Act 1937. Defra (AAHU) will liaise with Welsh Assembly Government, Food and Marketing Development Division (WAGFMDD) over the issue of such cross-border DAOs;
- **Scotland** – no such concurrent powers exist in respect of English and Scottish legislation and it will be necessary for Defra (the AAHU) to liaise with Scottish Government, Aquaculture & Freshwater Fisheries Division (SGAFFD) on the issue of separate DAOs to cover a cross-border affected catchment area However, generally cross-border activities in the Tweed area will be the responsibility of SGAFFD in co-operation with Defra; where as cross-border activities in the Esk will be the lead responsibility of Defra operating in co-operation with SGAFFD.
- In the event of restrictions having to be served in cross border catchments, Scottish Ministers will issue a DAO to cover those waters in the Tweed or Border Esk catchments that lie within Scotland and UK Ministers will issue a DAO to cover those waters that lie within England.
- The DCC will also co-ordinate with SGAFFD and the Scottish Disease Strategy Group (if activated) and/or WAGFMDD, as necessary, at all stages of a suspected outbreak involving a possible cross border element.

3.1 Role of EA

a. Defra may need assistance from the EA to help implement and enforce disease controls. Any EA staff redeployed to carry out on-farm

inspection or enforcement of movement restrictions will be issued with Defra warrants. The EA will need to provide details of all the staff concerned to the Head FHI so that AAHU can arrange for the warrants to be obtained from Defra Legal. The warrants will give EA staff working under the direction of the Head FHI authority to enter premises including fish farms to check records, take samples of fish and ensure compliance with Contingency Plan controls.

b. EA (HQ) will disseminate information on disease control arrangements to its regional EA contacts. It will be necessary for EA regional/area staff to assist with the collection of samples of fish from the wild (including the collection and recording of dead and dying fish). They may also need to assist with control measures on rivers such as electric fishing. EA staff engaged in these activities will not require DEFRA warrants.

3.2 Fish movements

a. The movement restrictions imposed under a DAO will be rigorously enforced by the Inspectorate and the EA. However, consideration may, subject to the seriousness of the outbreak, be given to requests for movements of live fish, eggs, and gametes to, from and within the designated area. Any such requests for derogations from movement restrictions will be considered initially by the **Head FHI** and **Director NCC**. The **Director NCC** will make a recommendation to the **DCC** but the final decision will be taken by the AAHU who will formally respond to such requests on behalf of the Secretary of State.

b. It is not possible to specify in advance what movements will be permitted. Movements of fish out of the affected catchment directly for processing for human consumption may be considered subject to appropriate safeguards such as the sealing of transport containers and controls at the processing plant to prevent spread of G.s.

c. It is unlikely that we will seek to impose a fallowing period on fish farms or prevent restocking within the affected catchment area.

3.3 Further sampling and testing

a. Priority must be given to assessing the extent of spread of G.s by investigating at the boundaries of the designated area and/or buffer zone and neighbouring catchments. The Inspectorate should visit all farms and non-farm sites covered by the DAO to check movement records, make a census and if necessary take samples for testing in accordance with the standards set out in the OIE Diagnostic Manual for Aquatic Animal Diseases. The EA may be requested to assist, particularly with the collection of wild fish samples.

b. The EA will remove dead and dying fish from suspected and infected non-farm waters, and keeps records of those removals. Samples of fish from suspected non-farm waters will be submitted to Cefas, Weymouth Laboratory, for examination for G.s.

3.4 Non-farm waters

An important aspect of controls will be the enforcement of movement restrictions on non-farm waters. We will draw the attention of anglers, riparian owners/occupiers and other river users to the controls by posting notices, distributing leaflets and other means available. Good publicity and assistance from the EA will be necessary.

3.5 Removal of controls

Control measures will stay in place until testing shows that the designated area, or part of it, is free from G.s or that the parasite is spreading out of control, in which case we may decide that further action to prevent the spread of infection is futile. Any decision to remove or vary controls, will be taken only after careful consideration of all the available evidence, and in consultation with the EA, the Inspectorate, the Head of the NCC and Defra Legal Department.

3.6 Disposal of dead fish

a. The safe disposal of fish is the responsibility of the fish farmer, fishery owner or the EA, depending on what waters they came from.

b. The Animal By-Product Regulations 2005 (SI No. 2347), which implement Regulation (EC) No 1774/2002 (as amended) set out the permissible ways of dealing with various sorts of animal waste. Under the Regulations, fish waste infected with G.s would be classed as category 2 waste making it “high risk”. This means there are five main options available for dealing with the disposal of waste resulting from an outbreak of G.s. They are rendering, incineration, burning (on site), burial (on site) or export. Responsibility for high-risk waste lies with any persons who have it in their possession or under their control.

c. The preferred options are rendering and incineration. Of these two methods, rendering is cheaper and able to handle much larger quantities of waste. These two methods are also administratively simpler options because the EA would not need to make an assessment of the impact of the disposal route since the parasite would be destroyed by the disposal process.

d. Burning and burial are permitted in certain circumstances, usually where there is a health risk associated with moving the waste, a lack of rendering or incineration capacity or where the waste is infected with a disease, which could survive the rendering process. In order to bury or burn G.s infected waste, AH (acting on behalf of Ministers) would need to certify that such a situation existed and issue a notice under Article 24(1)(c) of Regulation (EC) N0. 1774/2002, requiring the waste to be disposed of by burial or burning. Burning or burial would also have to comply with the provisions of Article 6 and Part B of Annex II of Commission Regulation (EC) No. 811/2003. In addition, the EA would need to be content that it would not pose an unacceptable risk to the environment.

3.7 Consideration of chemical or other treatments to eradicate G.s

a. The DoF Act 1937 does not contain powers to require treatment on farms or non-farm sites to eradicate the parasite. Any such action would therefore have to be carried out on a voluntary basis by site owners and, given the nature of the chemical treatments, would require consent from the EA's Environmental Planning and Protection section and from Natural England, as necessary. Equally, the DoF Act 1937 provides no powers to eradicate the parasite from wild fish in rivers (the only practical means of doing this would be by chemical treatment or electric fishing). However the 1937 Act (sections 2A) does allow Ministers to require the removal of dead or dying fish from fish farms and ensure their safe disposal. It also (sections 2B and 3(2)) allows Ministers, where necessary for the protection against disease of the stocks of fish, to authorise the removal of any fish from fish farm and non-farm waters within a designated area, including by methods otherwise illegal.

b. The AAHU would only recommend such action to Ministers on the basis of advice from the EA, Director NCC and the DCC on the likelihood of success and its environmental impact. Further information on eradication is set out in Appendix 3 and information on the applicable legal considerations at Appendix 2.

3.8 Compensation policy

Except in the very limited circumstances provided by section 6(3) and (3A) of the DoF Act 1937 (where samples of fish are taken by inspectors and none are found to be infected) the government has no legal obligation to compensate for losses due to notifiable fish diseases. Nor is it the Government's policy to compensate for such losses.

4 Communications/media/publicity

a. Much of the success of this Contingency Plan will depend upon our communicating with and providing information to those affected by the presence of G.s and by persuading them to act responsibly.

b. There is likely to be considerable (if short-term) interest both locally and nationally so it is important that good internal communication is maintained between the AAHU, DCC, Head FHI, Director NCC and the EA, and between the DEFRA, EA and FSA press offices, at all times to ensure a consistent approach. There will be particular interest from those individuals and organisations concerned with wild salmon and other freshwater fish matters and they will receive regular and targeted information

c. A key element in ensuring consistency, the dissemination of correct information and that everyone has the information they need readily to hand, will be the provision by AAHU of a core script and Q&A briefing. This will form the first and mandatory point of reference for external communication. It will chart the "story" of the disease to the present and will provide key messages to be put across; it will be kept rigorously up to date.

4.1 Internal communication

The **AAHU** will:

- co-ordinate and provide a core script and Q & A briefing, which will be updated as necessary to keep colleagues informed - including other organisations which may have to field inquiries;
- arrange regular meetings (video conferences) to update the NCC on developments;
- ensure that the details of all meetings are documented, and that all relevant documents are filed appropriately;
- submit regular written reports to Ministers, covering:
    1. the nature of the outbreak (site, scale);
    2. likely further spread;
    3. action taken to date;
    4. level of media, and other, interest;

5. timing of follow-up report.

4.2 External Communication

4.2.1 Enquiries

The main sources of information for external enquiries will be Defra's Press Office, the NCC and the EA. In all cases

- the **national media** should be referred to Defra's Press Office who should consult with the AAHU and the Director NCC as appropriate;
- the **local media** will be dealt with initially by the most senior official in the field in consultation with Defra's Press Office;
- **local members of the public and local river users** may well be uncertain about whom to contact. Most calls will probably be made direct to the EA who will provide information or, if necessary, refer callers to the Director NCC for more detailed scientific and technical advice. Some calls may also be directed to water companies, local authorities and the AAHU. Defra Press office and EA will need to ensure that all organisations who may potentially receive enquiries are kept informed of developments;
- other enquiries will be dealt with by the AAHU, the EA or the NCC; and,
- the starting point in dealing with any enquiry will be the core script and Q&A briefing.

4.2.2 Publicity

a. The **AAHU** and the **DCC** (acting on information provided by the EA) will provide details of owners or occupiers of non-farmed waters and users of such waters such as angling/wind-surfing/rowing/sailing/sub-aqua/diving clubs and tackle shops etc. Advice and assistance from the **EA** will be sought in distributing publicity material to these local interests. Press Office will issue press notices as necessary.

b. The **AAHU** will:

- Instruct Publicity Branch to produce posters alerting local river users to the outbreak and providing advice on preventing the spread of disease. The Fish Health Inspectors and the EA's local officers will post these at key sites.

- Write to fishing, fish farming and other interested organisations (using the AAHU contact database) informing them of an outbreak of G.s, that a DAO has been made and enclosing existing leaflets giving advice on how to prevent the spread of disease.
- Instruct Publicity Branch to produce updated leaflets advising anglers (and other river users) in more detail on the risks of G.s and the precautionary measures they can take to avoid spreading disease.
- Establish, maintain and update a Defra G.s website with links to the e-fishbusiness and the EA's Fish-e websites.

5 Resources

On activation of the Cefas Contingency plan for Gyrodactylus salaris the National Control Centre at the Cefas Weymouth laboratory will convene, and as a matter of high priority will consider the appropriate allocation of resources to combat the disease outbreak. The major constraint on the capability to deal effectively with the disease outbreak is likely to be diagnostic laboratory capacity. Cefas contingency plans include the facility to transfer staff engaged in Defra funded research projects to support the diagnostic requirements. As far as field capabilities are concerned, the Environment Agency has agreed, within its G.s contingency plan, to assist the Cefas Fish Health Inspectorate in obtaining appropriate samples from the wild, and in enforcing any statutory controls that may be required. A MOU is also in place between Cefas and FRS for the provision of mutual assistance in both diagnostic and field based activities the event of a major disease outbreak.

