
Annex 1

Foot and Mouth Disease

*Annex 1 to Scotland's
Exotic Animal Disease
Contingency Framework
Plan*

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Foot and Mouth Disease

Introduction

1. This document should be read in conjunction with the Scottish Government Framework Contingency Plan for animal disease, where the disease control concepts and actions are set out.

Description of Foot and Mouth Disease

Summary characteristics of the disease and its spread

2. Foot and mouth disease is a highly virulent, infectious and contagious disease of cloven hoofed animals, principally cattle, sheep, pigs and goats but it also affects deer, members of the camel and llama family and some other species of animals. It has only very rarely been recorded as affecting human beings, if at all. The virus does not infect horses, dogs and cats although these animals can spread the disease mechanically if, for example, their feet are contaminated with the virus.
3. Foot and mouth disease is caused by a virus. It is the most infectious and contagious animal disease known. In cattle, sheep, pigs and goats the disease causes fever, loss of appetite and painful vesicles (blisters) in the mouth and on the feet giving rise to acute lameness. In cattle the blisters in the mouth give rise to characteristic drooling of saliva and "lip smacking". The blisters are short lived and fragile bursting within 48 hours leaving a red raw surface. The incubation period of the disease i.e. the period from when an animal is first infected with the virus to when it shows clinical signs of disease is typically 3 to 5 days but may be as short as 36 hours depending on the susceptibility of the animal to the virus and the infectious dose (amount of virus) infecting the animal. On occasion the incubation period can be longer but does not normally exceed 14 days. Some animals may be capable of infecting other animals during the incubation period of the disease i.e. before the disease may be seen by the keeper. Because disease may go unnoticed in individual animals within a sheep flock, for control purposes the incubation period in sheep is considered to be 21 days.

Carrier state

4. The acute phase of the disease lasts for about a week after which the animals enter a convalescent phase. Most animals are no longer infectious after the acute phase but a carrier state is known to exist in cattle and sheep, where virus can be isolated from the pharynx of some animals many months after apparent recovery from the disease. In cattle the carrier state may last in excess of 24 months and in sheep up to 9 months. A carrier state is not known to exist in pigs. It is not known whether animals in a carrier state are capable of infecting other animals. They may excrete virus intermittently and there is circumstantial evidence that disease may be spread by carrier animals. A carrier state may also partly explain the persistence of the disease in some countries, for example, in buffalo in Africa.

Routes of spread

5. Foot and mouth disease virus is excreted in milk, semen, urine, faeces, saliva, mucous secretions of the nose and eyes and on the breath of animals as aerosol. Depending on the virus subtype and species of animal affected, vast quantities of virus may be excreted by these routes, heavily contaminating the environment. The disease may therefore be spread by direct contact between animals, if infected animals are moved or indirect contact by the movement of people vehicles and things contaminated by infectious faeces, urine, saliva etc. Virus may also survive for long periods in milk, milk products, meat and meat products from infected animals, depending upon how products are processed and they may be a source of infection. This period can be many months and may be indefinite if the product is frozen.
6. Because the virus is excreted on the breath as an aerosol by diseased animals the disease may be spread by this route between animals. Normally this spread is localised depending on the microclimate of up to a few hundred metres. Exceptionally, if the weather conditions are suitable (temperature, humidity and slow moving air such that the virus aerosol is not dispersed) windborne spread of the virus may occur over tens of kilometres, particularly over still expanses of water. Infected pigs, depending on the sub type of foot and mouth disease virus may excrete vast quantities of virus on their breath and an infected pig herd may generate a large infectious aerosol cloud presenting a great risk to susceptible animals downwind. It is therefore particularly important that infected, or potentially infected (dangerous contact) pig herds are killed quickly to prevent the generation of virus.

Role of wildlife in spread and maintenance of disease

7. Foot and mouth disease can affect wild cloven hoofed animals and pigs and these could be a source or reservoir of infection for domestic livestock. Under UK conditions the species that could become infected are deer, feral goats, sheep and pigs, and wild boar. There are no known colonies of wild boar in Scotland. The Scottish Government through the Scottish Agricultural College (SAC) and Science and Advice for Scottish Agricultural Scientific (SASA) will, where there is a potential risk, monitor wildlife in an outbreak of foot and mouth disease. There have been a number of incursions of foot and mouth disease into Great Britain's farm livestock in the 20th Century and two in this century. Despite monitoring wildlife on these occasions, there has been no evidence of disease in wildlife. In the unlikely event of a future outbreak where wildlife did become infected, a control and monitoring programme would be put in place by the Scottish Government with every effort made to prevent the disease becoming endemic in Great Britain.

Species differences

8. Some species may be more susceptible to particular strains of virus than others. As a general rule, pigs and cattle excrete the most virus and pose the greatest risk of spread of disease. Sheep excrete relatively less virus and disease spreads slowly in

a flock. It should be noted however that if infected sheep abort then the products of abortion are potentially very potent sources of infection. The disease is much less obvious in sheep than in cattle and pigs. Pigs tend to become infected by eating contaminated food and cattle and sheep tend to be infected by aerosol. The feeding of contaminated waste food to pigs has been the source of many outbreaks of foot and mouth disease around the world and it is for this reason that waste food feeding of pigs is banned in the United Kingdom and EU.

Summary characteristics of the virus of foot and mouth disease

9. Foot and mouth disease virus is a virus of the Picornaviridae family, (a small RNA virus). Seven distinct serotypes are recognised based on the immunological properties; they are:
 - A
 - O
 - C
 - SAT1
 - SAT2
 - SAT3
 - Asia1
10. However it should be recognised that within each broad serotype there will be a large number of subtypes which are also immunologically distinct and which may have distinct disease properties in terms of their ability to infect different species of animals. The variation of antigenic and immunological properties of the many subtypes of virus means that there will be variations in the effectiveness of laboratory tests and the efficacy of particular vaccines to provide protective immunity. See [Vaccination](#) below. It is also possible that the properties and nature of a particular virus may change during the course of an outbreak.
11. The foot and mouth disease virus survives best in the environment at low temperatures in moist conditions which are not too acidic or alkaline (pH 6 to 9). It may survive indefinitely following freezing and for many weeks in the environment under the right conditions of temperature and humidity. It is inactivated under acidic conditions (pH<6) or alkaline conditions (pH>9).
12. Foot and mouth disease virus is inactivated in solutions of 2% sodium hydroxide, 4% sodium carbonate and 0.2% citric acid and by disinfectants approved under the The Diseases of Animals (Approved Disinfectants) (Scotland) Order 2008. It is important to remember that disinfectants are rapidly inactivated in the presence of organic material and to be effective, surfaces should be clean i.e. visibly free of dirt and grime before the application of disinfectant.

