10.1 Background

Around 10 March, the Chief Veterinary Officer was realising that the existing policies of infected premises slaughter together with tracing and slaughter of dangerous contacts, were not containing the epidemic. Information available at the time could not fully explain why this was so. Either the policies themselves were inadequate or they were not being fully implemented or, to some degree, both.

The number of infected premises was doubling every week. The epidemic was on track to overwhelm resources. Around the country, including at MAFF’s Page Street Headquarters, the notion was growing that new instruments of policy were needed. MAFF’s Veterinary Management meetings pondered options for increasing the culling of sheep. Pre-emptive slaughter of sheep on Dartmoor was considered, focusing on premises contiguous to infected animals, as was a cull of all fat-stock sheep.

The Chief Veterinary Officer was also considering extending the definition of ‘dangerous contact’.

The epidemiologists at the Veterinary Laboratories Agency were simulating the epidemic on computers using the InterSpread model. By 12 March, they were forecasting that it might reach between 1,000 and 2,000 cases, compared with the 182 so far confirmed.

In Scotland, the Scottish Executive, working very closely with the NFU Scotland, had started to contemplate unprecedented steps in an effort to control an increasingly desperate situation. The epidemic in Dumfries and Galloway was exploding, threatening the valuable cattle populations to the north. Informally at first and, as far as we have been able to discover, without any scientific advice, plans were rapidly worked out for a 3km pre-emptive sheep cull. All sheep within 3km of a confirmed infected premises would be slaughtered. Meetings with MAFF in London and at Downing Street were called urgently and agreement quickly reached to coordinate policy across the Scottish-English border.

On 15 March, these policies were announced simultaneously in Scotland and England, although they were not implemented until 22 and 28 March respectively. The fact that the Minister of Agriculture, Nick Brown, announced that “animals within the 3km zones” were to be destroyed on a precautionary basis, without explicitly excluding cattle, caused confusion and consternation. Although a clarification was made later in the day that cattle were specifically excluded from this policy, resentment remained and affected local attitudes. The scene was set for confrontation.
10.2 The genesis of the FMD Science Group

If we step back from these events and return to late February, in parallel with the activity of the State Veterinary Service and MAFF, Sir John Krebs, Chairman of the Food Standards Agency was concerned how the FMD outbreak might develop. Before the end of the month, he was already speaking to a number of experts in epidemiological modelling to seek their views. Following these discussions an ad hoc group was hosted by the Food Standards Agency on 6 March. The epidemiologists discussed their initial view of the outbreak and what information they needed from MAFF to help analyse and predict the progress of the emerging epidemic. MAFF supplied the data requested on 13 March. Four groups of epidemiologists began their analysis. The Imperial College team (some of whom had recently published an analysis of FMD data from the 1967/8 outbreak) was the most advanced at this stage. On 16 March they sent MAFF their initial view of the outbreak and what information they needed from MAFF before the end of the month, he was already speaking to a number of experts in epidemiological modelling to seek their views. Following these discussions an ad hoc group was hosted by the Food Standards Agency on 6 March. The epidemiologists discussed their initial view of the outbreak and what information they needed from MAFF to help analyse and predict the progress of the emerging epidemic. MAFF supplied the data requested on 13 March. Four groups of epidemiologists began their analysis. The Imperial College team (some of whom had recently published an analysis of FMD data from the 1967/8 outbreak) was the most advanced at this stage. On 16 March they sent MAFF their initial view of the outbreak and what information they needed from MAFF. The epidemiologists had looked at what was happening to the so-called ‘case reproduction number’, \( R_0 \), which is the average number of new cases generated by one current case. Suppose there are FMD cases on 10 farms. How many new farms will these infect? With no movement restrictions or any kind of culling, it might be 50, corresponding to an \( R_0 \) value of 5. With movement restrictions and culling of infected herds it might be 15, an \( R_0 \) value of 1.5. These newly infected farms will go on to infect further farms. As long as \( R_0 \) is greater than one, then the number of new cases at each stage continues to increase and the epidemic is out of control. To get the epidemic under control, \( R_0 \) has to be reduced below one, so that the 10 current cases directly cause fewer than 10 new cases. To be sure of stopping the epidemic quickly, getting \( R_0 \) to a smaller value, say 0.5, is a good idea if possible. But keeping \( R_0 \) below 1 is the prime aim of any policy for managing an epidemic.