6 Summary of communication responsibilities

	Responsibilities
AAHU	Briefing Ministers Informing interested parties Producing core script and Q+A Updating, co-ordinating & distributing core script and Q+A Answering general enquiries Updating the G.s website
DCC	Oversight of all communication issues. Agreeing core script and Q+A . Ownership of core script and Q+A
Defra Press Office	Briefing the national media in consultation with Fish II / Director NCC
Defra Publicity Branch	Producing posters and leaflets
EA	Identifying local interests Assisting with publicity in affected areas Answering local and general enquiries
Director NCC **NCC**	Briefing local and national media on technical/scientific issues Answering general inquiries (Inspectorate) Reporting results of investigations Providing advice on precautions to be taken on suspicion and following confirmation of G.s at farm or equivalent levels

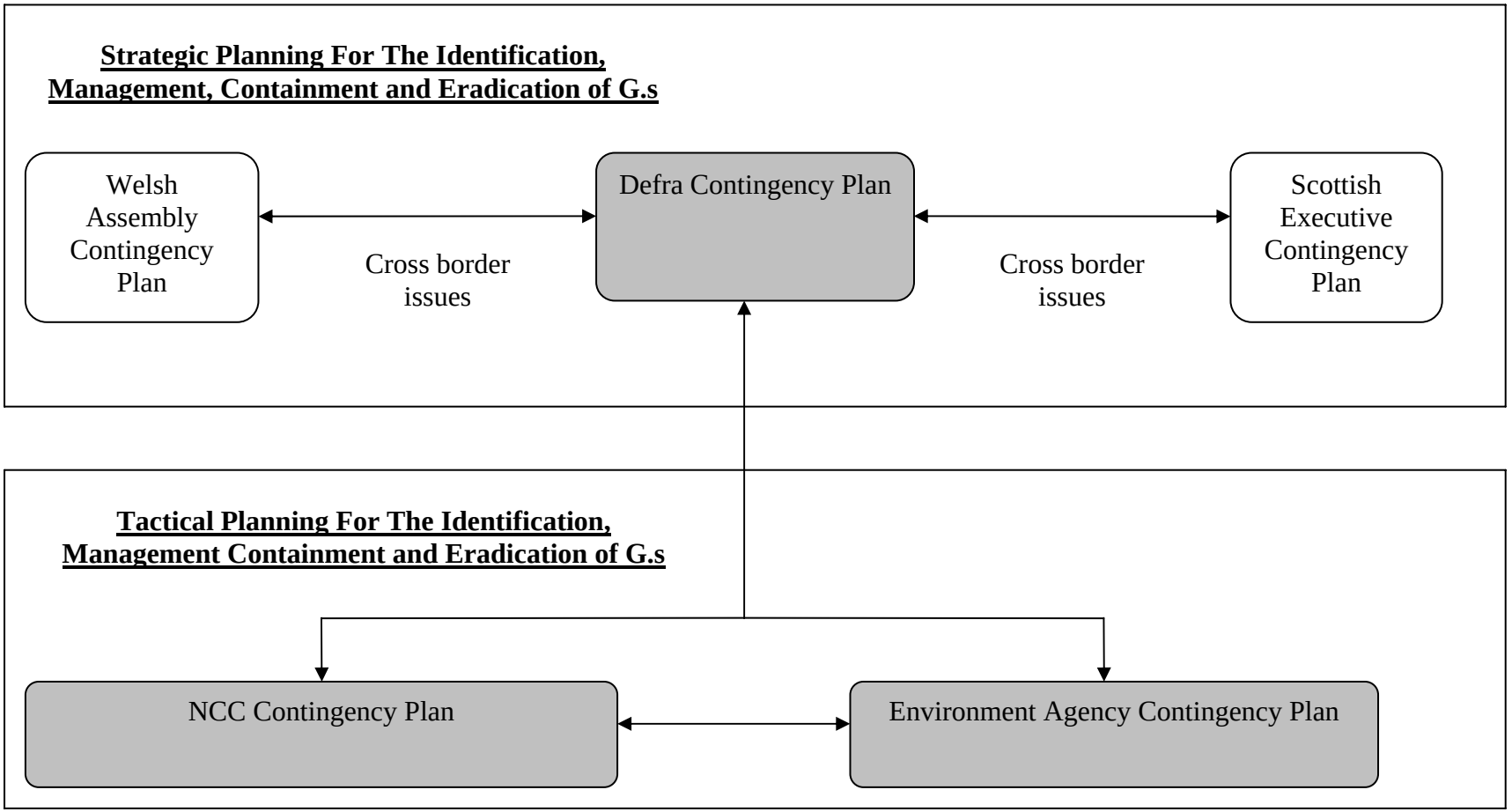
All	Reporting significant new developments to colleagues

7 Glossary of terms

AAHU	Defra, Aquatic Animal Health Unit (Responsible for policy and legislation on aquatic animal health matters, all UK contacts with the EC regarding such matters and related advice to ministers.)
Cefas	Centre for Environment, Fisheries and Aquaculture Science.
Chief Adviser	Short for Chief Adviser for Fish and Shellfish Health, also part of Cefas based at the Weymouth Laboratory. Responsible for scientific and strategic advice on the control of G.s, and for establishing and running the NCC.
CVO	Chief Veterinary Officer
DAO	Designated Area Order. This is an order made under the Diseases of Fish Act 1937, as amended, which enables a notice to be served prohibiting the movement of fish, eggs or fish food to, from or within the designated area. It is the main statutory weapon in the fight against G.s.
DCC	Disease Control Committee
Defra	Department for Environment, Food and Rural Affairs. Responsible for overall policy, advice to Ministers and co-ordination of contingency action.
Director NCC	Director of the National Control Centre. Responsible for ensuring that all action outlined in the contingency plan is undertaken
EA	Environment Agency. Responsible for assisting with action taken in non-farm waters, publicity and providing catchment area maps for designating areas.
G.s	Short for *Gyrodactylus salaris*, the parasite that causes the disease gyrodactylosis.
Head FHI	Head of the Fish Health Inspectorate.
Inspectorate	Short for the Fish Health Inspectorate, part of CEFAS and based at Weymouth. Responsible for enforcing fish health legislation and putting into action the front line disease control measures of this plan.
WAGFMDD	Welsh Assembly Government, Food and Marketing Development

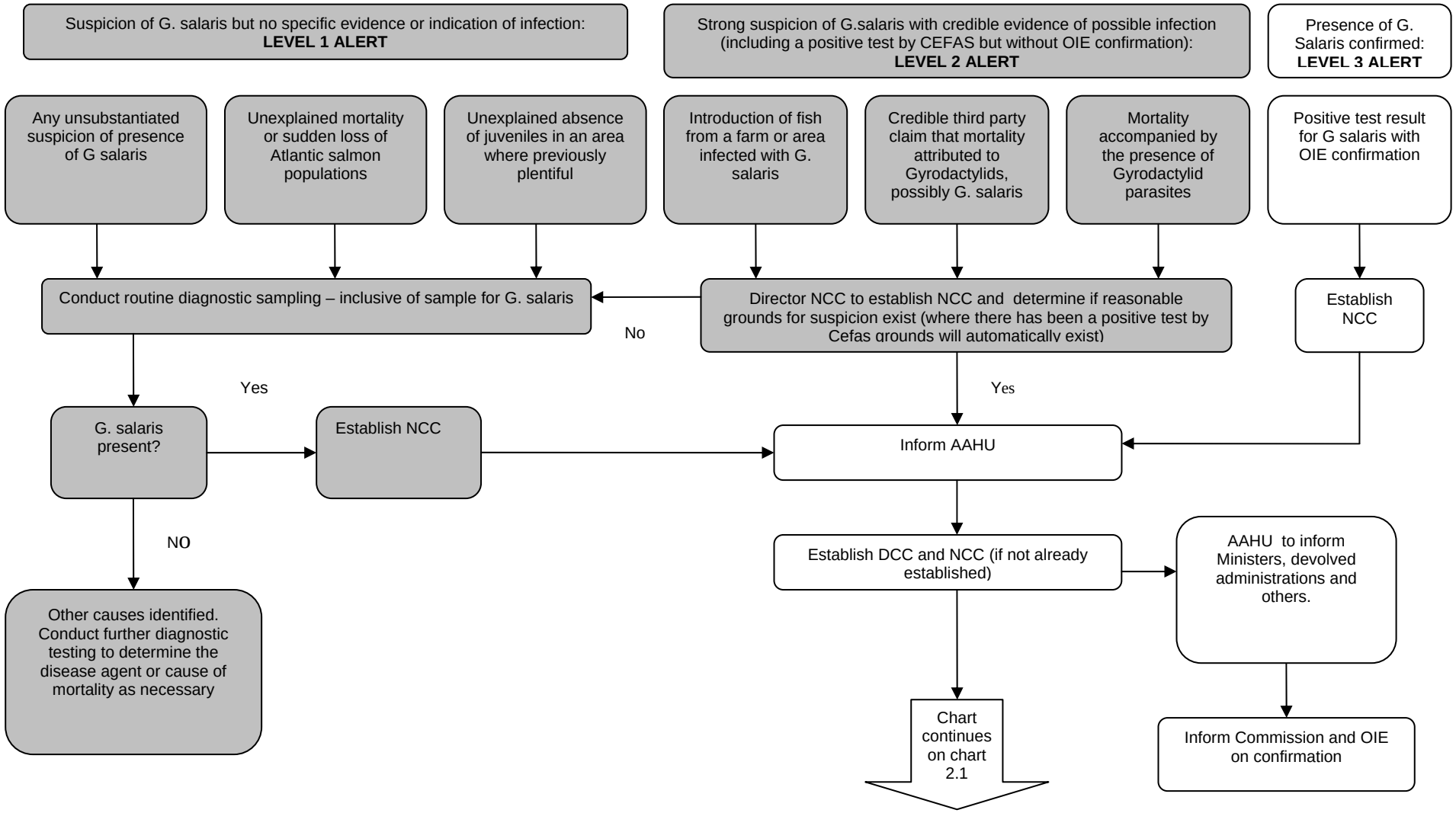
	Division
NCC	National Control Centre. This will be at CEFAS, Weymouth Laboratory. Its role is to act as the incident centre and the focal co-ordination point for the operation of the contingency plan.
OIE	Office International des Epizooties (the World Organisation for Animal Health).
SGAFFD	Scottish Government, Aquaculture, Freshwater Fisheries Division
TDN	Thirty day notice. This is a notice, which can be served under the Diseases of Fish Act 1937 by an inspector. It can only be served on a fish farm, not on non-farm waters, but it can be served on the spot to prevent movements of fish, eggs and fish food to or from the farm.