Links to further sources of information about foot and mouth disease

- How to spot foot and mouth disease
<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/factsheet1.pdf>
- Clinical signs of foot and mouth disease including pictures
<http://www.defra.gov.uk/animalh/diseases/fmd/about/clinical.htm>
- Foot and Mouth Disease - Ageing of Lesions
<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/ageing-lesions.pdf>
- Summary profile for Foot and Mouth Disease
<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/profiles/sp-fmd.pdf>
- Full disease profile for Foot and Mouth Disease
<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/profiles/fmd-fullprofile.pdf>
- OIE FMD technical disease card
http://www.oie.int/eng/maladies/en_fiches.htm?e1d7

Prevention is better than cure

13. As for all animal diseases the livestock keeper has a vital role in prevention of disease, early recognition and reporting of disease and preventing the spread of disease. This role is set out in the leaflet linked below:

Biosecurity – Preventing the introduction and the spread of foot and mouth disease
<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/factsheet2.pdf>

For ease of reference this leaflet has been reproduced at Appendix 1 to this Annex

In the event of an outbreak of foot and mouth disease the following link sets out what will happen to individual livestock keepers and their responsibilities:

What will happen when foot and mouth disease is suspected or confirmed?
<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/factsheet3.pdf>

Legislation

14. There is a wide range of legislation giving Scottish ministers the necessary powers to control animal disease. The principle legislation is given here in the links below:

EU

Community Measures for the Control of Foot and Mouth Disease (Directive (2003/85/EC))

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:306:0001:0087:EN:PDF>

National

The Animal Health and Welfare (Scotland) Act 2006

http://www.opsi.gov.uk/legislation/scotland/acts2006/asp_20060011_en_1.htm

The Foot-and-Mouth Disease (Scotland) Order 2006 (as amended)

http://www.opsi.gov.uk/legislation/scotland/acts2006/asp_20060011_en_1.htm

The Foot-and-Mouth Disease (Scotland) Amendment (No. 2) Order 2007

http://www.opsi.gov.uk/legislation/scotland/ssi2007/ssi_20070455_en_1

Rationale for Control

15. Foot and mouth disease does not normally kill animals; it may kill newborn animals and may cause abortions. The principle losses due to foot and mouth disease are general production losses often a result of secondary infections and diseases such as mastitis and foot infections. If no control measures are taken, then the disease will spread uncontrollably and become endemic (continuously present) in the country. In an endemic situation as immunity in the national herd or flock builds and wanes and with uncontrolled spread, waves of disease occur and long term economic production losses become enormous. With the limitations in current vaccines, there is no vaccine that will provide immunity against the wide range of existing foot and mouth disease serotypes and subtypes. Nor can current vaccines offer protection against the incursion of novel subtypes of foot and mouth disease virus which continue to emerge as the disease naturally evolves globally. Preventative or prophylactic vaccination requires the regular vaccination of successive generations of livestock. It is for this reason that many countries, including the EU, have opted for a policy of disease freedom without vaccination. There was an extensive economic study¹ carried out in 1989 that showed that despite occasional incursion into the EU, with current vaccines it is not economic to use preventative vaccination which, because of potential incomplete immunity, may mask the introduction of disease into a country making eventual eradication a difficult, costly and long term task.

Cost Benefit Analysis (CBA) of Foot and Mouth Disease Control Strategies

16. A cost benefit analysis of different foot and mouth disease control strategies has been carried out and this document and supporting documents may be found at the following links:

¹ Report from the Commission to the Council on a study carried out by the Commission on policies currently applied by Member States in the control of FMD SEC(89) 1731 final

- Cost Benefit Analysis of FMD Report May 2005
<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/costben.pdf>

Supporting CBA documents

- FMD CBA Epidemiological Model Specification and Description May 2005
http://www.defra.gov.uk/animalh/diseases/fmd/pdf/epidem_model.pdf
- Economic consequences Model: Input data and modelling assumptions May 2005
http://www.defra.gov.uk/animalh/diseases/fmd/pdf/economic_model.pdf
- CBA of Foot and Mouth Disease Control Strategies: Environmental Impacts May 2005
http://www.defra.gov.uk/animalh/diseases/fmd/pdf/environmental_report.pdf
- CBA of Foot-and-Mouth Disease Control Strategies: Tourism Damage and Disruption of Countryside Pursuits May 2005
http://www.defra.gov.uk/animalh/diseases/fmd/pdf/tourism_countryside_report.pdf
- Cost-Benefit Analysis of Foot and Mouth Disease Control Strategies: Wider Economic Costs May 2005
http://www.defra.gov.uk/animalh/diseases/fmd/pdf/economic-costs_report.pdf

Foot and Mouth Disease Control Strategy

17. In the event of an outbreak of disease in Scotland or an outbreak elsewhere in Great Britain, the Disease Strategy Group (DSG) (See Chapter 2 of Scotland's Contingency Framework Plan for a detailed description) will determine the control strategy for Scotland taking account of the available evidence, the known epidemiology of the disease and the overall control strategy objective.
18. FMD control policy generally operates at a national (GB) level. However, it may also be necessary to have adaptations of the policy to deal with specific problems in some areas, for example, husbandry, the size and distribution of livestock holdings, the local topography (eg island archipelagos), local people and vehicle movements, whether there are special grazing patterns, (as is the case for common land or hefted sheep), and the particular way the virus was moving through the area and the weight of infection in that area.
19. The steps taken in an outbreak to bring it under control are summarised in Figure 2 Summary of the Control Process at Appendix 2.

Initial Report, Investigation & Confirmation of Disease

20. The initial reporting procedure and investigation procedure are as set out in the Scottish Government Animal Disease Contingency Framework Plan.

21. The CVO Scotland will confirm disease on the basis of the disease report from the Animal Health agency, including the history of disease on the premises and the results of laboratory tests carried out on samples taken from suspect animals.

Laboratory Diagnosis

22. There are two types of laboratory tests: those that detect the presence of virus (antigen tests) and those that detect the presence of antibody produced by the infected animal in response to the infection. Antibody may also be produced by animals which have been vaccinated. In the case of foot and mouth disease, virus (antigen) may be detected a day or so before the animal develops obvious signs of disease and in most animals the virus is eliminated within 5 to 7 days except where the animal develops a carrier state. Antibodies to the virus are detectable 4 to 5 days after the animal develops signs of disease and may be detectable for many months after infection has been eliminated. Where emergency vaccination is used as part of the control strategy it is essential that there are tests which distinguish between those animals which have been vaccinated and not infected and those animals which may have been infected but which have also been vaccinated. This is called a DIVA strategy – distinguishing infected from vaccinated animal.

23. Laboratory tests are complex biological systems for detection of either antigen or antibody and may on occasion fail and have to be repeated. Tests vary in their sensitivity (how good the test is at detecting antibody or antigen if it is present) and their specificity (whether the test may give rise to false positive results). The reliability of test results is also dependent on the quality and quantity of the sample taken and whether the sample has been subject to degradation during sampling, storage or transport to the laboratory, for example, excessive heat or contamination with disinfectant.