Preliminary data from the 2001 UK FMD epidemic implied that, early in the outbreak, on average, one infected premise had infected 1.2 other farms by 24 hours after its own infection was discovered. Thus, even a perfectly implemented cull of infected premises within 24 hours of discovery would not, on its own, have controlled that epidemic until the disease itself had reduced the density of susceptible farms to such an extent that the epidemic ended naturally.

The membership of the Group was gradually extended, with increased veterinary input. By this stage the contentious decisions had already been taken.

Each on different principles, but their fundamental conclusion was the same. The disease was out of control (10.2.1).

These matters were now seen to have much wider implications for the whole of government. So, from then on, the Chief Scientific Adviser took the lead. Building on the group that met at the Food Standards Agency he created the FMD Science Group which met regularly from 26 March until 1 November (31 meetings in all).

34. We recommend that DEFRA’s Chief Scientist maintain a properly constituted standing committee ready to advise in an emergency on scientific aspects of disease control. The role of this group should include advising on horizon scanning and emerging risks. Particular attention should be given to the recommendations on the use of scientific advisory committees in The BSE Inquiry report of 2000.

10.3 The emergence of the contiguous cull

By 21 March, the Chief Veterinary Officer and the epidemiologists in the State Veterinary Service, along with those of the Chief Scientific Adviser and groups of independent epidemiological modelers were all coming to the same conclusion. Existing policies were not yet controlling the spread of the disease. Something needed to be done and done fast.

The findings of the 21 March modeling meeting were due to be sent to MAFF so that it could make a policy announcement later in the week. However, although there had been agreement at the 21 March meeting “that individuals would not talk to the media”, Professor Ray Anderson, Head of Infectious Disease Epidemiology at Imperial College, stuck to a pre-arranged appearance on the BBC’s ‘Newswight’ that evening. He did not discuss the details of that afternoon’s meeting but he did say “I think everybody is in agreement, both government, the farming community and the independent scientific advice, that this epidemic is not under control at the current point in time”. He went on to say “If this cull [i.e. the 3km cull in Cumbria, Dumfries and Galloway announced on 15 March] is applied vigorously and effectively enough you could turn the epidemic into a decaying process hopefully within, a month to two months. Doing something even better than that is not convinced is possible at the moment.”

Professor Anderson’s intervention on 21 March forced the pace of developments, bringing into public discussion the notion that the outbreak was out of control.

On 23 March, at a press conference with the Minister of Agriculture, Nick Brown, Professor King reiterated that the epidemic was out of control. Subsequent press reports on 24 March said that the time between report and slaughter needed to be brought down to 24 hours. Some suggested that the recently announced 3km sheep cull, which had only begun to be implemented in Scotland two days previously and would not be started in Cumbria for another four days, would need to be extended. Others alluded to a 1.5km ring cull of all susceptible animals.

We have been unable to find a clear account of decision making around that time. The pressure on the Government from all sides was growing. The press reports on 24 March talked of “confusion”. Some suggested that the Prime Minister had already given the order for a pre-emptive cull. Tensions were rising. The MAFF Permanent Secretary, Brian Bender, told us that, between 21 and 26 March, there was a great deal of confusion. The epidemiological modelers were concentrating on the principal factors influencing the spread of disease from an infected place to neighbouring farms. The vets, desperately short of resources and knowing that they were failing to deliver the critically important rapid slaughter of infected animals, were also considering extending the definition of dangerous contacts to bring more animals into the culling net. Everyone involved accepted that the slaughter of infected cases as rapidly as possible and certainly within 24 hours of report or less was the priority but that this, on its own, would not be enough to contain the disease at this stage. Some believed that enhanced biosecurity was what was needed, but the resources were not available to realise fully the biosecurity measures already in place.