Appendix 1: Flowchart 1

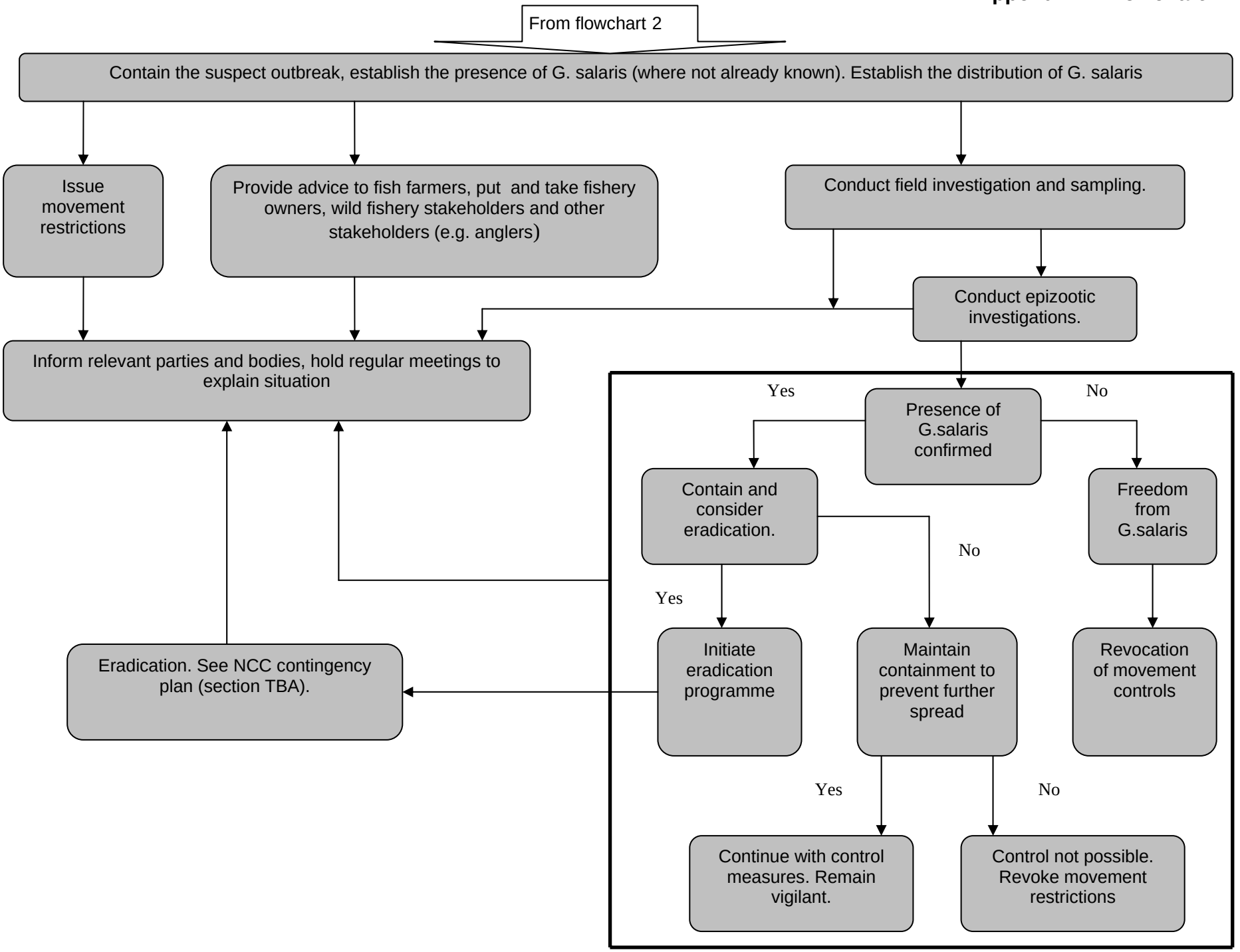


Appendix 1: Flowchart 2

Procedures to be followed on suspicion or confirmation of G. Salaris

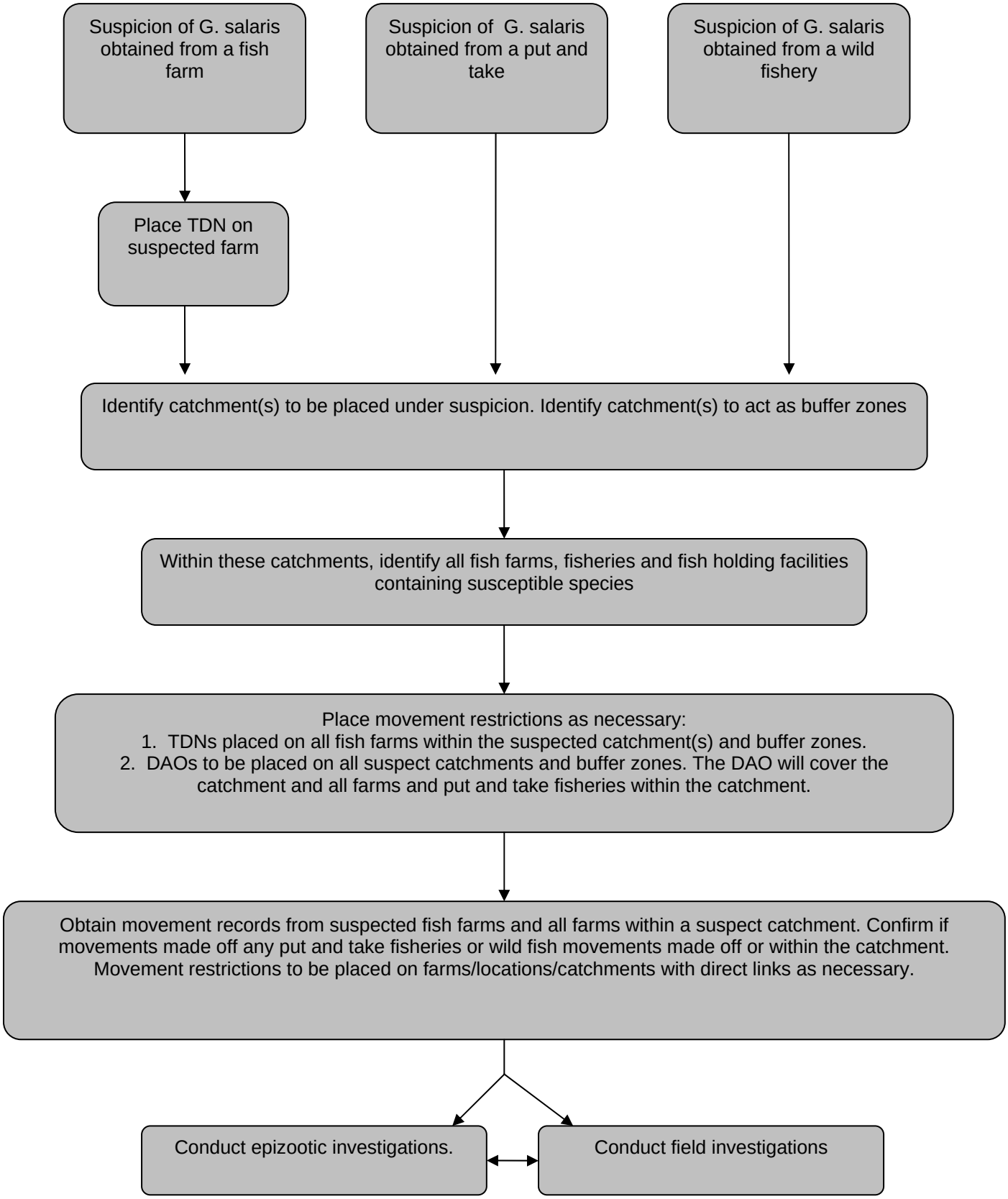


Appendix 1: Flowchart 2.1



Appendix 1: Flowchart 3

Placing movement restrictions on suspected sites



Summary of Legislation Affecting Control of Gyrodactylus salaris

Legislation relating to Fish

1. Diseases of Fish Acts 1937 and 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 an inspector 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.

1.6 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. Commission Decision 2004/453/EC

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

2.2 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 area.

3. The Animal By-Product Regulations 2005

3.1 EU Regulation 1774/2002 is enacted by means of the Animal By-Products Regulations 2005 which sets out the permissible ways of dealing with various categories of animal waste.

3.2 Dead farmed fish that are infected with *G. salaris* would be classified as Category 2 by-products and are required to be disposed of in accordance with the requirements set down in Regulation 1774/2002 .

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

4. Freshwater Fish Directive 78/659/EEC

4.1 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.

4.2 The Directive does not mention the active substances which may be used to eradicated *G. salaris*. However, Annex 1 assumes that "the concentrations of other harmful substances are very low". [The Directive is implemented through the Surface Waters (Fish life) (Classification) Regulations 1997 and 2003 amendments]

5. Salmon and Freshwater Fisheries Act 1975

Section 30 of this Act makes it an offence to introduce fish into an inland water without first obtaining the written consent of the Environment Agency.

Note on Eradication

1. Eradication of *G. salaris* infection has been successfully achieved in several rivers and fish farms in Norway. Cefas and AAHT will maintain a comprehensive and up-to-date knowledge of the approaches and success levels of the eradication policy in Norway country and others, as appropriate, with a view to guiding Defra policy if better methods become available.

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.

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.

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 the EA and English Nature as appropriate, and other stakeholders; including those with an economic interest in the waters to be treated.

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 3. 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.

6. Norwegian practical experience has shown that eradication of infection may be possible through the use of rotenone when *G. salaris* occurs. Cefas and the AAHT, in association with SEERAD and the Scottish FRS, 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 England. The NCC contingency plan will contain up-to-date details of sources of rotenone and other necessary materials and staff.

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. ***[Cefas? 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 England and make this available to the in the event of an outbreak of G. salaris.]***

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.

9. In making recommendations to Ministers on the feasibility of attempting to eradicate disease DCC will take note of advice from the NCC, EA and other government bodies as appropriate; and consultations with external stakeholder groups. 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.

Contingency plan
for
containing
and eradicating
Gyrodactylus salaris

NCC strategy

Contents

1 *Gyrodactylus salaris* – worst case scenario

It is highly likely that an introduction of *Gyrodactylus salaris* into England or Wales would go unnoticed, and that the subsequent parasite transmission between farms containing susceptible fish and river populations of wild salmon would be undetected for a number of months. This could rapidly lead to a worst case scenario in which all [290] salmonid farm sites and all [89] river catchments containing wild salmon would require sampling to assess the extent of the disease. The impact on NCC staff and resources in this situation needs to be estimated:

1.1 Field workload

Fish farms

Maximum time for sampling

Assuming no information on the distribution of potentially infected stock, (requiring systematic sampling of ponds) and a maximum number of ponds on a fish farm of 150; fifteen 20-fish samples would be required. At a sampling rate of 150 fish per hour, total time required = 2 man hours.

Inspection of movement records

Maximum time required for a farm movement record inspection on a complex site (including S30s) is 2.5h, however in most instances this task would be completed within 1-1.5h

It is envisaged that a majority of farm visits would be completed within 4 man-hours, allowing a CEFAS inspector to complete 2 farm sites per day.

Time required for 8 inspectors to visit 290 GS susceptible farm-sites in England and Wales is **18 days.**

Sampling wild fish

Sampling programs for catchments containing wild salmon will be agreed with EA staff and the selection of sites for electrofishing will be based on EA/local knowledge to target salmon presence with the aim of assessing the distribution of the parasite within the river system. It is estimated that 3 sites per catchment could be identified and sampled in 1 working day. Therefore the time required for the sampling of 89 catchments by 8 CEFAS inspectors is **12 days.**

A team of 8 field operatives, drawn from the Inspectorate, will work daily, providing for rest days and illness, allowing the total field work to be completed in 30 days without drawing staff from other areas of work. A number of research staff from Defra funded projects have been identified who may assist with field work if the rate at which farms and catchments are visited falls below the expected level.

1.2 Laboratory workload

Farm inspections will generate up to fifteen (20-fish) samples per site. Wild fish surveys will generate 3 samples per catchment. This will result in a maximum of 4620 samples over a 30-day period, an average of 154 per day. This falls within the laboratory examination capacity of 80-200 samples per day with current staffing levels.

2 NCC actions at initial suspicion of GS infection (Level 1)

HeadFHI alerts status to:

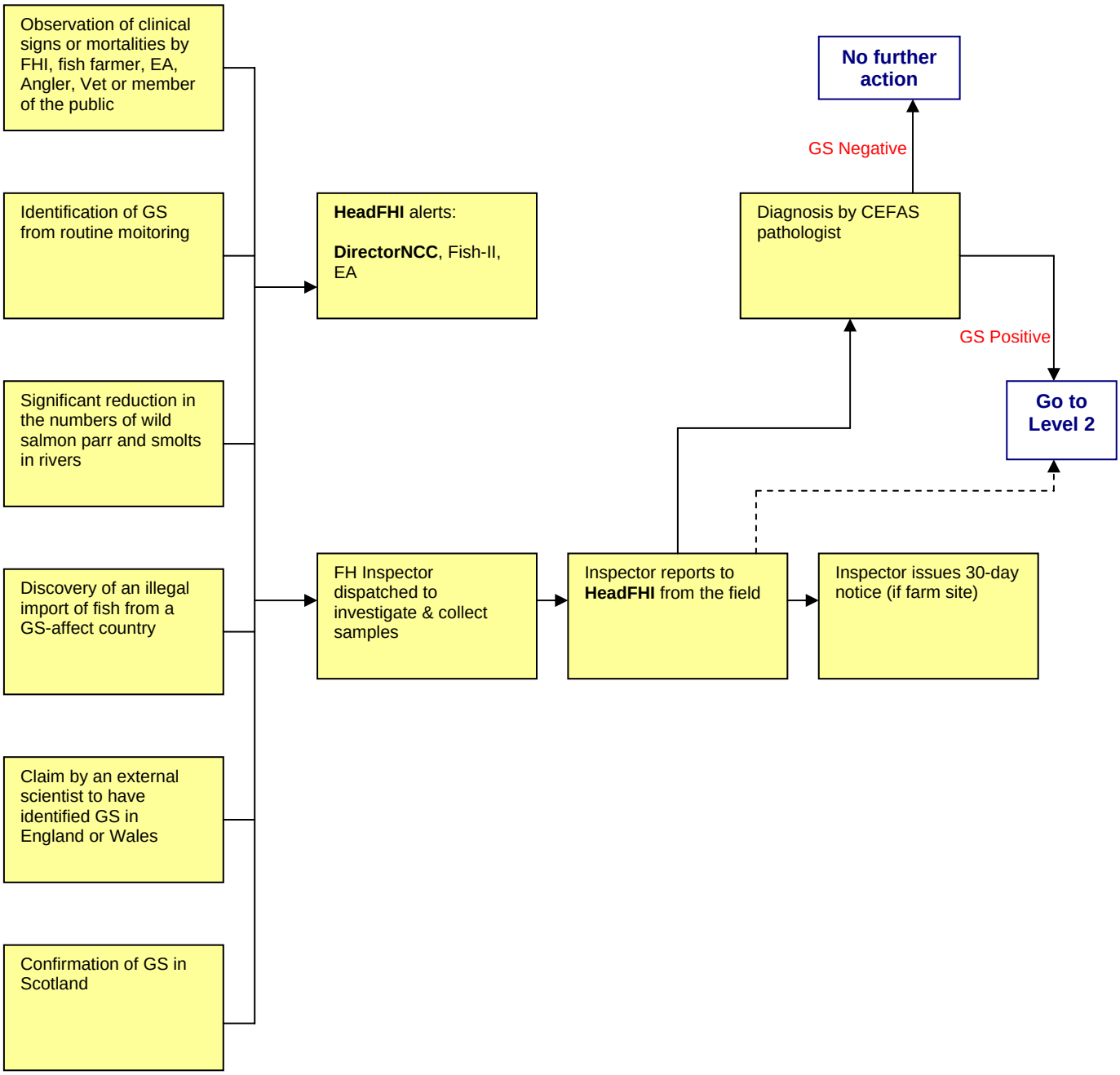
- FHI and diagnostic staff and all other CEFAS staff that may be affected by activation of the CP,
- DirectorNCC,
- Fish II,
- EA (Contact).