Stopping Spread

Temporary Control Zone

24. When foot and mouth disease is suspected an investigation will be carried out by a veterinary officer of the Animal Health agency. If the suspect case is in Scotland, premises restrictions will be imposed as set out in Scotland's Contingency Framework Plan (paragraphs 1.17 – 1.19). If the veterinary officer cannot rule out the possibility of disease being present on the premises samples will be taken from suspect animals and sent to the National Reference Laboratory at the Institute for Animal Health Pirbright. Scottish Ministers will impose a temporary control zone normally of at least 10km radius around the suspect premises in which animal movements will be banned. Scottish Ministers may also impose wider area controls, before confirmation of disease, in the form of Supplementary Movement Control Zone. Table 1 FMD Movement Controls, sets out the nature of the controls.

Slaughter and Disposal

25. The principle control method to eradicate foot and mouth disease, as required under EU and National law, is the humane slaughter of affected animals to prevent further virus production and the humane slaughter of animals which, following a veterinary risk assessment, are considered to be Dangerous Contacts, (as set out in the Framework Contingency Plan). Because foot and mouth disease is such a highly infectious and contagious disease and the consequences of further outbreaks so severe, the humane slaughter of Dangerous Contacts, on a precautionary principle, is fundamental to the effective control of the disease.

Tracing and Epidemiological Investigations

26. The principles of tracing backward to look for the origin of the disease and forward tracing to look for spread of disease, as well as the epidemiological investigations are as set out in the Scottish Government Framework Contingency Plan pages 10 to 11.

National Movement Controls and Area Controls

27. Following confirmation of disease, Scottish Ministers are likely to impose a Restricted Zone sufficient to stop the spread of disease. On initial confirmation of disease there will be great uncertainty about the origin of the disease, how long disease has been present, whether there are other premises already infected and how far the disease has spread, which will be partly dependent on seasonal movements of animals which may be extensive. Given such uncertainty the size of the restriction zone may extend to the whole of Scotland and link with similar area controls in the rest of Great Britain. As set out in the Framework Contingency plan a Protection Zone and a Surveillance Zone will be declared. The PZ will have a minimum radius of 3km from the Infected Premises and the SZ a minimum radius of 10km from the Infected Premises. The controls imposed in such areas on animal movements and marketing of products are set out in Table 1 FMD Movement Controls.

Export Controls

28. Table 1 FMD Movement Controls also sets out the restrictions on meat, meat products, milk and milk products. There are also a range of controls on other animal product such as hides and bristles derived from animals in restricted areas. While some products may be placed on the intracommunity market under certain conditions during the initial phases of an outbreak the Commission will take safeguard measures banning intracommunity trade in live foot and mouth disease susceptible animals from the whole of Great Britain.

29. The rules of international trade with third countries (non EU countries) and for gaining foot and mouth disease free status are set out in the World Animal Health Organisation (OIE) Terrestrial Animal Code which can be found at the following link:

Table 1 FMD Movement Controls

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
<p>Temporary Control Zone (TCZ):</p> <ul style="list-style-type: none"> • Around suspect premises. • Can be such size as needed but normally covers a 10km radius of the suspect premises, as it can later become a surveillance zone. • Additional controls can be placed on the movement of animal products, things, people, vehicles and non-susceptible animals. 	<p>Ban on movements into and out of TCZ or from and between premises within TCZ except:</p> <ul style="list-style-type: none"> • through the zone without stopping • to complete a journey started before the creation of the zone • under licence 	<p>N/A, unless premises are also within another zone, in which case the conditions for that zone apply.</p>
<p>Supplementary Movement Control Zone (SMCZ):</p> <ul style="list-style-type: none"> • Around TCZ of such size as needed to prevent disease spread. • May extend to the whole of Scotland. • Would impose a nationwide animal movement ban on day one of a suspected outbreak. • Can be used to control movement of specified non-susceptible animals for up to 72 hours 	<p>Ban on movements into or out of an SMCZ or onto or off premises in an SMCZ except:</p> <ul style="list-style-type: none"> • through the zone without stopping. • to complete a journey started before the creation of the zone. • movement of a horse for veterinary treatment under license (if horse movements need to be controlled). 	<p>N/A, unless premises are also within another zone, in which case the conditions for that zone apply.</p>
<p>Restricted Zone (RZ):</p> <ul style="list-style-type: none"> • Following confirmation of FMD. • Of such size as needed to prevent disease spread. • May extend to the whole of Scotland. • Used to maintain the national animal movement ban following confirmation. 	<p>Ban on movements from premises, or into or out of an RZ, except:</p> <ul style="list-style-type: none"> • under licence. 	<p>N/A, unless premises are also within another zone, in which case the conditions for that zone apply.</p>

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
<p>Protection Zone (PZ):</p> <ul style="list-style-type: none"> • Around Infected Premises. • Cover a minimum of a 3km radius or more if necessary to control disease. 	<p>Ban on movements from and between premises except:</p> <ul style="list-style-type: none"> • movement for emergency slaughter (under license and following satisfactory clinical examination) in PZ or if unavailable then outside PZ • transport through the zone • transport from outside zone for immediate slaughter in zone (under license) 	<p>Fresh meat can only be marketed if produced more than 21 days before the earliest infection date and stored and transported separately from meat produced 21 days or less before the earliest infection date.</p> <p>Otherwise treatments required for meat and other animals products before being marketed:</p> <ul style="list-style-type: none"> • separation required in abattoirs, transport and storage and subsequent premises until treatment complete • Meat and offal to be heat treated (cooked) • Milk to be pasteurised • UK will apply for possible derogation which provides for exemption from treatments 30 days after establishment of the latest PZ applying to each premises.

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
<p>Surveillance Zone (SZ):</p> <ul style="list-style-type: none"> • Around a PZ. • Cover a minimum of a 10km radius from the Infected Premises or more if necessary to control disease. 	<p>Ban on movements from premises except:</p> <ul style="list-style-type: none"> • movement to slaughter (under license and following satisfactory clinical examination) to an abattoir • within or close to the SZ • movement to pasture in SZ (under license and following satisfactory clinical and serological surveillance testing) and >15 days after last case in associated PZ 	<p>Fresh meat can be marketed if either:</p> <ul style="list-style-type: none"> • the animals were on the same premises for at least 21 days before slaughter and were identified so as to allow tracing of the premises; and the meat has been detained under supervision for at least 7 days and until any suspicion of infection on the premises of origin has been ruled out; or • the animals were on the same premises for at least 21 days before slaughter during which no susceptible animals were brought onto the premises; samples taken within the 48 hours before loading have tested negative; and meat has been detained under supervision for 24 hours and not released until after a repeat inspection of animals on the premises of origin has ruled out on clinical grounds the presence of infected or suspect animals. Otherwise treatments required for meat and other animals products before being marketed: <ul style="list-style-type: none"> • separation required in abattoirs, transport and storage and subsequent premises until treatment complete • Beef and sheep meat to be heat treated (cooked) or matured and deboned • Pig and sheep meat to be heat treated (cooked) • Milk to be pasteurised • UK will apply for possible derogation which provides for exemption from treatments 30 days after establishment of the latest SZ applying to each premises