It has become apparent to us that, while some policy decisions were recorded with commendable clarity, some of the most important ones taken during the outbreak were recorded in the most perfunctory way, and sometimes not at all. In the context of our own Inquiry, this has made the task of constructing an audit trail extremely difficult in some vital policy areas, including the contiguous and 3km culls, and the decision to close footpaths.

Good record keeping is essential. Records are not kept purely to inform potential future inquiries. They should set out what has to be done, when and by whom, to help ensure that results are delivered.

35. We recommend that, from day one of an outbreak, provision be made to keep a record of all decisions made and any actions to be taken.

The Chief Veterinary Officer feared that a national 3km pre-emptive cull was neither practical nor likely to be legal (17.3). Professor King told us that, in the period between 21 and 24 March, he had asked the Imperial College team to model smaller radii than 3km. On the basis of that modelling, a radius of between 1 and 1.5km had appeared to be optimum in bringing the epidemic under control with the minimum necessary cull. Somewhere in the midst of this the idea was born that a contiguous premises cull would have a similar impact to a 1.5km cull, although the FMD Science Group was to be asked to advise on the definition of ‘contiguous’ during the following weeks.

The models showed that a national policy based on slaughter of infected animals within 24 hours of report and the pre-emptive slaughter of all animals on contiguous premises would contain the disease and eventually eliminate it while minimising the total number of animals slaughtered, compared with the other scenarios that had been modelled (10.3.1). This led to the introduction of the so-called 24/48 hours slaughter policy.

We have been unable to establish the precise rationale for the target of 48 hours, nor ascertain the source of that timescale. Professor King told us that it was designed to allow for the prioritisation of infected premises culling and that it recognised that the incubation period gave some time for manoeuvre in tackling contiguous premises. The target of 48 hours was first stated in the Number 10 lobby briefing on the morning of 26 March. It formed part of the Minister’s statement to the House of Commons, which formally confirmed the new policy, on 27 March. We have been unable to establish any formal record of the decision to introduce the 48 hour target. For what became such a central component of disease control policy, albeit one that proved unattainable in practice, this is regrettable.
Foot and Mouth Disease 2001: Lessons to be Learned Inquiry

10.3.1 Predicted impact of culling policies

Each scenario has a different impact on the shape of the epidemic (chart A) and on the numbers of FMD cases and farms culled out in total (chart B). What happened in the actual epidemic (scenario 1) can be compared with the theoretical scenarios. The models were calculated using farm numbers, rather than numbers of animals, at July 2001. Farms culled for welfare reasons were not included.

Timing of the slaughter of infected premises has the most significant effect on the size of the epidemic. Had the 24 hour target for infected premises been achieved from the start, the epidemic would have been dramatically reduced. (Compare scenarios 1 and 5 in chart B.) However, culling of infected premises alone would not have eradicated the disease. The modelling suggests that, without any non-infected premises culling, the epidemic would have been catastrophic (scenario 6 in chart A). Not only does the culling of non-infected premises reduce the predicted number of FMD cases, but it also—perhaps counter-intuitively—reduces the total number of farms culled (for example, compare scenarios 4 and 5 in chart B). Thus, overall, appropriate pre-emptive culling reduces the numbers affected by the epidemic and its duration.


10.4 Slaughter on suspicion

In practice, the 48 hour contiguous cull was probably never more than 50% implemented. Certainly, in the areas of the highest infectivity, the implementation rate was lowest. But efforts to slaughter infected premises within 24 hours of report (rather than confirmation) increased dramatically along with monitoring of success. Before 22 March, when a vet felt unable to confirm a case on clinical grounds but was equally unable to be sure there was no infection, samples were taken and tests carried out. Only if these proved positive were the animals slaughtered. This testing could take up to four days so infected animals could be left alive for up to five days. Slaughter on suspicion was introduced on 24 March, requiring slaughter of all suspicious animals whether clinically confirmed or not.