Fish Health Inspector dispatched to investigate the source of suspicion (potential Index Case (IC)), and reports back to HeadFHI from the field and, if necessary:

- Collects samples for parasite identification;
- Inspects movement records and makes copies and, where appropriate, collates relevant Section-30 data (so that contact chasing can begin if it is necessary to move to Level-2);
- Issues 30 DN if source of suspicion is a fish farm (to cover interval preceding DAO).

See **Diagram 1** (overleaf)

Diagram 1. Actions at initial suspicion (Level 1)



3 NCC actions at reasonable grounds for suspicion (Level 2)

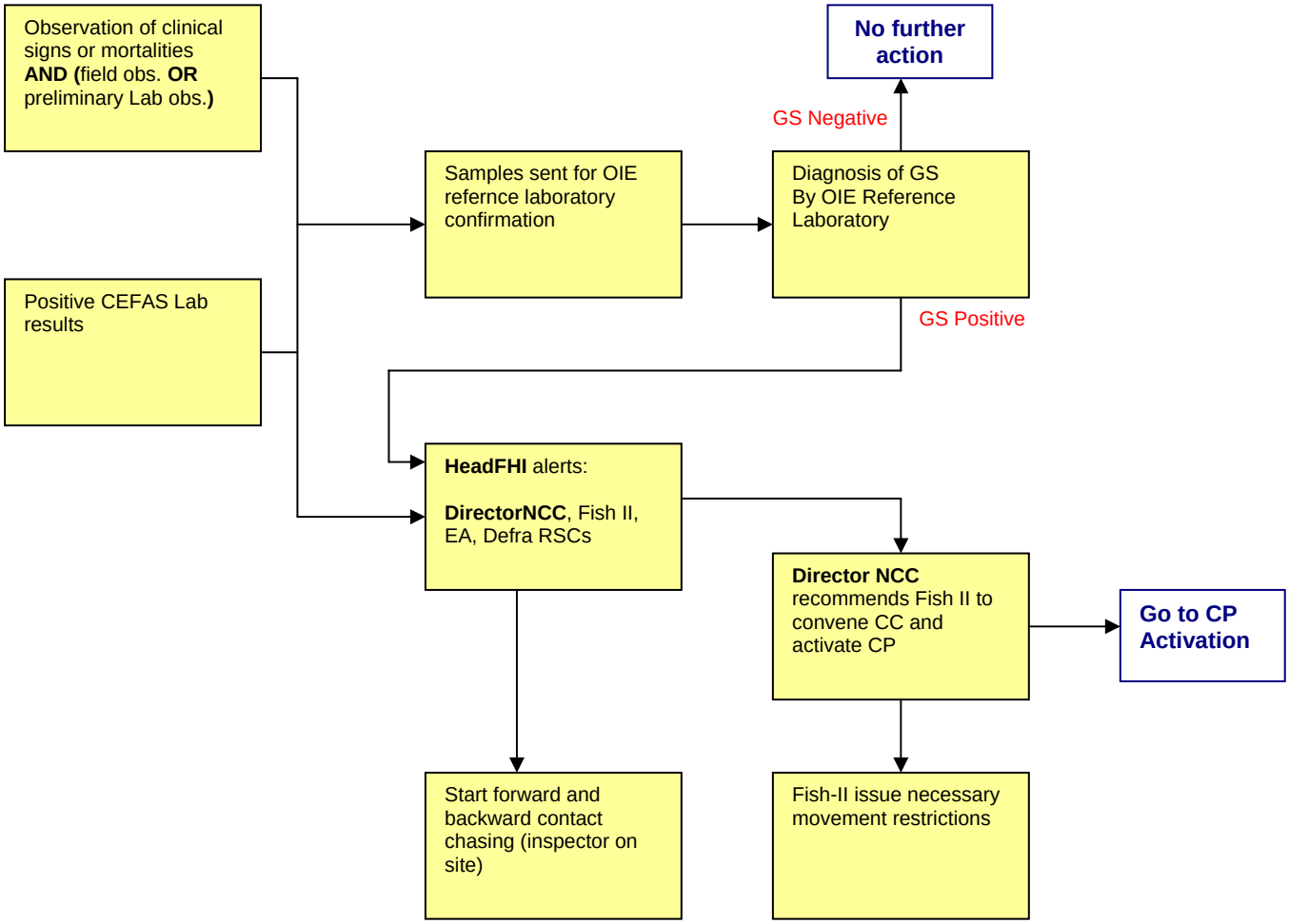
HeadFHI alerts Level 2 status to:

- DirectorNCC
- Fish II
- EA (Contact)
- Inform VLA (Contact)
- Defra RSCs (for information only)
- Inform Scottish authorities (Contact).

(HeadFHI may call alert before the results of any laboratory tests)

See **Diagram 2**

Diagram 2. Actions at reasonable grounds for suspicion (Level 2)



4 NCC actions following confirmation of Level 2

- DirectorNCC recommends Fish II to convene Central Committee and activate CP;
- DirectorNCC advises Fish II, CC and HeadFHI on the need to implement DAOs;
- DirectorNCC provides briefing to Fish II, the media and otherwise acting as Government's spokes person on the technical/scientific aspects of the disease outbreak;
- HeadFHI and the Epidemiologist will provide information to DirectorNCC allowing him to make an initial report to CC and Fish II (within 3 days of CP activation) including:
    - a brief history of the case (probable source, evidence for GS, extent of spread, areas at risk),
    - recommendation for action to control and eradicate the disease,
    - an assessment of the likely disease consequences for farmed and wild stocks of fish in the affected areas;
- Prioritisation of farm and non-farm sites that will need to be contacted by telephone if CP activated;
- Start [**phase 1**] contact chasing: FH Inspectors visit sites implicated by the contact with the IC and inspect movement records and makes copies and, where appropriate, collate relevant Section-30 data;
- NCC crisis centre activated.

5 National Control Centre (NCC) operation

On confirmation of a fish disease outbreak it will immediately be necessary to activate the National Control Centre (NCC). The NCC will be established at the CEFAS Weymouth laboratory in the library. The aim will be to have the NCC fully operational within 2 hours of the notification of a disease outbreak.

Immediately on notification of a disease outbreak the NCC Duty Manager should:

- Out of working hours. Proceed to the laboratory. In practice, a call out outside normal working hours will be unlikely given that diagnosis will undoubtedly be confirmed during the normal working day. On arrival, initiate the set to work of the NCC;
- In working hours. Initiate the set to work of the NCC;

The NCC Duty Manager will be drawn from:

- the Support Services Manager
- the Accommodation Manager
- the Information Services Manager.

The NCC Duty Manager will be responsible for ensuring that:

- The NCC telephones are connected and tested;
- The NCC fax is connected and tested;
- The NCC information/briefing boards are made ready;
- The call out of key personnel has been initiated in accordance with the call out cascade;
- The video conference link is tested;
- Access to the library by non-essential personnel is restricted;
- A record of communications and decisions is maintained in an incident log.

Details of the layout of the NCC are shown in Diagram 3. The work of the NCC will be supported by IT and other support services personnel.

Detailed instructions for the set up of the NCC will be held:

- by each NCC Duty Manager;
- in the library.

A copy of the *Gyrodactylus salaris* contingency plan will also be held in the library.

<u>When fully operational the NCC will comprise:</u>

- The Director of the National Control Centre (DirectorNCC),
- The Head of the Fish Health Inspectorate (HeadFHI),
- CEFAS Epidemiologist,
- Fish II staff (2),
- Defra press branch staff (1),
- Other CEFAS staff may be seconded to the NCC at the request of DirectorNCC to the Science Are Head Weymouth.

<u>When fully operational the NCC will:</u>

Be equipped with:

- Satellite television (requirement to be confirmed),
- 3 x telephones (one line to be dedicated to Defra), one with conference/speaker facility,
- Facsimile facilities,
- 4 x PCs – all with internet connection, standard microsoft applications and e-mail,
- 1 x printer – networked to each PC,
- Video Conference facilities (via Room 102A).

Communication links to the following will be established with:

- the CC
- the Area Disease Control Centre(s) (ADCC)
- other Agencies, departments as required.

6 Media communications

Good communication is key to a successful contingency plan. It is essential that up to date contacts (telephone, fax, email) of key stakeholders are kept, namely:

- Environment Agency (EA) regional offices,
- Riparian owners,
- Angling clubs,
- Fish farms,
- Put and take fisheries.

A website containing information on the parasite, where advice can be sought and advice on minimising the risk of transmission will be prepared with links from the CEFAS, Defra and EA websites. In the event of an outbreak this website should be updated daily with the known distribution of the parasite.