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
<p>Vaccination Zone (VZ):</p> <ul style="list-style-type: none"> Following a decision to vaccinate. Can be of such size as needed. <p>Phase 1: From start of vaccination until at least 30 days after vaccination is completed in the VZ at Scottish Minister's discretion.</p>	<p>Ban on movements of all susceptible animals (whether or not they have been vaccinated) between premises within and out of VZ except:</p> <ul style="list-style-type: none"> movement (under licence following satisfactory clinical examination) direct for immediate slaughter within, or in exceptional cases close to, VZ 	<p>Fresh meat (including offal) cannot be marketed. Treatments required for meat and other products from vaccinated animals before being marketed:</p> <ul style="list-style-type: none"> separation required in abattoirs, transport and storage and subsequent premises until treatment complete Meat to be heat treated (cooked) Milk to be pasteurised Controls last until the end of Phase 1 <p>Products from unvaccinated animals may be marketed without treatment unless premises are also within another zone, in which case the conditions for that zone apply.</p>
<p>Vaccination Zone (VZ):</p> <p>Phase 2: Up to when survey and classification of holdings complete.</p>	<p>Ban on movements of all susceptible animals (whether or not they have been vaccinated) between premises within and out of VZ except:</p> <ul style="list-style-type: none"> movements under license to slaughter within or outside VZ 	<p>Offal cannot be marketed. Treatments required for meat and other products from vaccinated animals before being marketed:</p> <ul style="list-style-type: none"> separation required in abattoirs, transport and storage and subsequent premises until treatment complete Beef meat to be heat treated (cooked) or matured and deboned Pig and sheep meat to be heat treated Milk to be pasteurised <p>Products from unvaccinated animals may be marketed without treatment unless premises are also within another zone, in which case the conditions for that zone apply.</p>

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
<p>Vaccination Zone (VZ): Phase 3: After completion of survey and classification of holdings until UK infection free status recovered.</p>	<p>Ban on movements of all susceptible animals (whether or not they have been vaccinated) between premises within and out of VZ except:</p> <ul style="list-style-type: none"> • movements between premises allowed under licence • movements under license direct to slaughter within or outside VZ 	<p>Offal cannot be marketed. Treatments required for meat and other products from vaccinated animals before being marketed:</p> <ul style="list-style-type: none"> • separation required in abattoirs, transport and storage and subsequent premises until treatment complete • Beef meat from vaccinated animals (and seropositive offspring of vaccinated dams) to be heat treated (cooked) or matured and deboned • Sheep meat from vaccinated (and seropositive offspring of vaccinated dams) to be heat treated • Fresh meat from vaccinated pigs (and seropositive offspring) can be marketed provided it has been produced at an authorised establishment, which only processes meat originating from premises declared free of disease or from animals reared and slaughtered outside the VZ, has been stored and transported separately from meat not eligible for marketing, and is health stamped accordingly. All other meat from vaccinated pigs must be processed into a meat product before marketing. • UK will apply for possible derogation which provides for exemption from treatments for beef and sheepmeat. <p>Fresh meat from unvaccinated animals from the VZ can be marketed if animals are transported correctly, all test negative for FMD and are processed in an authorised establishment or all susceptible animals on all reactor holdings in the VZ have been slaughtered.</p>
<p>Vaccination Surveillance Zone (VSZ):</p> <ul style="list-style-type: none"> • Minimum of 10km around a VZ or further if needed. • No vaccination permitted. 	<p>Ban on movements between premises within and out of VSZ except:</p> <ul style="list-style-type: none"> • within the premises they are kept • under licence. 	<p>N/A, unless premises are also within another zone, in which case the conditions for that zone apply.</p>

Control zones	Movement controls on susceptible animals	Conditions for marketing meat and milk
Wild Animal Infected Zone (WAIZ): <ul style="list-style-type: none"> • If disease is confirmed in a wild animal. • Of such size as needed to control disease spread. • Susceptible animals should be isolated from wild animals. 	Ban on movements onto or off premises except: <ul style="list-style-type: none"> • under licence. 	N/A, unless premises are also within another zone, in which case the conditions for that zone apply.

Note: This table is not a definitive summary of the requirements of the FMD legislation and should therefore be read as only a guide to the main features relating to the movement of livestock and the treatment of products. Further controls may be declared if necessary including, but not limited to, controlling movement of non-susceptible animals

Cleansing, Disinfection and Controlled Restocking

30. The principles of cleansing, disinfection and controlled restocking are clearly set out in Annex IV and Annex V of the EU Directive:

Community Measures for the Control of Foot and Mouth Disease (Directive (2003/85/EC))

[http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:306:0001:0087:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:306:0001:0087:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:306:0001:0087:EN:PDF)

31. These requirements have been transposed into Scottish law (see Legislation in paragraph 14 above) and will be supervised by officers of the Animal Health agency and local authorities.

32. Unlike some other diseases the completion of final cleansing and disinfection of the last infected premises does not affect the earliest date for regaining OIE FMD free status which is:

- three months after the last case where culling of animals on infected premises and dangerous contacts (“stamping out”) and surveillance are applied;
- three months after the slaughter of the last vaccinated animal where stamping out, serological surveillance and emergency (“suppressive”) vaccination is used;
- six months after the last case or the last vaccination (whichever is latest) where stamping out and “protective vaccination” to live is used, provided that serological surveillance based on the detection of FMD non-structural proteins demonstrates the absence of infection in the remaining vaccinated population.

Vaccination

33. Foot and Mouth Disease is a highly infectious disease which is serious for animal health and for the economics of the livestock industry and the wider rural economy. As a result there are international trade rules and disease control legislation which influence the options available to the Scottish Government in controlling the disease. In the event of an outbreak, the overriding aim is to prevent the production and spread of the virus which causes the disease.

34. Vaccination can play a major role in controlling FMD by:

- preventing or reducing the incidence of clinical disease when animals are exposed to virus;
- preventing or reducing the amount of virus produced by infected animals, thus reducing the likelihood of spread to other animals; and thus
- reducing the number of animals killed during an outbreak.

However FMD vaccination can also:

- Mask infection
- Prolong the length of an exit strategy

35. Routine, preventative vaccination is banned under EU law, thus allowing the EU to maintain the highest FMD status under international trade rules of “countries free from foot-and-mouth disease without vaccination”.

36. The Scottish Government recognises the potential value of emergency vaccination as a disease control measure. Emergency vaccination will be considered as part of the control strategy from the start of any outbreak of FMD. If there is any doubt about the ability of culling of IPs and DCs to control the outbreak quickly, then vaccination to live will be among the disease control options to be considered. This is supported by the EU legislation which requires arrangements for emergency vaccination to be put in place as soon as the first outbreak is confirmed.

37. The EU and the UK hold a bank of foot and mouth disease antigens from which vaccines can be rapidly prepared for a ‘vaccination to live’ control strategy. The selection of particular antigens and the quantity of antigen stored is assessed from expert advice from the Community Reference Laboratory at the Institute of Animal Health at Pirbright and based on the known global prevalence of strains of foot and mouth disease viruses.