This policy highlighted the tension between the need for speed and the desire for certainty of diagnosis. In the event only a small proportion of sheep slaughtered on suspicion subsequently tested positive. This led people to call for the use of rapid on-farm tests and technologies which were being newly developed (10.4.1). These technologies drew upon standard laboratory techniques and some people argued that, as they were available, they should be used. However the tests they could perform in the field had not been validated to the same standards as conventional laboratory tests. It would have been inappropriate to use potentially unreliable tests during the FMD crisis.

Rapid diagnostic tools could be of considerable value by supporting clinical judgement and, potentially, improving the quality of decision making on the ground. For the last few years, the Pirbright Laboratory has been developing pen-side tests for detecting FMD virus. These are test sticks, based on the technology used in home pregnancy tests, and give rapid results within a few minutes. Limited but encouraging trials have been conducted in the field to date.

36. We recommend that the State Veterinary Service be routinely equipped with the most up-to-date diagnostic tools for use in clinical practice, to contribute to speed and certainty of action at critical times.
"One of the major lessons of the 1997 (classical swine fever) outbreak (in The Netherlands) was that the suspension of the preventative killing of suspected holdings resulted in massive spread of infection. This was subsequently identified as a major mistake in the reviews of that outbreak. Clearly this was a factor in the policy approach followed [in 2001] by our Dutch colleagues.”

Commissioner David Byrne, response to the European Parliament Temporary Committee on FMD, 25 March 2002

10.4.1 Developing rapid on-farm tests

One specific offer of testing came from the Agricultural Research Service of the United States Department of Agriculture. In collaboration with private companies, the Agricultural Research Service had developed a Real-Time Polymerase Chain Reaction (RT-PCR) test using portable equipment, such as the ‘SmartCycler’. US scientists offered to visit the Pirbright Laboratory with their equipment and materials in order to test them under field conditions during the UK outbreak but the priorities of managing the outbreak made this impracticable.

The Agricultural Research Service claimed that their tests which give results in a couple of hours were straightforward and reliable. However, they wished to publish their results in the scientific journals before proceeding to validation.

The Pirbright Laboratory and the FMD Science Group considered the technology carefully. Pirbright Laboratory uses RT-PCR routinely in the laboratory and had evaluated the use of portable equipment. They concluded that RT-PCR has much potential for rapid testing in mobile or local laboratories, but not on the farm itself.

RT-PCR goes through cycles of copying specific sequences of DNA which, if present, can then be visualised. It is a sensitive technique which allows pre-clinical detection of small amounts of FMD virus within a couple of hours. Contamination can lead to false positives. In the field RT-PCR can be unreliable, resulting in false negatives.

10.5 The justification of the contiguous cull

The justification for culling contiguous premises was founded on a statistical concept. All the models showed that culling farms neighbouring infected premises would reduce spread of infection and control the epidemic. This was based on the observation that, on average, animals on 34% of premises within a radius of 1.5km of infected premises came down with FMD. Although culling contiguous premises was a blunt policy instrument, it had the benefit of speed in decision making. It did not depend on the epidemiological groundwork to identify dangerous contacts, which was resource intensive and time consuming.

From some perspectives the rigorous application of a contiguous culling policy was a desperate measure. But the situation was desperate. The epidemic was expanding out of control. FMD could have become endemic. The pressure was intense. Resources were stretched. There was no time to explore alternatives or carry out experiments. Here was a simple formula that both the Chief Veterinary Officer and the Chief Scientific Adviser said would work. And that was the advice that was followed.

10.6 Implementing the culling policies

MAFF now had a range of culling policies to be implemented on the ground:

- Culling of all susceptible animals on premises with clinically confirmed cases within 24 hours of report.
- Slaughter on suspicion.
- Culling of known dangerous contacts.
- Culling of sheep, pigs and goats within 3km of infected premises in Cumbria and Dumfries and Galloway.
- Culling of all susceptible animals contiguous to infected premises within 48 hours.

Vets in MAFF Headquarters at Page Street and around the regions had to organise all this and communicate the details to everyone concerned. There was little time for reflection or any opportunity to think through all the issues. And many complex issues were to arise.