Diagram 3. NCC Layout

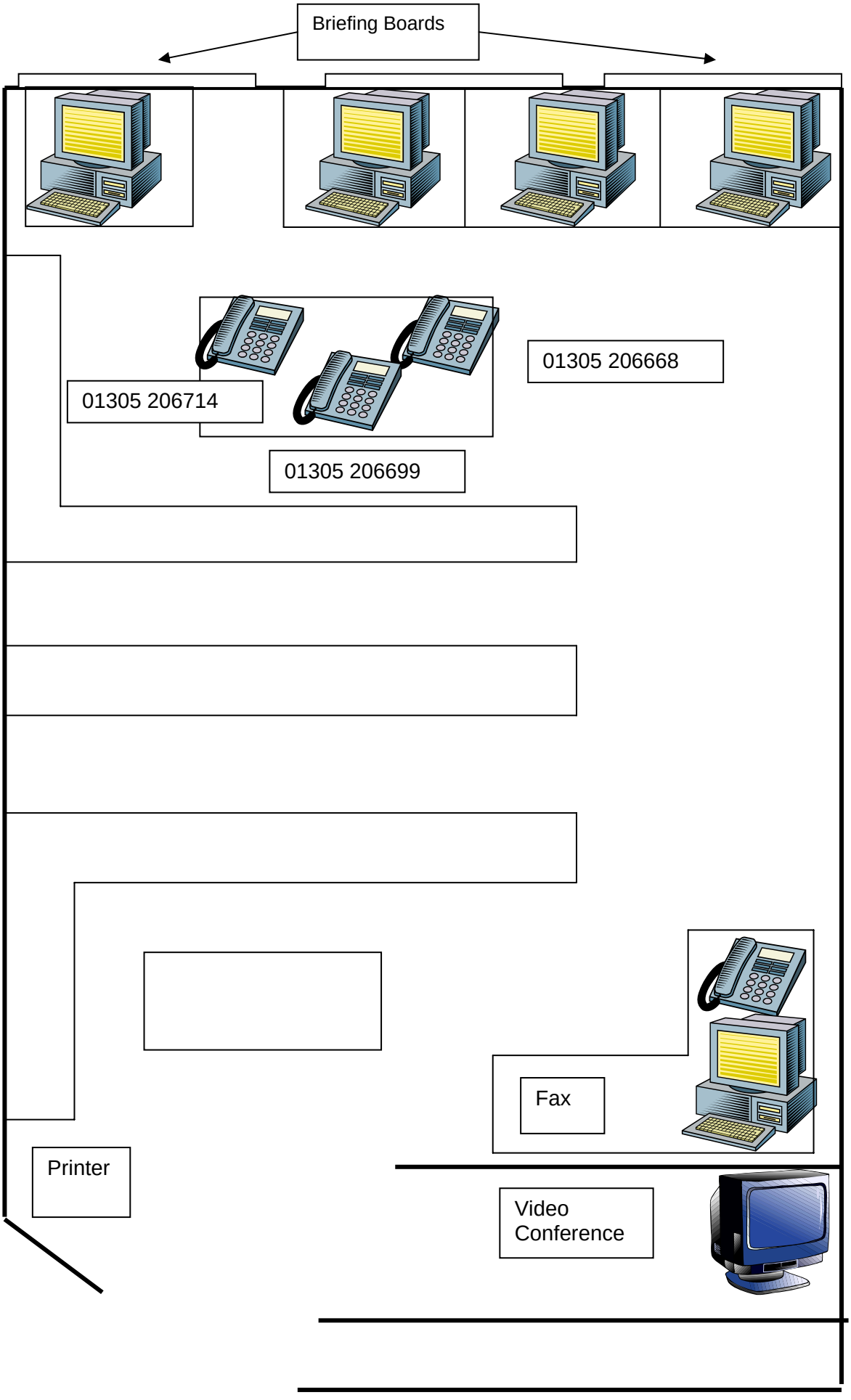
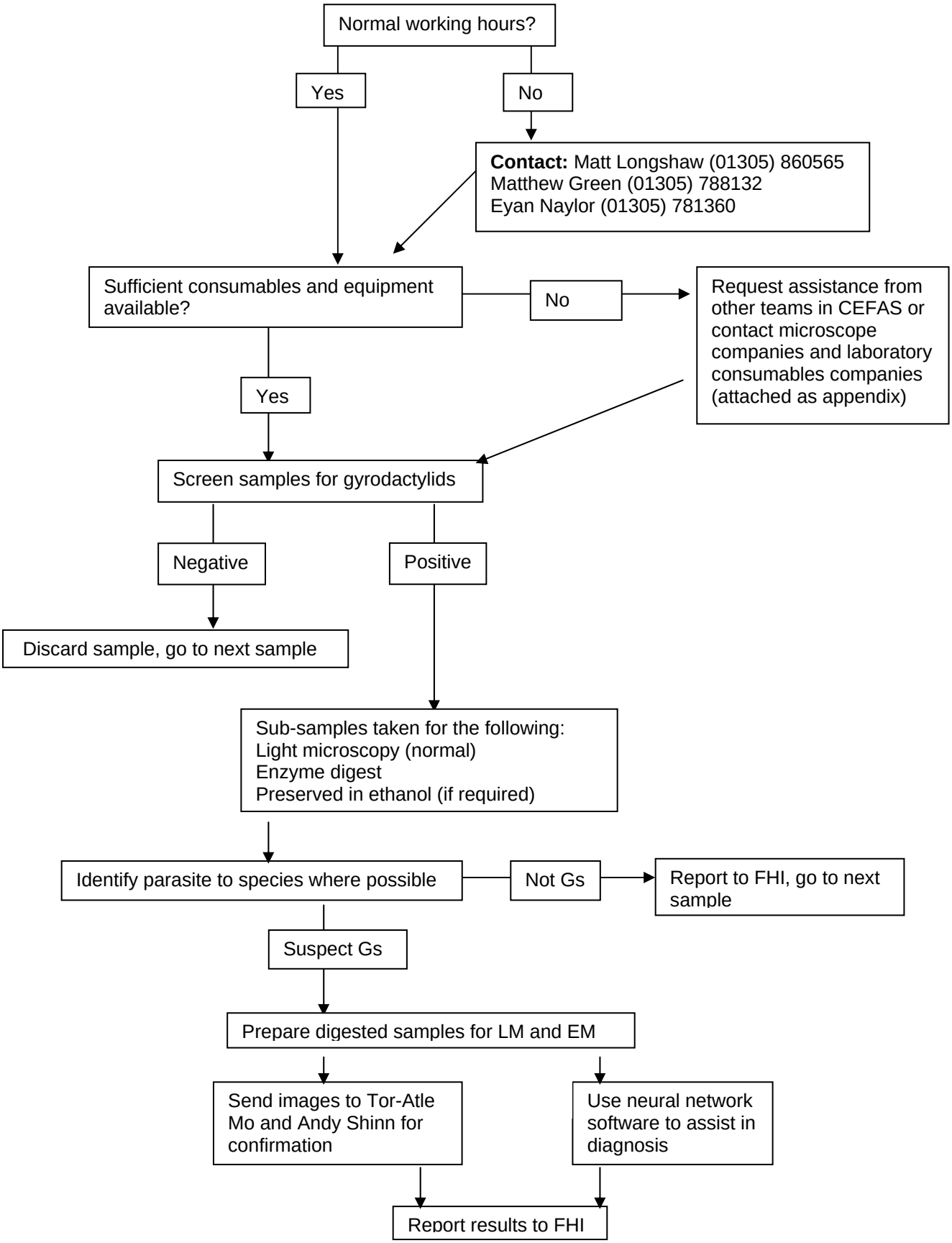


Diagram 4. Laboratory identification aspects of contingency plan



7 Field activities focused on the index catchment

1. FHI staff will liaise with EA Regional Office responsible for the catchment containing the index site;
2. Test all farm sites containing GS susceptible fish stocks on the catchment;
3. Test wild salmon populations if present in the catchment (EA to provide support for Electro-fishing teams);
4. Identify farm to farm contacts (outside catchment) (Timeframe 12-months);
5. Identify all imports and salmon movements (Section 30s - in / out of catchment) (Timeframe 12-months);
6. All dangerous contacts to be communicated back to NCC (Weymouth).

8 Field activities in catchments identified as containing dangerous contacts

1. The NCC will liase with EA Regional Offices responsible for each catchment as identified by contact chasing;
2. If the scale of infection within a region is considered to be significantly high, then Area Disease Control Centres (ADCCs) will be established to co-ordinate local sampling and disease control measures as required. CEFAS inspectors will be dispatched to regions implicated co-ordinate these as necessary;
3. CEFAS inspectors will liase with the NCC and:
    - Test all farm sites containing GS susceptible fish stocks on catchments implicated by DC (Prioritise with proximity to index site and epidemiological importance – epidemiology team input - timeframe 12-months)
    - Test wild salmon populations (if present in the catchments implicated) - EA to provide support for Electro-fishing teams
    - Identify farm to farm contacts (outside catchments)
    - Identify all imports and salmon and RBT movements (in out of catchments) (Timeframe 12-months).

9 Daily actions at NCC

1. Progress ongoing forward and backward contact chasing using Movement Records as received from FH inspectors;
2. Receive field samples from FH Inspectors and pass to the Diagnostic team;
3. Prioritise the order of DCs to be sampled in each catchment according to information provided by contact chasing, [positive / negative] results from diagnostic team, model data from Epidemiology team;

4. The Epidemiologist will assess the likely route of spread of the disease and the implications for disease control measures and periodically review the efficacy of the current control programme;
5. Send results of revised priorities to the ADCCs;
6. Recommend movement of resources between ADCCs;
7. Communicate current GS status to Defra via the Central Committee:
    - Sites determined positive / negative by diagnostic team
    - Infection status by Catchment
    - Send data to Defra to enable them to update the GS crisis WebPages;
8. Provide advice and information to fish farmers, river users (anglers, water sports etc), and riparian owners on the status of the outbreak, risks of GS communication and disinfection procedures;
9. It is not normal practice to run contact chasing ahead of the inspectors' sampling programme, however to provide additional epidemiological information, advanced contact chasing may be progressed by telephoning DCs implicated by the contact chasing and requesting Movement Records [for the last 12 months] to be faxed / emailed immediately to the NCC. This will allow the likely extent of the outbreak to be assessed.

10 Daily actions at ADCCs

1. Each ADCC will have a CEFAS representative, who's main role will be to liase with the NCC and EA staff;
2. Receive revised priorities from the NCC (Weymouth) and revise sampling programmes accordingly;
3. Co-ordinate the regions sampling program;
4. Collect material from regional sampling program and send to NCC;
5. Communicate staff workload back to NCC;
6. Co-ordinate the secondment of necessary EA staff to other ADCCs if necessary.

Key personnel details

POSITION	TEL NO.	MOBILE
Director NCC		
Barry Hill		07780 688420
(Deputy – Eric Hudson)		07769 882702
Head FHI		
Eric Hudson		07769 882702
(Deputy – Alasdair Scott)		07879 483332
Epidemiologist		
Edmund Peeler		07769 882710
Senior Fish Health Inspectors		
Kevin Denham		
Alasdair Scott		07879 483332
Stephen Maidment		07771 977273
(Ian Laing)		07769 882704
Fish Health Inspectors		
Richard Gardiner		07769 882706
Brain Mander		07769 882715
Sam Bark		07769 882718
Keith Jeffrey		07769 882714
Jonathan Hulland		07769 882717
Neil Cross		07769 882723
Neil Tredwin		07769 882716
Peter White		07769 882719
Epidemiology staff		
Edmund Peeler		07769 882710
Sophie St-Hilaire		
Mark Thrush		07745 017239
Crisis Centre staff		
Paul Haywood (Support services manager)		07762 150387
Carole Norrie (Accommodation manager)		07939 584573
Sue Walker		
IT Support		
Caroline Crane (I. S. manager)		07769 882722
Paul O'Dowd		
Other Staff		
Gillian Taylor		
Peter Dunn		
Margaret Chipp		
Debbie Murphy		
Hayley Carlin		
Alastair Cook		
Tony Hancock		
Other departments may be called on to assist in wild salmon and farm sampling including staff from		
Bacteriology Virology Physiology Salmon & Freshwater Group (Lowestoft)		
Laboratory staff		
Matt Longshaw		
Matthew Green		
Eyan Naylor		

Glossary of terms

30DN	Thirty-day notice. A Fish Health Inspector may serve this under the Diseases of Fish Act 1937. It can only be served on a fish farm, not on non-farm waters, but it can be served on the spot to prevent movements of fish, eggs and fish food to or from the farm.
ADCC	Area Disease Control Centre. These will co-ordinate sampling of wild salmon and farmed RBT under the direction of a CEFAS Fish Health Inspector and will be established in suitable EA offices in close proximity to areas of high GS incidence.
CC	Central Committee established by Defra, Fisheries Division II to oversee implementation of Contingency Plan and review arrangements annually.
CEFAS	Centre for Environment, Fisheries and Aquaculture Science, an executive agency of Defra.
CP	The Contingency Plan. To be activated by Defra on confirmation or on reasonable grounds for suspicion that GS has entered England or Wales.
DAO	Designated Area Order. This is an order, activated by Defra, made under the Diseases of Fish Act 1937, as amended, which enables a notice to be served prohibiting the movement of fish, eggs or fish food to, from or within the designated area. It is the main statutory weapon in the fight against GS.
DC	Dangerous Contact. A site, identified through contact chasing, which may have been potentially infected through the movement of stock from an infected premises.
Defra	Department for Environment, Food and Rural Affairs. Responsible for overall policy, advice to Ministers and co-ordination of contingency action.
EA	Environment Agency. Responsible for assisting with action taken in non-farm waters.
FHI	Fish Health Inspectorate, part of CEFAS and based at Weymouth. Responsible for enforcing fish health legislation and putting into action the front line disease control measures of the Contingency Plan.
GS	*Gyrodactylus salaris*, a monogenean parasite causative agent of gyrodactylosis.
HeadFHI	Head of the Fish Health Inspectorate.

Head NCC	Head of the National Control Centre. Responsible for ensuring that all actions outlined in the contingency plan are undertaken.
IC	Index Case. The fish farm or river site where GS is first detected.
IP	Infected Premises. All fish farm sites that are infected with GS.
NCC	National Control Centre. This will be at the CEFAS, Weymouth Laboratory. Its role is to act as the incident centre and the focal co-ordination point for the operation of the contingency plan.
OIE	Office International des Epizooties (the World Organisation for Animal Health) responsible for the confirmation of all notifiable diseases.
RBT	Rainbow trout (*Oncorhynchus mykiss*). This species, commonly farmed in the UK, may become infected GS (albeit at a lower intensity than Atlantic salmon) and transmit the disease to wild salmon populations.
RDCC	Regional Disease Control Centre. Established in EA Regional offices; responsible for co-ordinating sampling of wild salmon and farmed RBT within their region under the direction of a CEFAS Fish Health Inspector. [*Establishing ADCCs rather than RDCCs is now the favoured option*].
RSC	Defra Regional Service Centre.
S30	Section Thirty Consent. This applies to the section of the Salmon and Freshwater Fisheries Act 1975 under which it is an offence to introduce fish into inland water without first obtaining the written consent of the Environment Agency.
SEERAD	Scottish Executive, Environment and Rural Affairs Department.
SVS	State Veterinary Service. Assistance may be sought from the SVS in the event of a very extensive outbreak.
VLA	Veterinary Laboratories Agency. The VLA may be called upon to assist with the mathematical modelling and qualitative risk analyses to support decisions made during the operation of the CP.

Environment Agency Contingency Plan for Combating an outbreak of *Gyrodactylus salaris* in England and Wales

The role of the Environment Agency in assisting Defra, WAG & Cefas in the implementation of control measures in the event of a *Gyrodactylus salaris* outbreak in England and Wales

1 Purpose/Scope

This document sets out the roles and responsibilities of the Environment Agency in the event of an outbreak of *Gyrodactylus salaris* (GS) in England and Wales. It outlines how they will be delivered and ensures the response will be sufficient to provide the level of service required to contain and resolve the outbreak. It has been established as a partner document to the Defra and WAG plans and the plan made by the Cefas to deliver their responsibilities. It remains as a 'living' document to allow for organisational and personnel changes. The document should be read in conjunction with the Defra, Cefas and WAG plans.