38. The Institute of Animal Health at Pirbright has carried out an evaluation of NSP tests (these seek to distinguish vaccinated from infected animals) essential for any exit strategy where vaccination to live is used.

39. The Animal Health agency has put in place the operational capability to be ready to vaccinate 5 days into an outbreak. The Food Standards Agency Scotland has confirmed that it is safe to consume products from vaccinated animals.

40. International trade rules have been revised so that disease free status can be regained more quickly after emergency vaccination has been used: only 3 months longer than if vaccination is not used. Many of the past barriers to emergency vaccination have therefore been addressed to ensure it is a real disease control option in any future outbreak.

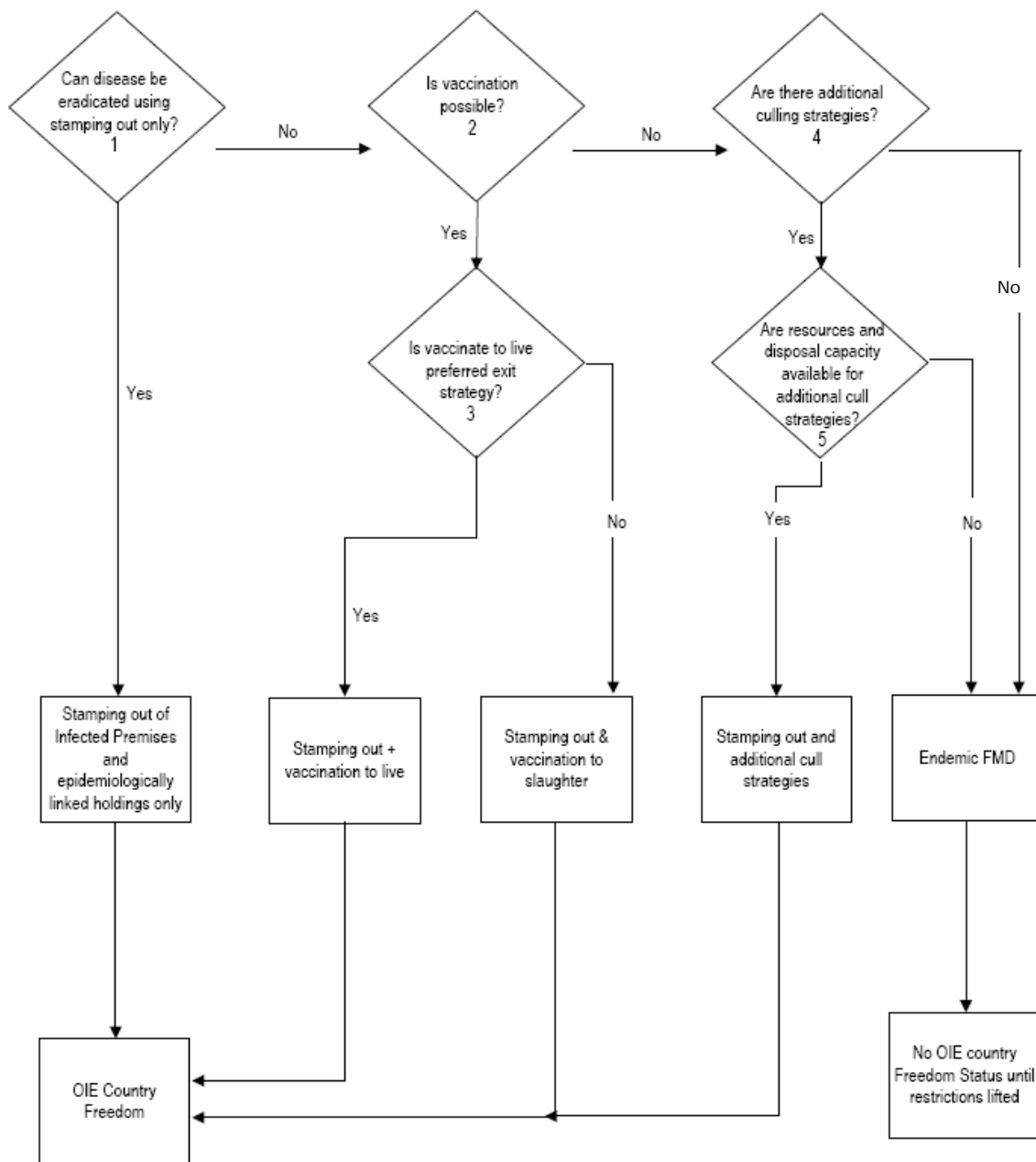
Future use of vaccination

41. In any future outbreak, when deciding the role of vaccination there will be many uncertainties about the behaviour and characteristics of the virus, its origin, the length of time it has been present, the degree of geographical spread and the number of undisclosed foci of infection as a result of secondary spread. In the face of such uncertainties any decision taken by Scottish Ministers to vaccinate will need to take account of veterinary and epidemiological advice in an area where difficult judgements have to be made. Ministers would also need to balance a range of other important factors including stakeholder views, the effects on tourism and rural businesses, animal welfare and the costs and benefits to the economy generally before final decisions were made.

Speed of detection of disease

42. One of the key factors which influences the eventual size of any foot and mouth disease epidemic is the time from introduction of infection to the initial detection of disease. See Figure 1 Vaccination Decision Tree. Any delay in detection will give an opportunity for disease to spread, perhaps quite widely, making control very difficult by stretching the immediate resources available to control it.

Figure 1 Vaccination Decision Tree



43. In Europe, FMD has been detected, on average, 21 days after its introduction. At the start of an outbreak it is often difficult to establish how long a delay in detection there has been. It might therefore take a considerable time to determine where infection had first been introduced, how long it had been there and the extent of spread in the meantime. Where there had been a delay in detection, other factors

would need to be considered in determining whether vaccination should be used in areas where disease had spread.

44. Vaccination is ideally suited for an area where there was FMD in a part of the country and there had not rapid detection of disease and there was indication of lateral spread. Other epidemiological factors would also need to be taken into account. For example, if the mode of spread to the new area suggested that other herds in the area may have become infected by the same route, or the density of livestock and type of husbandry suggested that there might be rapid dissemination of disease in the area, despite rapid detection, then emergency vaccination might be recommended. Where there was evidence that there had been little or no delay in the detection of disease then it would probably be unnecessary to use emergency vaccination in order to control and eliminate the disease.

Development of FMD in Different Species

45. Foot and mouth disease develops differently in different species of livestock. In broad terms, pigs are infected primarily by ingestion whereas sheep and cattle are primarily infected by inhalation. Once infected, generally, pigs excrete most virus, cattle much less than pigs and sheep even less than cattle.

46. The way in which FMD develops in a livestock population will also depend on the strain of FMD virus involved and new strains of FMD continue to emerge. It may not be possible to determine the detailed behavioural characteristics of any particular strain of FMD virus for a number of weeks, especially if experimental infections were required. Where the origin of infection is unknown there will always be initial uncertainty about how the disease will behave in any new outbreak.