The 3km cull was controversial in Cumbria though less so in Scotland. The contiguous cull was controversial wherever it was rigorously applied. Many representations were made to us by farmers. They believed they were victims of the unhinging application of a generic policy in spite of obvious local circumstances and mitigating factors that should have been considered. In Scotland the contiguous cull policy was not generally applied. It was instead used strategically to help control spread at the edge of the epidemic.

Many farmers did not understand or accept the statistical basis for the policy. Most contiguous premises were not infected and probably would not have become infected. But some would and, if not culled out, would have revealed themselves only when they had contributed to the further spread of disease.

Many vets accepted this and had no professional doubts. But some, including many Temporary Veterinary Inspectors, did not. They called for more local discretion. However, introducing widespread discretion was judged not to be wise at the height of the epidemic.

There were numerous appeals against the contiguous cull and many of these were upheld. In several instances the farm in question was re-designated as not contiguous. A climate of confrontation and opposition to the cull was generated in many parts of the country.

The experience in Scotland at this stage is illuminating. Through the State Veterinary Service, the Scots were implementing national policies but, because of the powers vested in the Scottish Minister, there was considerable local discretion. First, with the help of the NFI Scotland, it had been possible to explain the rationale and to build a reasonable consensus in support of the 3km sheep cull in Dumfries and Galloway.

In other words, communication of the policy goals was successful. Second, a decision was taken to apply the contiguous culling policy pragmatically and only in those premises at the edge of the epidemic zone as an extra precaution to prevent the spread of infection into new territory. These policies worked well. The disease was eliminated after 91 days.

“The contiguous cull was the single most controversial policy initiative of the entire battle against Foot and Mouth disease. It was crude, medieval and extremely brutal. And the fact that it was stepped up when the General Election loomed closer made many suspicious that it was driven by politics, not science.”

Editorial, Western Morning News, 22/05/02
In an FMD outbreak tight central direction is necessary both at the early stages of the epidemic and as it reaches its height. Good epidemiological judgements are only possible when all relevant factors are taken into account. This is one reason why reference had to be made to the State Veterinary Service specialists in Page Street. When eventually the Chief Veterinary Officer saw the epidemic was tailing off, more local discretion became possible. From 26 April the rules governing the contiguous cull were altered.

37. We recommend that in order to build support steps always be taken to explain the rationale of policies on the ground, particularly where implementation is likely to be controversial. Wherever possible, local circumstances should be taken into account without undermining the overall strategy.

The introduction of the explicit 24 hour report to slaughter policy (including slaughter on suspicion) and the contiguous cull policy played a critical part in disease control in the 2001 outbreak. The Government felt it had little choice but to accept the advice it received on these matters from the Chief Veterinary Officer and the Chief Scientific Adviser. But the process of determining and responding to that advice should have been better. It was certainly not in line with the recommendations on scientific advice made by The BSE Inquiry. Communication of the rationale generally was poor. The decision making process remains unclear. In some cases too the statutory position was insufficiently clear. Although the circumstances which led to this were exceptional, it was in part a failure of advance planning.

The possibility of adopting a contiguous culling policy in future should be retained. However, it is imperative that it should only be applied in the light of up-to-date scientific and veterinary advice. Robust management information should be available to support any decision.

38. We recommend that provision be made for the possible application of pre-emptive culling policies, if justified by well-informed veterinary and scientific advice, and judged to be appropriate to the circumstances.
11.1 Opening of COBR

By the morning of Thursday 22 March the situation was dire. The number of new cases over the previous week had averaged 31 each day. Following an emergency morning meeting with the Prime Minister, the Minister for Agriculture and others at Number 10 to discuss options for tackling the rapidly escalating crisis, the Cabinet Secretary gave instructions for the Cabinet Office Briefing Room to be opened immediately.

This mechanism, better known within Whitehall and to the media by its acronym of COBR, is an established part of the contingency machinery of government. It had been used to manage and coordinate responses to earlier civil emergencies, such as the fuel crisis in Autumn 2000. It would be deployed later in the year to respond to the terrorist attacks on the World Trade Centre and the Pentagon on 11 September 2001.