In the event of an outbreak of GS on a cross border catchment, the Environment Agency will liase with the Scottish Executive and other Scottish institutions as necessary. However, the actions of the Environment Agency will remain the responsibility of the Central Committee whose decisions will have consideration of the opinions of the Scottish Executive. With regard to on the ground fisheries work, its is likely that the status quo will remain with the Tweed Commissioners taking ownership of the Tweed and the Environment Agency for the Eden and Border Esk.

2 Introduction

2.1 Gyrodactylus salaris

Gyrodactylus salaris is a freshwater monogenean parasitic fluke of Atlantic salmon. It is not present in England and Wales. Its natural host is the Baltic strain of Atlantic salmon, in which the parasite does not cause clinical disease. However, the transfer of the parasite to Norwegian Atlantic salmon strains in the late 1970's produced disease outbreaks resulting in an average loss of 89% of salmon from infected rivers. A total of 42 rivers in Norway have been infected resulting in severe ecological damage and economic loss within affected catchments. Norwegian figures estimate that the introduction of *GS* to the country has resulted in a £150-175m cost to the economy in lost fishing revenues and in the costs of eradication operations. The Atlantic strain of Atlantic salmon present in Norway is the same as in England and Wales. Experimental exposure of UK stocks to *GS* has shown they are susceptible to the parasite.

To date, *GS* has not been detected in England and Wales or other parts of the UK. An outbreak in the UK has the potential to cause similar catastrophic ecological effects and long-term economic impacts similar to those seen in Norway, particularly within the infected river catchments. If the salmon fisheries of England and Wales were lost, this would represent a net economic loss of about a quarter of a billion pounds with particular effects on fishery owners and the 30,000 or so salmon fishermen (mostly anglers). The

character of our salmon rivers is such that eradication of the disease with current methods available would not be viable in most places and hence salmon stocks would not be able to recover. The parasite can also infect mature rainbow trout, which, through fish movements between fish farms and also stocking to the wild poses probably the greatest risk of its transfer between catchments. The parasite can also be carried, but not complete its life-cycle, on brown trout, grayling, char, brook trout and eels. Whilst no evidence is yet available, it is likely that other fish species could also carry the parasite.

The Norwegian experience demonstrated that the parasite is not readily detected in the wild, leading to significant risk of transfer between catchments and onwards before its presence is recognised and controls can be implemented for containment. The initial detection of the parasite in Norway occurred at least one year after its arrival. Impacts, in terms of significant fish loss, tend to occur 2 years after introduction. In the UK the many fish transfers that take place could readily lead to broad dispersal before its presence was realised.

Under the EU Fish Health Regime, *GS* is a List III Notifiable disease. This means that should an outbreak be detected, any member state with additional guarantees for that disease (such as the UK) must apply measures to contain and eradicate the disease via a Contingency Plan. As eradication is currently very difficult, the Contingency Plan will aim in the first instance to limit the subsequent spread of the parasite, enabling later consideration of eradication options on a catchment-by-catchment basis.

3. Contingency Plan partners

Defra and WAG are responsible for leading the response to an outbreak of *GS* in England and Wales respectively. Centre for Environment Fisheries and Aquaculture Science (Cefas) including the Fish Health Inspectorate (FHI) deliver the operational response. The Environment Agency's role is to support that response (operating under our statutory duties to maintain, improve and develop fisheries and responsibilities under the Disease of Fish Act to report suspicion of a notifiable disease outbreak). Board approval was given to the principles of our response and support role to Defra/ WAG, now established in this Contingency Plan. This Plan is a partner document to the Defra/ WAG and Cefas Plans (see Fig. 1) and stands as part of the Environment Agency's major incident response guidance for Fisheries.

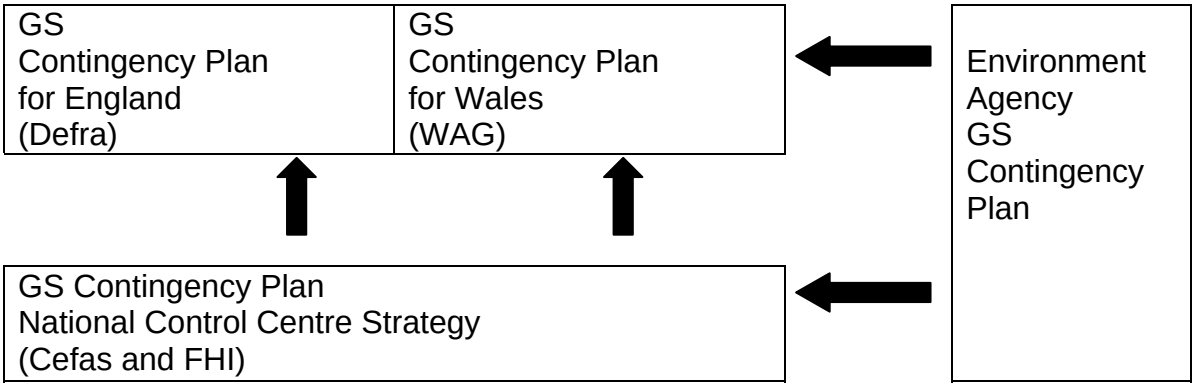


Figure 1 Relationship between Government partner plans in combating an outbreak of Gyrodactylus salaris in England and Wales

Defra and WAG have established the responses for England and Wales in the documents; 'Contingency Plan for Containing and Eradicating *Gyrodactylus salaris* in England' and the partner document for Wales. These are supported by the Cefas National Control Centre (NCC) Strategy document.

This Plan outlines the role of the Environment Agency, its inter-relationship with the roles of Defra/ WAG and Cefas and the relevant chain of command and notification procedures should an outbreak occur. It therefore forms a key component of the Government's integrated response to a *GS* outbreak. The Environment Agency response will include providing significant manpower and other resources at the local operational (Area) level to undertake particular tasks and duties to contribute to the incident response.

4. Environment Agency Roles and Responsibilities

The Defra and WAG contingency plans clearly set out the roles and responsibilities of both Cefas and the Environment Agency. The Environment Agency will:

- develop a strategy in consultation with Defra/ WAG and Cefas for reorganising its resources to assist Defra/ WAG on the matters identified in this Contingency Plan to help contain and eradicate GS; and, specifically, it will:
  - report any suspicion that it may have of infection to the Head of the Fisheries Health Inspectorate (FHI);
  - assist Cefas to establish the distribution of the parasite through sampling.
  - maintain the Environment Agency contact details to enable mail-shot communications to owners or occupiers of non-farmed waters and users of such waters such as angling, canoeing, wind-surfing, rowing, sailing, sub-aqua, diving, clubs etc to communicate on any GS outbreak, and the joint action being taken by the FHI, Defra/ WAG and the Agency.

- remove dead and dying fish from non-farm waters, and ensure their safe disposal;
- if authorised by the Secretary of State under the Diseases of Fish Act 1937, remove healthy fish from non-farm waters and ensure their safe disposal;
- if warranted as Fish Health Inspectors, provide support to the Inspectorate through inspection of fish farms and non-farm sites for disease and/or compliance with any movement restrictions (making full use of the Agency/Cefas live fish movements database);
- assist the Head FHI/Director NCC in the delineation of Designated Area Order (DAO) areas and disease enforcement buffer zones;
- assist with publicising control measures and movement restrictions; Assist with contact tracing through the use of records of consents under Section 30 of the Salmon and Freshwater Fisheries Act 1975 and Environment Agency regional byelaw consents.'

5. Activation of the Contingency Plan

5.1 England &Wales Government Response

The Defra and WAG contingency plans require the setting up of two key groups to manage the incident. These are the Central Committee (CC) and the National Control Centre (NCC). The Central Committee will be established by Defra/WAG and will direct, maintain and oversee the implementation of the Contingency plan. The CC is a strategic decision-making body. The group will be comprised of representatives of Defra/WAG, Cefas, Animal Health Division, State Veterinary Service and the Environment Agency (Liaison Officer).

Cefas will establish the NCC at its Weymouth Laboratory. The NCC is a tactical decision-making body. This group will be comprised of delegates from Cefas including the Fish Health Inspectorate and the Environment Agency (Liaison Officer).

There are two Levels:

- On Level 1 (initial) suspicion of *G.salaris* being detected in England, Wales or Scotland the NCC will be convened, all partners will be notified and Cefas will take samples for testing;
- On Level 2 suspicion (probable outbreak) and / or confirmation that G.salaris has been detected the Contingency Plan will be invoked and the CC convened.

5.2 Notification Procedures

Level 1 Initial Suspicion of a *G.salaris* Outbreak

At Level 1, the NCC is responding to an initial suspicion of an outbreak of *GS*. This information may come from the FHI, a fish farmer, anglers, a vet, a member of the public or an Environment Agency employee. Therefore, it is necessary for all Environment Agency field staff to be made aware of their responsibility to act on any suspicion of the presence of *GS* in the wild. Unlike with other fish diseases a *GS* outbreak is not likely to result in large numbers of dead fish. Over the course of a number of years the parasite causes a crash in juvenile salmon stocks, i.e. smolt and parr numbers. It is this dramatic reduction that is likely to be picked up.

Environment Agency Emergency Contact Numbers	
RCC	**Tel. No.**
Anglian	01733 464 290
EA Wales	02920 466 423
Midlands	0121 711 5900
North East	0113 231 2080
North West	01925 417 652
Southern	01903 832 105
South West	01392 442 009
Thames	0118 953 5351
Incidents Process (0900-1700hrs)	0117 914 2613
Thames Barrier (24hrs)	0208 293 4954

Notification procedure:

The NCC should contact the Environment Agency Regional Communication Centre (RCC) for the catchment concerned (see above table). The RCC will take the details, record as an incident on NIRS and pass the details to the Competent Officer. This will be the Environment Management Duty/standby Officer.

The Competent Officer should identify this as a potential Category 1 incident and appoint an Area Base Controller (ABC) who should open the Area

Incident Room to manage the incident. (The Area Base Controller is likely to be area EM staff with incident management expertise. Technical back up for the ABC with come from the area Fisheries Technical or FRB team). This would be the trigger for the ABC to send a HELP report which will notify senior management at a National Level - this will include the Head of Fisheries and the technical advisor for fish health based at Brampton.

Level 2 Reasonable Grounds for Suspicion of a GS Outbreak

At Level 2, there are reasonable grounds for suspicion of an outbreak after examination of samples at the Cefas laboratory or from the field observation of clinical signs or mortalities. At this Level, the Head of FHI alerts the NCC Director, Defra/WAG & the Environment Agency. It is at this point that the Integrated Contingency Plan is activated and the CC and NCC crisis centres are fully mobilised.

Notification Procedure:

The NCC should contact the Environment Agency nationally via Incidents Process during Office hours and Thames Barrier out of office hours (see above table). The Director of Operations (via Incident Process) or National Duty Manager (NDM), via Thames Barrier, will decide whether to declare a national major incident, appoint a National Base Controller (NBC) and open the National Incident Room (NIR).

The NBC will decide what needs to be done in the regions, i.e. should all regions appoint Regional Base Controllers and open Regional Incident Rooms etc. A Technical Task Team composed of relevant fisheries experts from policy and process and the Technical teams will be formed to support the NBC. The NBC will appoint the Liaison Officers to go to the NCC and CC. The Liaison Officers will maintain the link between the CC/ NCC and the Environment Agency (NBC) providing briefings and decisions on the required actions. The NBC will disseminate this to Regions who will co-ordinate Area action managed by the ABCs. NBC will generate national situation reports (national SITREPS) for Defra/ WAG and Cefas collated from information in Regional SITREPS.

Please note that under Level 1 where there has been contact at the local level with ABC(s) this would continue upon subsequent activation of Level 2.

At the earliest opportunity, the Environment Agency would take the decision, with input from the NCC, to close the incident rooms when the incident response phase is at an end. A project team with a mix of the right policy, operational and technical staff would be formed to manage the medium to long term monitoring, containment and eradication plans including any policy change requirements.