47. In the event of an outbreak, particularly in pigs, it is normal practice to model the potential for windborne dissemination of disease from an infected premise, using the prevailing meteorological data. Without detailed knowledge of the characteristics of the virus in the early stages of an outbreak it would be wise to assume that pigs would excrete extremely large amounts of virus and use this parameter in the meteorological dispersion model. Where the plume was predicted to have the potential to infect cattle, emergency vaccination may be undertaken in the area under the plume. Subsequent work, taking several weeks, may show that pigs did not excrete the large amounts of virus assumed as a parameter in the model and that vaccination was unnecessary but, given the uncertainty, emergency vaccination would have been a wise precaution.

Disease in cattle

48. Cattle are susceptible to infection by inhalation and once infected may also generate infectious aerosols of virus. Cattle may therefore become infected by either local aerosol spread, over a relatively short distance or, if there are very exceptional weather conditions, infectious aerosols may carry quite large distances on the wind.

49. During the first stage of a vaccination campaign, meat from vaccinated cattle would have to be heat-treated. Once it has been shown that virus is no longer circulating, meat from vaccinated cattle may be marketed with an EC health mark (oval stamp) after deboning and maturation. It is economically viable to debone and mature beef (for 24 hrs). Milk may be marketed after normal pasteurisation. But both require the infrastructure needed to apply and enforce official controls and the availability of these must be a factor in the decision making process.
50. Vaccination of cattle in certain cases may be valuable in controlling disease. Where cattle are the main generators of the FMD virus, the overall cattle density in an area, the size and proximity of herds and standards of biosecurity (influenced by the type of husbandry) would all affect the decision. For example, if there were delay in detecting disease in a pig herd that had excreted large amounts of virus and meteorological conditions were such that there was a wide angle plume of virus over an area of dense cattle population, and herds were becoming infected leading to a heavy weight of infection in an area, then vaccination might be utilised. Infectious aerosol spreading over a wide area in certain meteorological conditions might also be generated from cattle herds, with high prevalence of diseased animals, and this is a further scenario where vaccination might be effective.
51. Vaccination of cattle in an area where sheep farming is the principal activity is less likely than in areas of intensive cattle or pig farming but, nevertheless, cannot be ruled out and would depend on the particular local epidemiological conditions, for example, where there was poor biosecurity and evidence of lateral spread of disease. Vaccination may be used in registered rare breed herds which are considered to be under direct threat of infection, for example, within 3km of an infected premises.

Disease in Pigs

52. Pigs are normally infected by ingestion and not by inhalation. Once pigs become infected they may pose the greatest risk to surrounding susceptible livestock because, of all species, they normally produce the most virus once infected. Virus is normally excreted as an aerosol when the pig exhales. Cattle are the species most susceptible to infection by inhalation.
53. If vaccination is used in pigs, until it has been proven by surveillance testing that virus is no longer circulating in an area, meat from vaccinated pigs will have to be heat treated before it can be traded with an EC health mark. There will also be implications for integrated multi-site production where it may not be possible to move vaccinated pigs reared in the vaccination zone to finishing units outside the vaccination zone.

54. The EU Directive on FMD says that vaccination should be considered where pigs are the principal species clinically affected by disease. In such a situation, it would be necessary to consider the risk from aerosol/windborne infection and assess:

- how recently the pigs had become infected;
- whether, as a result of a breakdown in biosecurity, there was a risk that disease had been spread to other pig herds thereby increasing the amounts of virus being excreted;
- the susceptibility of the livestock population in the area to infection by the inhalation route; and
- weather patterns in the period since the initial infection.

55. Such factors would determine how many farms with livestock were potentially at risk from aerosol/windborne spread of disease and whether there was a risk that relying on the slaughter of IPs and DCs might not be enough to control the outbreak.

56. In general, pigs are the species least susceptible to infection by the aerosol route. In the pig industry, standards of biosecurity are good and 20-day standstill movement controls are in place. Computer modelling carried out during the 2001 epidemic also showed that disease was unlikely to spread in areas of predominantly intensive pig production. It is therefore unlikely that it would be necessary to vaccinate such pig herds in an outbreak. Nevertheless, where standards of biosecurity were poor and there was not early detection of disease in any pig herd it might be necessary to vaccinate pigs in order to control disease.

57. Vaccination may be used in registered rare breed herds which are considered to be under direct threat of infection, for example, within 3km of an infected premises.

Disease in Sheep

58. If disease is discovered in sheep and there is good biosecurity, it should be possible to control the disease by the rapid slaughter required by law of infected sheep flocks and slaughter of Dangerous Contacts. (Decision point 1 of Figure 1 Vaccination Decision Tree). If vaccination were to be used in sheep, then the Directive requires that, before the meat from vaccinated animals can be traded with an EC health mark, it should either be heat treated or deboned and matured until the country's FMD-free status is established. There are concerns about whether it would be economically viable to debone and mature sheep meat. This could be critical in determining whether emergency vaccination to live would deliver the expected benefits.

59. Once a sheep flock on extensive grazing is infected the disease tends to move very slowly through it because of the low level of virus excretion. In very extensive sheep, because of low contact rates, an infected flock will pose much less of a risk to neighbouring animals than infected cattle or pigs. Gathering sheep for

vaccination might perversely increase the numbers of sheep that subsequently become infected in extensive systems. It is, therefore, very unlikely that vaccination will be used in grazed commercial sheep flocks or in areas where grazed sheep are the predominant livestock.

60. For the reasons given above, if disease were discovered in a sheep flock in a predominantly pig or cattle producing area, it is probable that vaccination would not be used in either pigs or cattle in that area, unless local epidemiological conditions indicated a higher risk.

61. Vaccination may be used in registered rare breed flocks which are considered to be under direct threat of infection, for example, within 3km of an outbreak of FMD.

Size of Vaccination Zone

62. Under the Directive, strict controls would have to operate over vaccinated animals. In addition, there would have to be a vaccination surveillance zone of not less than 10km in depth surrounding a vaccination zone. Within the vaccination surveillance zone there would be movement restrictions; it would not be permitted to vaccinate any susceptible animals and there would be enhanced surveillance in this area to detect disease. The perimeters of both the vaccination zone and the vaccination surveillance zone would have to be clearly defined so that livestock keepers were in no doubt about the area they were in. This would be done by using obvious geographical boundaries such as roads, rivers and other natural features, for example, a large abutting area of woodland, which was livestock free, which may pose a natural barrier to the spread of disease.

63. Given the clinical and serological surveillance required under the EU Directive, it would be sensible to limit the size of any vaccination zone to the minimum necessary to control disease based on an epidemiological assessment. This would take account of factors in the following list, which is not exhaustive: -

- natural barriers to the spread of disease;
- the number of cases in the area, their geographical disposition and estimated area of future spread;
- the numbers and type of livestock affected and the duration of that infection;
- the predominant livestock species in the area and its density;
- the type of husbandry;
- the standards of biosecurity;
- the prevailing climatic conditions that might predispose to the spread of disease;
- animals being at greatest risk of infection within 3 kilometres of an existing outbreak.