In activating the COBR mechanism on 22 March, the Cabinet Secretary requested that every available departmental Permanent Secretary should attend the first meeting, which he himself chaired at 1500 that afternoon. Ten Departments were represented along with the Scottish Executive and National Assembly for Wales. The Government's Chief Scientific Adviser was also present.

The participants went through the operational approach in place to eradicate the disease and looked at the available resources at each point of the process. In doing so, it became clear that the problem was not just lack of veterinary staff. The meeting agreed a series of actions to assess operational requirements in more detail and to begin leveraging in the wider resources of government. MAFF was to be asked each day whether any additional resources were needed. If any were, these would be provided at once. From this day an integrated strategic and operational response to the disease emerged.

COBR met twice daily until 5 April. The frequency of meetings was then reduced. A brief summary of its operation and functions during the FMD outbreak is set out in paragraphs 2.3.24-2.3.28 of the Government’s Memorandum to this Inquiry (see the CD-ROM annexes).
"We all knew about speed, speed, speed and from where I was sitting ... the main thing holding it up in the first six weeks was a fascination with an election date."

11.2 Timing of COBR

The opening of COBR was a significant turning point in efforts to co-ordinate disease control activities on the ground and to mobilise logistical support across government.

From this moment and for several weeks thereafter, the Prime Minister took personal control of the crisis. And crisis it had become. Parts of the countryside were in chaos. Tensions inside and outside government were increasing. The epidemic was not ‘under control’ in any sense of the term. The COBR mechanism allowed the full force of government to be brought to bear. The goal was simple: to rid the country of the disease and to do so as quickly as possible.

Many submissions to the Inquiry suggested that government decisions at this time were heavily influenced by electoral considerations. The argument was that, in the first phase, a softly, softly approach was taken to avoid unnecessarily disturbing public opinion. Only when it became clear that this was not working was a heavy-handed approach adopted, again with an eye on forthcoming local and national elections.

We have examined government papers and questioned Ministers and officials but have found no evidence to support such a suggestion. Indeed, officials at all levels and in many locations are adamant that they were never exposed to any pressures other than the need to control the disease in the best possible way. Politicians would undoubtedly have had electoral considerations in mind, given the level of media speculation about the likely date of the General Election, but we have no evidence to support the notion that this had a significant bearing on policies or strategies for managing the disease.

Nor do we have any reason to doubt the Prime Minister’s personal assertion that he was focussed entirely on tackling the disease. As a result of his preoccupation with the epidemic, delaying the local elections already set for 3 May and the General Election became inevitable. Electoral campaigns would have been impractical with the disease still rampant in large areas of the country.

Why then did it take 31 days from detecting the first case to putting in place the mechanisms and organisation that could bring to bear the full capabilities of government resources? These were 31 days during which a serious veterinary problem became a national disaster.

Part of the reason lies in the culture of Whitehall. Departments are often reluctant to seek help from each other. The outbreak was initially regarded solely as MAFF’s problem. Without any formal review mechanism for reporting to the top of government, there was no structured way to challenge the prevailing view. There were, in short, no trigger points.

There is a lesson here for the future.

39. We recommend that a mechanism be put in place at the centre of government to assess potential domestic civil threats and emergencies and provide advice to the Prime Minister on when to trigger the wider response of Government.

11.3 Management of information

We have already identified the issue of inadequate information flow. Put simply, those at the top responsible for major decisions were not provided with timely, accurate and relevant information about what was happening on the ground. Good management information systems and information analysis models would have shown, as early as the end of the first week of the outbreak, that existing resources were already stretched and in some parts of the country had been exhausted.

But, as late as 29 March, robust information on performance against the 24-hour slaughter target was still lacking. There were little data on disposal rates and a significant backlog of data on the operation of the 3km cull in Cumbria.

One of the earliest challenges for COBR was to improve the quality of management information it received from the ground. A note from the Permanent Secretary of the Cabinet Office to the Cabinet Secretary on 29 March (see CD-ROM annexes) set out the deficiencies in management information available to the centre and the steps being taken to rectify them.