Notification Procedures on Suspicion/ Confirmation of GS

Level One

NCC
(CEFAS – FHI)
- Notify the Environment Agency locally

→

Environment Agency RCC
- Record incident on to NIRS
- Assign a Competent Officer (EM duty/ Standby Officer)

↓

Competent Officer
- Classify the Incident as a Cat 1
- Appoint ABC

↓

ABC
- Open Area Incident Room
- Send out HELP report

Level 2

NCC
(CEFAS – FHI)
- Notify the Environment Agency nationally

→

Environment Agency Incident Process/ Thames Barrier
- Notify Director of Operations or National Duty Manager

↓

DoO/ NDM
- Declare a major national incident
- Appoint NBC

↓

NBC
- Open National Incident Room
- Appoints RBCs
- Form Tech support team
- Appoint Liaison Officers to the CC and NCC.

6. Incident Response

6.1 Sampling regime for river catchments adjacent to *Gyrodactylus salaris* outbreaks

Introduction

In the event of detection of *Gyrodactylus salaris* (GS) in a river in England, Wales or Scotland early establishment of the extent of spread to adjoining or adjacent rivers will be required.

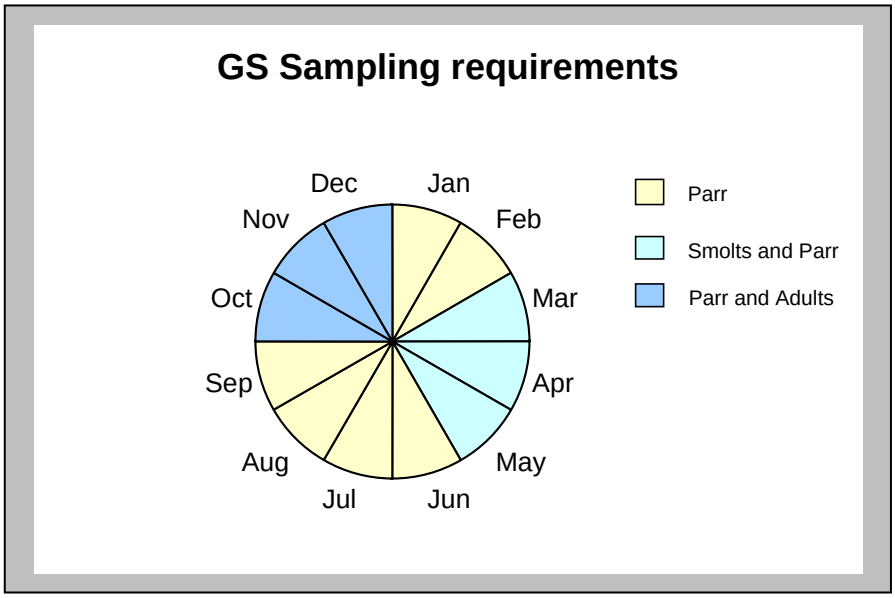
GS is primarily a parasite of juvenile (freshwater) stages of salmon. It can infect and survive on other salmonids and other fish species; however, the establishment of a long-term population is limited to salmon and, at low levels, rainbow trout. Attempts to establish the parasites presence in a river should, therefore, be targeted at juvenile salmon populations. GS cannot survive in seawater, therefore the value of examining recently returned adult fish is limited.

Where freshwater links are present between rivers the Norwegian experience would suggest that, unless there are significant barriers to salmon migration, the spread of GS is likely.

Sampling Methods

GS is primarily present on juvenile salmon (parr and smolts). Depending on the time of year sampling should, therefore, prioritise the collection of parr and smolts. Outside the months of the year when smolts are present, sampling should target parr only. The use of adult fish should be limited to the winter, to fish target fish that have been present in the river for sometime.

The smolt run varies in time and duration between rivers and is considered to be dependant on a number of factors. Local experience should therefore be applied as to the value of selecting smolts for examination earlier or later in the spring. However, the following provides a guide to sampling requirements through the year.



Sample requirements

Experience of the outbreaks in Norway have suggested a significant time lag between introduction of GS to a river and the development of parasite numbers to a level where mortality occurs and is detectable. Before that occurs the parasite exists at low levels within the host population. Sample size requirements should therefore target a low 2% infection level.

In order to detect an infection level of 2% to 95% confidence limits 150 fish are required to be sampled from a population, assuming equal susceptibility for all fish sampled.

Therefore, to establish absence of GS from a river a minimum of 150 fish should be examined. The 150 can be made up of smolts, parr and adults, as appropriate at the time of year.

Where more than one site is sampled a minimum of 30 fish from each site should be collected.

Feasibility

In many rivers in England and Wales the capture of 150 salmon of any life stage would represent a significant portion of the population and in some cases may not be possible.

In such cases the number of fish caught and examined will be subject to ongoing assessment through contact with the NFTT (National Fisheries Technical Team) at Brampton. Where populations limit the number of fish caught the confidence limits will be recalculated before conclusions on the absence of the parasite are made.

Target locations

Smolts
Due to the downstream migration of smolts and the greater detectability of GS on this life stage, smolts should be targeted in the lower freshwater reaches of the river.

Parr
In order to increase the chances of detecting the presence of GS at an early stage after introduction parr should be sampled from the upper, middle and lower reaches of their natural range, with a minimum of 30 fish collected from each section. In addition minor tributaries and spawning streams should be sampled.

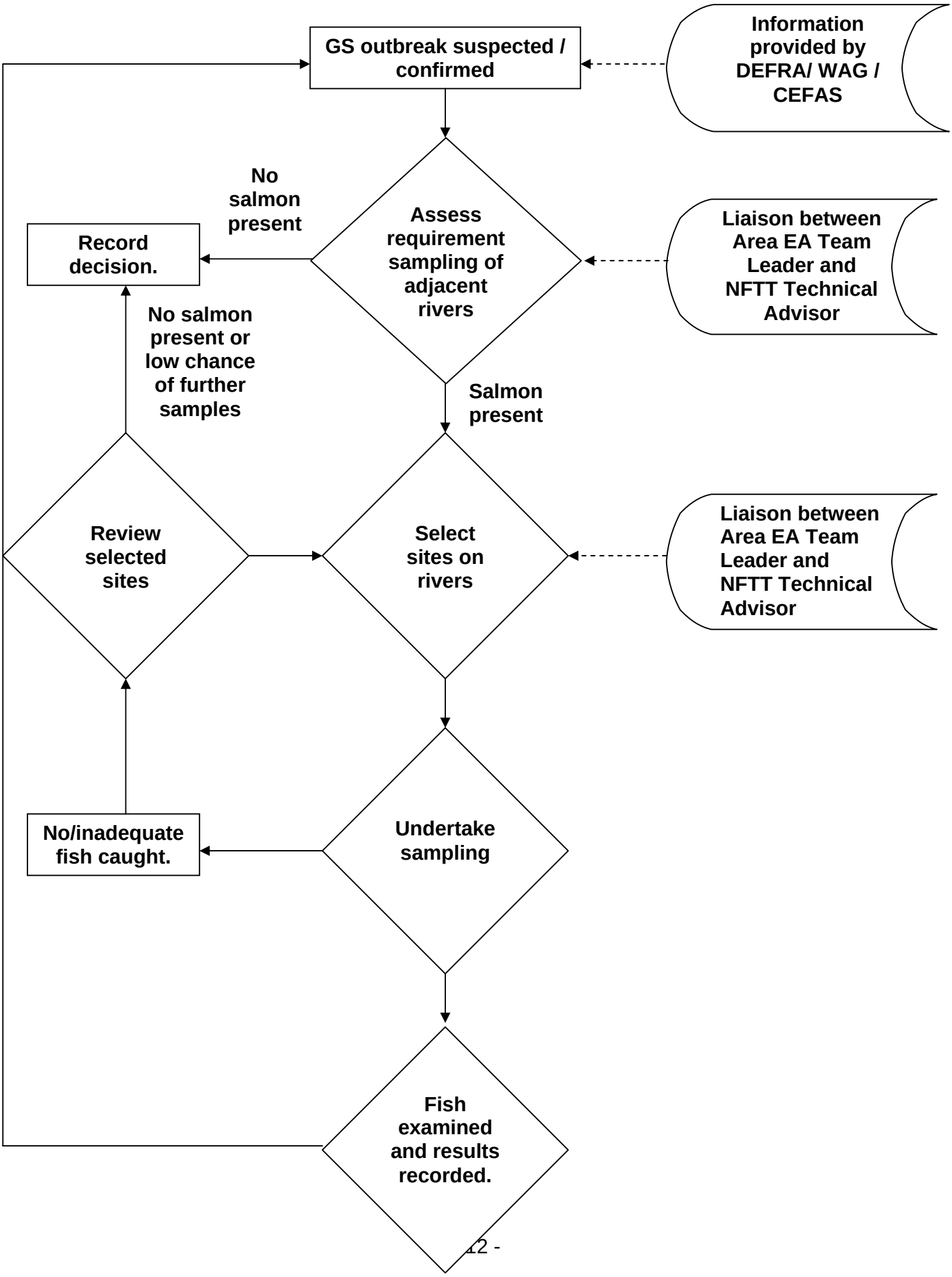
Adults
At the appropriate time of year adults can be included in the samples of parr and contribute towards the total of 150 fish where and when they are found in the river. However, it is envisaged that the contribution of adult fish to the sample is likely to be minimal.

Sampling methods

Selected sampling methods will depend on the nature of the river sampled. For the most part these will be in line with the usual sampling method adopted by the local Environment Agency Ecological Appraisal Team. Primarily this is likely to involve electro-fishing. However, as the sampling is destructive (i.e. the fish will not be returned) other methods, including gill netting, may be considered.

Consultation with NFTT

Before sampling, advice may be sought from the National Fisheries Technical Team, Brampton with respect to the specific features of sampled rivers. See flow chart below.


GS outbreak suspected / confirmed
Information provided by DEFRA/ WAG / CEFAS
Assess requirement sampling of adjacent rivers
No salmon present
Record decision.
Liaison between Area EA Team Leader and NFTT Technical Advisor
No salmon present or low chance of further samples
Salmon present
Review selected sites
Select sites on rivers
Liaison between Area EA Team Leader and NFTT Technical Advisor
No/inadequate fish caught.
Undertake sampling
Fish examined and results recorded.

6.2 Actions and resources required to meet different scenarios

The following scenarios present different extents of suspicion of infection by Gs and report the likely appropriate actions for the Environment Agency and CEFAS.

Scenario A – Infection in an isolated area

A1) Single rainbow trout farm in a catchment that does not contain wild salmon (i.e. in East Anglia)

Controls

The parasite could be eradicated by destocking and fallowing the farm under the supervision of CEFAS.

The EA could electro-fish upstream and down stream of the farm to remove and dispose of escapee rainbow trout. Note in low conductivity waters other methods may need to be employed.

The farm would then be fallowed until all escaped rainbow trout in the adjacent river have died or been removed. Extensive surveys of wild fish would establish the absence of rainbow trout.

Movement controls: see DAO summary, Table 1.

Surveillance

The EA would undertake surveillance on the adjacent river to monitor the presence of rainbow trout and confirm when these have died out. Surveillance would be undertaken for a period of at least 2 years following destocking of the rainbow trout farm. Sampling would take place twice a year at 3 or more sites.

The EA would undertake surveillance and sampling (assisted by CEFAS) on any adjacent catchments which contain salmon: two visits to 3 sites per catchment for 5 years after the complete removal of rainbow trout from the index catchment (autumn surveillance targeting parr, spring sampling focussed on smolts (assisted by trapping)).

Enforcement

Negligible – intelligence led (case by case)
CEFAS would assess whether the farm was likely to attempt to sell stock to other sites in the period after detection and before fallowing. Areas and Cefas would be supported by the NFMET.

A2) Small salmon river in an isolated area with no fish farming

Controls

The parasite could be eradicated by removal of the host. This would be achieved by the construction of barriers to prevent the upstream migration of returning adults (this would also block other anadromous salmonids) and by actively seeking and destroying redds and / or by chemical treatment (e.g. rotenone). The removal of fish by an extensive programme of electro-fishing and netting may be considered, where water conductivity was conducive.

Surveillance

EA would conduct survey work on the infected catchment to monitor the decline and eradication of the salmon population and the dynamics of the Gs infection on any salmon, while remaining. This would involve two visits to 3 sites per year for 5 years after eradication of GS (on a small catchment, this would assist the eradication process greatly).

EA would undertake surveillance and sampling (assisted by CEFAS) on adjacent catchments: two visits to 3 sites per catchment for 5 years after the complete removal of GS from the infected river.

Enforcement

Negligible – intelligence led (case by case)
reduce poaching controls
Areas and Cefas would be supported by the NFMET.