Exit strategy where vaccination is used

64. As soon as a FMD outbreak is confirmed, a country loses its international trading status of "free from foot-and-mouth disease without vaccination". How quickly a country regains its FMD free status depends partly upon how long it takes to

eradicate the disease and partly on the disease control strategies used. The international rules governing FMD free status have changed since 2001 and the use of emergency vaccination no longer carries the same trade “penalty” as previously.

65. The OIE (World Animal Health Organisation – the international animal health standard setting body) sets down rules for recovery of FMD free status. Disease free status can be recovered:

- three months after the last case where culling of animals on infected premises and dangerous contacts (“stamping out”) and surveillance are applied;
- three months after the slaughter of the last vaccinated animal where stamping out, serological surveillance and emergency (“suppressive”) vaccination is used;
- six months after the last case or the last vaccination (whichever is latest) where stamping out and “protective vaccination” to live is used, provided that serological surveillance based on the detection of FMD non-structural proteins demonstrates the absence of infection in the remaining vaccinated population.

Controls on products from vaccinated animals

66. There are three phases to an emergency vaccination campaign laid down in the EU Directive on FMD control:

Phase 1 – During emergency vaccination and until 30 days after completion of vaccination

Phase 2 – 30 days post vaccination and prior to completion of survey to detect vaccinated animals from those which have been vaccinated and subsequently exposed to the virus (the latter would have to be culled as infected animals)

Phase 3 – After completion of the survey (required in Phase 2) but before FMD free status is regained.

67. In each of these phases, specific controls would apply on products from vaccinated animals. See Table 1 FMD Movement Controls

68. **Phase 1** Fresh milk would have to be treated (single HTST pasteurisation) at a dairy within the vaccination zone or transported outside the zone for treatment, subject to strict biosecurity and transport rules. Fresh meat from vaccinated animals would then have to be cross-stamped, transported in sealed containers and then treated (heat treated or naturally fermented and matured). Once the meat had been treated, the resulting product would be given the health mark, thus enabling it to enter intra Community trade. Consumers would not see cross-stamped meat.

69. **Phase 2** Fresh milk would have to be pasteurised at a dairy either within the vaccination zone or transported outside the zone for treatment subject to strict biosecurity and transport rules. Fresh meat from vaccinated pigs would continue to

require heat treatment before it could be placed on the market. However, fresh meat (excluding offal) from vaccinated ruminants (i.e. sheep and cattle), would be subject to deboning and maturation so that it could bear an oval mark to enable it to enter intra Community trade.

70. **Phase 3** Fresh milk would have to be pasteurised at a dairy either within the vaccination zone or transported outside the zone for treatment subject to strict biosecurity and transport rules. Fresh meat from vaccinated ruminants would still be subject to deboning and maturation as in Phase 2 but derogation exists which would permit untreated meat from vaccinated cattle and sheep to be marketed freely on the domestic market (i.e. within the Member State), and therefore approach more normal market conditions for livestock producers. Likewise, fresh meat from vaccinated pigs would still have to be heat treated as in Phase 1, but derogation allows for untreated meat from vaccinated pigs to be placed on the domestic market, and may be exported to another Member State if requested by them. Such meat would have to carry a special mark. It should be noted that, under the EU FMD Directive, meat and meat products from animals in the Protection and Surveillance Zone and meat and meat products produced in these zones are also subject to treatment similar to that from vaccinated animals for at least 30 days after these zones have been applied. After 30 days derogation may be granted by the European Standing Committee on the Food Chain and Animal Health (SCoFCAH) for untreated products to be allowed from the PZ and SZ.

Serological surveillance

71. During Phase 2 of a Vaccination campaign, a serological survey has to be carried out to differentiate between those animals which have been vaccinated and those which have been vaccinated and subsequently exposed to the FMD virus, or may still be infected. The antibody tests used for this are Non Structural Protein (NSP) tests. NSP tests are based on the principle that during active infection with foot and mouth disease virus, non structural proteins (NSP) are generated and the infected animal develops antibody to the NSP. It is this antibody that is detected by NSP tests. The purified antigens from which foot and mouth disease vaccine is produced contain only negligible amounts of NSP and so a vaccinated animal which is not infected will not develop antibodies to NSP.

72. The OIE FMD and Exotic Diseases Commission and the OIE Code Commission have accepted the principle of herd based NSP serosurveillance as a basis for countries regaining FMD free status.

73. NSP tests would use a herd based test on a statistical basis and, where positive results were found, a discriminatory test would be used. Where the presence of FMD virus is confirmed, then the premises will be confirmed as an infected premises. Where the survey shows that at least one animal has been infected, through previous contact with the virus, but where further testing of the animals on the

holding confirm no FMD virus is present then the animals on the premises are either all culled (and disposed of) or classified according to the tests, and some culled and others slaughtered i.e. can enter the food chain depending on whether it is believed that virus no longer circulating and the interpretation of the tests applied to the herd.

74. Where testing on the premises rules out past or present infection with FMD virus, the premises will become subject to phase 3 controls until FMD free status is regained.

75. For unvaccinated animals in a surveillance zone serological surveillance would also have to be carried out. This would use a serological test that would detect antibodies to FMD virus but it would not necessarily be an NSP test. There are sampling protocols set out in the Directive. It is very likely that a vaccination zone may partly or wholly cover a surveillance zone. The tests used and the sampling protocol used in the overlapping zones would depend on whether or not the animals were vaccinated.

Export of live animals post vaccination

76. Once vaccinated, animals cannot be exported or enter intracommunity trade, even after FMD free status is regained.

Exit Strategy

77. The Disease Strategy Group as set out in the Framework Contingency Plan will determine the Exit Strategy consulting across the Scottish Government and with Stakeholders to minimise the impacts of the disease on the industry, rural communities, the rural and wider economy and the environment. The exit strategy must be considered as integral to the control strategy from the outset of the outbreak. Control strategies that prolong or increase the cost of the exit strategies should be avoided, if possible.

78. In simple terms the EU Directive sets out the minimum time scale for lifting area restrictions: the PZ is lifted not less than 21 days after preliminary disinfection is completed and the SZ is lifted not less than 30 days after preliminary disinfection is completed. Provided necessary surveillance has been completed including the sampling of sheep and there are no further cases. This process is complicated comes when the outbreak is prolonged with many cases spread over a wide geographical area. Resources including laboratory resources may be stretched dealing with bringing the outbreak under control before they can be diverted to carry out the surveillance necessary to lift restricted areas and prove country freedom. The use of a vaccine to live control strategy will demand much greater laboratory and surveillance resources than a stamping out alone policy see *Exit strategy where vaccination is used*.

79. A serosurveillance facility run by SAC, on behalf of Scottish Government, is available at Dumfries. In the event of a disease outbreak the laboratory would be able to analyse samples collected for the purposes of establishing disease freedom. Diagnostic samples would only go to the National Reference Laboratory.