The ability of the regions to enter data locally onto the Disease Control System at this time was, at best, limited. The bulk of the information was sent by phone, fax and email from the regions to Page Street where it was recorded. The Animal Health Divisional Offices and Regional Operations Directors made matters more complicated.

The Animal Health Divisional Offices had always collected data on the time of slaughter. They also recorded disease report times, although not until Saturday 24 March. The information was supposed to be passed to Page Street. But the severe pressure on resources meant that recording and reporting sometimes suffered, leading to backlogs and gaps. Where information was reported, it was not always made available to the local Regional Operations Director.

MAFF did not at first collect information on start of slaughter, a key parameter. Nor did its systems have the ability to measure properly performance against the 48-hour slaughter targets introduced on contiguous farms on 28 March. On 29 March, MAFF started collecting this information from Regional Operations Directors by telephone and entering the data at Page Street.

For the first two months of the outbreak – including the absolutely critical first three to four weeks – there was a serious deficiency in the reliability and completeness of the information available to those in charge of managing the disease.

“...you could see the colour drain from his [Jim Scudamore’s] face when we were telling him. Jim Scudamore did not know, Nick Brown did not know, the communications blockage between what was going on on the ground and Carlisle, and then from Carlisle to Page Street, Page Street to the Minister, the Minister to the Prime Minister and the Cabinet, there were blockages all the way along.”

Public Meeting, regional visit to the North West
We believe that this lack of clear information on some of the most important indicators of the performance of disease control policies was a significant obstacle to managing the disease. There is a key lesson here for the future. The quality of management information in times of crisis is critical.

Whatever the contributory factors, MAFF Ministers and officials realised too late that managing the crisis was not only about securing sufficient numbers of vets – important though they were – but also about ensuring that other resources were available as well. Mechanisms within the Department had not been sufficiently sensitive to pick up the early warning signs that MAFF and the State Veterinary Service were being overwhelmed. The Prime Minister told the Inquiry that he was constantly asking MAFF whether they had sufficient resources to tackle the disease and was repeatedly assured that they thought they had. The reality, borne out by subsequent events, was different.

11.4 Reinforcing the crisis response

There was no mechanism at the centre of government to provide detached advice, at one step removed from efforts to tackle the disease, about when to reinforce the response to the crisis. DEFRA’s Permanent Secretary told the Inquiry that such a mechanism would have served a valuable function. Neither the Cabinet Office nor the Home Office, the Department with lead responsibility for advising on domestic emergency planning arrangements at the time, fulfilled this role. This apparent vacuum in central advice and expertise on crisis management has subsequently been tacitly acknowledged by the creation of the Civil Contingencies Secretariat in the Cabinet Office following the General Election in June 2001.

The Civil Contingencies Secretariat will act, in future, as a trigger, alerting departments and the centre to potential problems across a range of issues. Its work will be based on horizon scanning and the assessment of information drawn from a variety of sources, both domestic and international. It will also advise departments on how to develop, rehearse and update their contingency plans. There is one essential caveat. The existence of the Civil Contingencies Secretariat must not reduce the incentive for departments to develop comprehensive contingency arrangements themselves.

11.5 Creation of the Joint Co-ordination Centre

The Joint Co-ordination Centre came into operation in MAFF on 26 March and was co-located with the existing Departmental Emergency Control Centre at Page Street. A brief summary of its operation and functions is set out in paragraphs 2.3.29-2.3.33 of the Government’s Memorandum to this Inquiry.
“The function of the JCC was to provide and maintain an accurate ground picture of progress of the campaign, provide a liaison network to facilitate the rapid dissemination of instructions and information to the field and present information on the operation to all interested parties. It reported to COBR and to MAFF (later DEFRA) Ministers... It produced a daily report to COBR on the state of the epidemic, the resources deployed, the effectiveness of the operation, (the culling and disposal targets) disposal options, costs and on measures being taken to return the countryside to normality.”

The Joint Co-ordination Centre benefited from the organisational and logistical expertise of the military personnel assigned to it, along with staff from other government departments. Thus the NFU wrote in its submission to the Inquiry: “The military’s role in the Joint Co-ordination Committee [sic] ... proved to be a critical factor in achieving a more co-ordinated, applied and disciplined approach to tackling a wide range of logistical issues on the ground.” The NFU was represented in the Joint Co-ordination Centre to provide feedback on the impact of policies on the ground – an opportunity which was not extended to representatives of the wider rural economy.