CEFAS resources: FHI Inspector present at field sampling
Laboratory - processing and identification of samples

Preservation of genetic material

The planning and execution of chemical treatment can take 2 years, the use of barriers up to 5 years to eliminate the host population and hence the parasite. During this period, the EA may decide to trap returning salmon, and keep them in a broodstock facility where they can be stripped. If these stocks were bred and maintained, the river could be restocked, following elimination of the parasite, with salmon native to the river. However, if the river has been subject to extensive stocking with other strains of salmon, there would be little to be gained.
The legal position on the installation of barriers preventing upstream migration still requires clarification.

A3) Fully Enclosed stillwater rainbow trout fishery (see A1 for online)

Controls

The parasite could be eradicated by destocking and fallowing (supervised by EA). Fishing-out and withholding of consent to restock (based on risk) may be an effective eradication method. However, it may be necessary to consider chemical treatment. The EA have experience of using rotenone in enclosed stillwaters (e.g. the recent elimination of top-mouth gudgeon from Ratherheath tarn).

Rainbow trout will only be able to over-winter in large stillwaters where removal of fish by netting would not be possible (chemical treatment may be necessary in these cases).

Before elimination of the parasite, measures are required to minimise the low risk of spread of the parasite through recreational use of the lake, e.g. disinfection controls for anglers (implemented through codes of practice) and disinfection controls for other water users, e.g. canoeists (also implemented through codes of practice).

The water could not be restocked until at least 12 months after fallowing and surveys to establish absence of fish.

Surveillance

Elimination of fish from the stillwater would be confirmed through surveys to ensure that all fish had been removed. Monitoring methods would be dependent on the characteristics of the infected water (e.g. may be achieved by seine netting).

Scenario B - Containment in a limited number of infected catchments

The infected catchments may be geographically widespread; some will have salmon and / or farmed rainbow trout. In this scenario, complete eradication would not be possible and therefore we would not regain GS free status for England and Wales. The country would be divided into GS free and GS infected zones. Eradication could be attempted in rivers where there are infected rainbow trout farms, but no salmon, by destocking and fallowing.

Controls

Disinfection controls for anglers (implemented through codes of practice)

Disinfection controls for other water users, e.g. canoeists (implemented through codes of practice)

Fishery owners may wish to stock rivers with salmon so that recreational fishing for salmon can continue. Stocking will increase the infection pressure in a river, and might increase the risk of spread to neighbouring uninfected rivers. Decisions would be risk assessed on a case-by-case basis, taking account of risk versus social and economic impacts.

Surveillance

EA would undertake surveillance and sampling on all infected catchments (two visits to 3 sites per catchment per year) to monitor the dynamics of the infection and the response of UK salmon stocks to the parasite for continued policy development. This would continue long-term.

EA would undertake surveillance and sampling on uninfected catchments (two visits to 3 sites per catchment per year) to confirm infection status in these waters, and to monitor effectiveness of the containment policies. This would continue long-term.

Enforcement

Movement between catchments of live fish would need to be enforced. Areas and Cefas would be supported by the NFMET.

Scenario C - Preservation of a limited number of uninfected catchments

All efforts would be directed towards keeping the parasite out of a small number uninfected river catchments. A high level of cooperation from fishery owners can be expected since they will have strong financial drivers to protect the remaining salmon fisheries.

Controls

Movement controls: A permanent DAO would be placed on the whole of England and Wales with the exclusion of confirmed uninfected catchments. The main risk of spread will be from movement of vehicles and equipment from infected areas to uninfected farms. All fish transporters and feed lorries entering uninfected regions would be disinfected under CEFAS supervision. Ova would be allowed into uninfected catchments following disinfection supervised by CEFAS.

Codes of practice would need to be developed for recreational users of uninfected salmon rivers. Anglers fishing uninfected rivers would need to provide evidence that their equipment had been disinfected before use. Similarly, canoes or other boats that may move from infected rivers would need to provide evidence that measures to prevent spread had been observed.

Surveillance

The Agency would undertake routine surveillance and sampling on uninfected catchments (two visits to 3 sites per catchment per year) to maintain disease free status in these waters. This will continue long-term. Levels of sampling will have to be gauged on available stocks and their sustainability and would be further dependant on the impact of GS.

EA would also undertake surveillance and sampling in infected catchments.

Table 1. Summary of live fish movements into and out of Gs DAO:

	Fish species groups				
Potential movement	**Coarse fish (inc. carp)[1]**	**Trout (other than rainbow), grayling, Eels[2]**	**Rainbow trout**	**Salmon**	**Salmon Ova**
Section 30 introduction to fully enclosed stillwater within DAO	✓	✓	✓	×	×
Byelaw removal from fully enclosed Stillwater within DAO	✓	✓*	×	×	×
Section 30 introduction into on-line or within floodplain stillwater within DAO	✓	✓	×	×	×
Byelaw removal from on-line or within floodplain stillwater within DAO	✓*	×	×	×	×
Introduction to fish farm in DAO	✓	✓	×	×	×
Removal from fish farm in DAO	✓*	✓*	×	×	×
Section 30 introduction into open watercourse in DAO	✓	✓	×	×	×
Byelaw removal from open watercourse in DAO	×	×	×	×	×

[1] Assumes no salmonids (including grayling) or eels are present at the source site
[2] Assumes no salmon or rainbow trout are present at the source site

6.3 Biosecurity Measures

All environment Agency field operations should continue as normal following the biosecurity protocols set out by Cefas. Where adequate biosecurity arrangements cannot be put in place, that operation/ equipment should not move between catchments and advice should be sought from Cefas via the appropriate ABC.

6.4 Water Transfer Schemes

Where catchments are connected by water transfer schemes, but GS is only detected in one catchment, both catchments would be place under a Designated Area Order. This may be the same order of for otherwise non-contiguous catchments separate DAOs may be placed.

Although it is considered possible under a DAO, it is unlikely that any water transfer scheme would be switch off due to the overriding socio-economic impacts.

A2) Small salmon river in an isolated area with no fish farming

Controls

The parasite could be eradicated by removal of the host. This would be achieved by the construction of barriers to prevent the upstream migration of returning adults (this would also block other anadromous salmonids) and by actively seeking and destroying redds and / or by chemical treatment (e.g. rotenone). The removal of fish by an extensive programme of electro-fishing and netting may be considered, where water conductivity was conducive.

Surveillance

EA would conduct survey work on the infected catchment to monitor the decline and eradication of the salmon population and the dynamics of the Gs infection on any salmon, while remaining. This would involve two visits to 3 sites per year for 5 years after eradication of GS (on a small catchment, this would assist the eradication process greatly).

EA would undertake surveillance and sampling (assisted by CEFAS) on adjacent catchments: two visits to 3 sites per catchment for 5 years after the complete removal of GS from the infected river.

Enforcement

Negligible – intelligence led (case by case)
reduce poaching controls
Areas and Cefas would be supported by the NFMET.

CEFAS resources: FHI Inspector present at field sampling
Laboratory - processing and identification of samples

Preservation of genetic material

The planning and execution of chemical treatment can take 2 years, the use of barriers up to 5 years to eliminate the host population and hence the parasite. During this period, the EA may decide to trap returning salmon, and keep them in a broodstock facility where they can be stripped. If these stocks were bred and maintained, the river could be restocked, following elimination of the parasite, with salmon native to the river. However, if the river has been subject to extensive stocking with other strains of salmon, there would be little to be gained.
The legal position on the installation of barriers preventing upstream migration still requires clarification.

A3) Fully Enclosed stillwater rainbow trout fishery (see A1 for online)

Controls

The parasite could be eradicated by destocking and fallowing (supervised by EA). Fishing-out and withholding of consent to restock (based on risk) may be an effective eradication method. However, it may be necessary to consider chemical treatment. The EA have experience of using rotenone in enclosed stillwaters (e.g. the recent elimination of top-mouth gudgeon from Ratherheath tarn).

Rainbow trout will only be able to over-winter in large stillwaters where removal of fish by netting would not be possible (chemical treatment may be necessary in these cases).

Before elimination of the parasite, measures are required to minimise the low risk of spread of the parasite through recreational use of the lake, e.g. disinfection controls for anglers (implemented through codes of practice) and disinfection controls for other water users, e.g. canoeists (also implemented through codes of practice).

The water could not be restocked until at least 12 months after fallowing and surveys to establish absence of fish.

Surveillance

Elimination of fish from the stillwater would be confirmed through surveys to ensure that all fish had been removed. Monitoring methods would be dependent on the characteristics of the infected water (e.g. may be achieved by seine netting).

Scenario B - Containment in a limited number of infected catchments

The infected catchments may be geographically widespread; some will have salmon and / or farmed rainbow trout. In this scenario, complete eradication would not be possible and therefore we would not regain GS free status for England and Wales. The country would be divided into GS free and GS infected zones. Eradication could be attempted in rivers where there are infected rainbow trout farms, but no salmon, by destocking and fallowing.

Controls

Disinfection controls for anglers (implemented through codes of practice)

Disinfection controls for other water users, e.g. canoeists (implemented through codes of practice)

Fishery owners may wish to stock rivers with salmon so that recreational fishing for salmon can continue. Stocking will increase the infection pressure in a river, and might increase the risk of spread to neighbouring uninfected rivers. Decisions would be risk assessed on a case-by-case basis, taking account of risk versus social and economic impacts.

Surveillance

EA would undertake surveillance and sampling on all infected catchments (two visits to 3 sites per catchment per year) to monitor the dynamics of the infection and the response of UK salmon stocks to the parasite for continued policy development. This would continue long-term.

EA would undertake surveillance and sampling on uninfected catchments (two visits to 3 sites per catchment per year) to confirm infection status in these waters, and to monitor effectiveness of the containment policies. This would continue long-term.

Enforcement

Movement between catchments of live fish would need to be enforced. Areas and Cefas would be supported by the NFMET.

Scenario C - Preservation of a limited number of uninfected catchments

All efforts would be directed towards keeping the parasite out of a small number uninfected river catchments. A high level of cooperation from fishery owners can be expected since they will have strong financial drivers to protect the remaining salmon fisheries.

Controls

Movement controls: A permanent DAO would be placed on the whole of England and Wales with the exclusion of confirmed uninfected catchments. The main risk of spread will be from movement of vehicles and equipment from infected areas to uninfected farms. All fish transporters and feed lorries entering uninfected regions would be disinfected under CEFAS supervision. Ova would be allowed into uninfected catchments following disinfection supervised by CEFAS.

Codes of practice would need to be developed for recreational users of uninfected salmon rivers. Anglers fishing uninfected rivers would need to provide evidence that their equipment had been disinfected before use. Similarly, canoes or other boats that may move from infected rivers would need to provide evidence that measures to prevent spread had been observed.

Surveillance

The Agency would undertake routine surveillance and sampling on uninfected catchments (two visits to 3 sites per catchment per year) to maintain disease free status in these waters. This will continue long-term. Levels of sampling will have to be gauged on available stocks and their sustainability and would be further dependant on the impact of GS.

EA would also undertake surveillance and sampling in infected catchments.

Table 1. Summary of live fish movements into and out of Gs DAO:

	Fish species groups				
Potential movement	**Coarse fish (inc. carp)[1]**	**Trout (other than rainbow), grayling, Eels[2]**	**Rainbow trout**	**Salmon**	**Salmon Ova**
Section 30 introduction to fully enclosed stillwater within DAO	✓	✓	✓	×	×
Byelaw removal from fully enclosed Stillwater within DAO	✓	✓*	×	×	×
Section 30 introduction into on-line or within floodplain stillwater within DAO	✓	✓	×	×	×
Byelaw removal from on-line or within floodplain stillwater within DAO	✓*	×	×	×	×
Introduction to fish farm in DAO	✓	✓	×	×	×
Removal from fish farm in DAO	✓*	✓*	×	×	×
Section 30 introduction into open watercourse in DAO	✓	✓	×	×	×
Byelaw removal from open watercourse in DAO	×	×	×	×	×

[1] Assumes no salmonids (including grayling) or eels are present at the source site
[2] Assumes no salmon or rainbow trout are present at the source site

6.3 Biosecurity Measures

All environment Agency field operations should continue as normal following the biosecurity protocols set out by Cefas. Where adequate biosecurity arrangements cannot be put in place, that operation/ equipment should not move between catchments and advice should be sought from Cefas via the appropriate ABC.

6.4 Water Transfer Schemes

Where catchments are connected by water transfer schemes, but GS is only detected in one catchment, both catchments would be place under a Designated Area Order. This may be the same order of for otherwise non-contiguous catchments separate DAOs may be placed.

Although it is considered possible under a DAO, it is unlikely that any water transfer scheme would be switch off due to the overriding socio-economic impacts.