80. Depending on the disease situation it may be possible following a risk assessment to divide the country into risk areas from low to high and which allow the relaxation of controls and permit movements within and from low risk areas to high risk areas. Regionalisation is dependent on the epidemiology of the disease and its geographical distribution and seasonal trade patterns. Proposals to regionalise must be acceptable to other UK Governments, the Commission and other trading partners. Regionalisation will also impose restrictions on animal and animal product movements to maintain the region with the higher disease status. This may have an adverse economic effect which outweighs any short term advantage of regionalisation and these economic considerations must be taken into account in coming to decisions on regionalisation.

Appendix 1

Biosecurity – Preventing the introduction and the spread of foot and mouth disease

Introduction

Biosecurity is about being aware of the ways disease can spread and taking every practical measure to minimise the risk of disease spreading. It is about practical things you can do on your farm to help prevent the introduction and spread of foot and mouth disease (FMD) to and from your animals.

Good biosecurity should be practised at all times, not just during an outbreak. Taking the right measures in the early stages of an outbreak e.g. before we know disease is in the country, can help prevent or reduce its spread.

In order to help reduce the risks of introduction and spread of disease as well as to eradicate FMD, it is vital that you practice the good biosecurity measures outlined in this leaflet

- this will help to protect your livestock, your business - and those of your neighbours.

The following list shows some of the routes by which FMD can be spread, but where good biosecurity measures can help to reduce the risk.

- Contaminated footwear, clothes or hands of people who have close contact with infected animals, e.g. when feeding or examining them.

- Equipment that becomes contaminated through use on or near infected animals.

- Any vehicle that enters or leaves premises especially those areas where susceptible animals are kept

.

- Contamination from the carcass of an infected animal.

- Contamination from any place where an infected animal has been; from pastures, loading ramps, markets, roads, etc.

- Contamination from other animals such as dogs, cats, poultry and foxes, which can carry infected material on their feet or coats, but do not become infected themselves.

- Contamination through contact with infected animals from neighbouring farms where adequate separation distances are not in place.

- Animals eating infected animal products.

A summary of advice

Avoid visiting other farms unless absolutely necessary and follow all the procedures explained here when you do.

Keep different species of livestock separate where possible.

When handling your animals, be aware that sheep do not always show obvious signs of the disease and you could inadvertently infect other animals.

Keep everything clean - materials like mud or bedding on clothes, boots equipment or vehicles can carry the virus from farm to farm or between different groups of livestock on the farm.

It is essential that you clean yourself, your vehicle and everything you carry thoroughly when you move between different groups of livestock on the farm.

Make sure you have disinfectant and cleaning material ready at your farm entrance, so that essential visitors can disinfect themselves before entering the premises and as they leave.

Keeping livestock separate

Where possible, keep an empty field, river, woods or road between groups of livestock - whether they are yours or they belong to someone else.

As far as possible ensure that all people, vehicles or equipment moving between farms, and even between different groups and types of animals, are cleansed and disinfected prior to moving.

Keep yourself clean

Materials like mud, manure, bedding or feedstuffs can carry the virus and may be picked up on hands, vehicles, clothing or equipment and transmitted to other animals.

It is essential that all these things are cleansed and, where possible, disinfected when you move between groups of livestock.

- Wash all dirt off outer clothes and footwear before you spray or brush on disinfectant. There is no point using disinfectant on dirty clothes or boots.
- Keep footbaths covered so that rain does not dilute the disinfectant. Renew the disinfectant regularly as required by the manufacturer's instructions.
- Between handling different groups of animals, change outer clothing and footwear if possible and clean your hands with soap and water. Where you can, have different clothes and boots for use with each group of animals.
- Never wear your working clothes when you leave the premises, especially if you are going anywhere near livestock - or near other people who may keep livestock.

- If you have been visiting livestock, or places where livestock have been, change your clothes or footwear when you return home - and certainly before you visit your own animals. Wash dirty clothes at the highest temperature possible.
- After handling livestock or any item contaminated with mud, urine, manure etc, remember to wash your hands, especially your nails with soap and warm water. Only a tiny amount of virus is needed to infect an animal.

Vehicles

- Vehicles can carry the virus more quickly and further than anything else. The virus can be carried anywhere on the vehicle or its load - as well as on the driver.
- All vehicles must be cleansed and disinfected before entering and leaving your farm.
- It is not just the obvious places (like tyres) where infection could be carried, but also beneath and inside the vehicles. Drivers and others should ensure that they have carried out the required personal disinfection procedures before entering the cab.
- Try to avoid driving through dung or manure on the road.
- If material falls from your vehicle then, when possible, sweep it off the road.

Keep the farm secure

A major threat to your livestock is close contact with people - including those who deliver feed, fuel and fertilisers, or collect milk and other products.

- Make sure that visitors always follow biosecurity measures for both themselves and their vehicles.
- Make this as easy as possible for them, by having the proper equipment, including brushes, hoses, water and disinfectant, ready at your farm entrance.
- Where possible, ensure that you keep a record of all people who have contact with your livestock or areas where there may be contamination.
- Keep boundaries secure as straying animals could carry infection to or from your farm. Check fences, hedges, walls and gates.

Avoid visiting other farms

- If this is unavoidable be sure to take all the precautions explained for cleansing and disinfecting vehicles, equipment and people when you leave your farm, before entering another farm, on leaving another farm and on return to your own farm.
- Clean yourself and all clothing, footwear, vehicles and equipment on return to your own farm before you go near your own animals.

Extra measures during heightened risk or during an outbreak

Vehicles

- Wherever possible do not allow vehicles onto the premises.
- Only make essential journeys and, if possible, use another vehicle to visit distant stock.
- If it is safe to do so, make sure vehicles park outside the farm. Make sure that vehicles visiting your premises do not drive near your livestock and keep the parts of the farm where vehicles have to drive as clean as possible.

Avoid Visiting Other Farms

- Where possible, do not visit other farms.
- If you do visit other farms wear a face mask if possible, as FMD virus can be carried in human throats. Remember FMD does not affect humans, it is a disease of animals only.
- Take as little onto the other farm as possible and leave your dog behind. Park outside the farm where possible.
- Wear boots and clothing given to you by the farmer being visited and leave them there when you leave.
- Footpaths may be closed in areas where there is a greater risk of spreading disease, particularly on affected farms and in the Protection Zone around premises where disease is confirmed. (See Fact Sheet 3 for further information).

Keep Livestock Separate

- Prevent people, vehicles or equipment moving between farms and even between different groups and types of animals.
- Keep any animals which are not currently at your home farm away from there. If possible get a suitable person who doesn't have contact with other livestock to care for them.

Vaccination

- Vaccination offers potential benefits in disease control and the UK holds its own supplies of FMD vaccines.
- There may be circumstances during an outbreak when emergency vaccination would be appropriate but this would be subject to a risk assessment at the time.

The leaflet may be found at:

<http://www.defra.gov.uk/animalh/diseases/fmd/pdf/factsheet2.pdf>

Appendix 2

Figure 2 Summary of the Control Process