40. We recommend that, in future, a representative of the wider rural economy be invited to participate in the Joint Co-ordination Centre.

Once they had been established and settled into a working pattern, both the Joint Co-ordination Centre and COBR made a significant contribution to the overall disease control strategy. At Cabinet on 29 March, the Minister of Agriculture reported that a huge effort was being made to bring the disease under better control and departments, especially the Ministry of Defence, had been most helpful in providing additional resources.

11.6 Handling of strategic and operational issues

Decision-making at a strategic level, involving the Prime Minister and the Minister of Agriculture, took place outside COBR. The Minister of Agriculture did not attend COBR. The Prime Minister has told us that, given the volume of work, responsibility had to be divided up. He decided that the Minister should lead on policy, keep the House of Commons informed and liaise with the farming industry while COBR dealt with logistics. It is not apparent, though, that this distinction was maintained throughout the crisis, or recognised by all those responsible for disease control activities on the ground.

Whether or not policy is decided inside or outside COBR, there should be well defined roles and functions at every stage of the process for managing a crisis. At a strategic level, the Prime Minister or Minister in charge must set the overall policy direction. At an operational level policy should be interpreted, parameters defined for action and appropriate resources made available. In our view, COBR and the Joint Co-ordination Centre fulfilled this function well. At a tactical level, those on the ground must understand what needs to be done and have the authority to do it.

In any crisis, especially one that mobilises the deployment of resources across Government, we perceive a need for detached, impartial advice at the most senior levels from individuals not directly involved in the emergency response. A ‘senatorial group’ whose membership would vary depending on the nature of the crisis could provide this. Such a body could give a valuable independent view on the handling of future national emergencies.

41. We recommend that the concept of a ‘senatorial group’ be developed to provide independent advice to the Prime Minister and Cabinet during national crises.
12.1 Introduction

Disposal of carcasses presented an enormous logistical problem. It created huge public concern and wide media interest. Images of mass burials and, particularly, huge pyres are still the emblem of the outbreak – even though the last pyre was lit on 7 May. While closure of footpaths may have been a major factor in keeping local tourists away from rural attractions, the images of the mass pyres, televised around the globe, undoubtedly kept away foreign visitors.

42. We recommend that burning animals on mass pyres is not used again as a strategy for disposal.

The issue of disposal and the inadequacy of provision for it had been noted in the Drummond Report in 1999 and further acknowledged by the State Veterinary Service in July 2000. The Dutch experience of disposing of nine million pig carcasses during the outbreak of classical swine fever in 1997 could have served as a warning for other countries to be prepared for a similar eventuality.

Contingency planning should have included consideration of a range of off-farm disposal options for various scenarios. It could have anticipated logistical problems that might arise from the location of disposal facilities, the size and species of animal, and the fact that many farms are accessed via narrow lanes. It should have drawn upon the Dutch experience and considered strategies to manage large scale disposal, such as vaccinating animals to postpone slaughter or freezing carcasses to pace the disposal. Better planning could have helped to reduce the backlog of carcasses and so improve the management of their disposal.

Disposal was an issue not only for the carcasses generated by disease control culling but also for the animals accepted onto the Livestock Welfare (Disposal) Scheme.

The Drummond Report commented that: “there is little time to debate the merits of one disposal method against another when disease has broken out and carcasses on the infected premises are starting to decompose.” Yet this is exactly what happened in 2001.

The pre-existing Veterinary Instructions had a section on disposal of carcasses, predicated on disposal on the infected premises, preferably by burying, as recommended in the Northumberland Report. For disease control reasons moving carcasses off infected premises was best avoided.
From the environmental perspective, on-site disposal could create problems because of the potential contamination of groundwater. In the last major outbreak in 1967, this had been less of an issue. Awareness of environmental matters was less developed in 1967. The Environment Agency did not exist and legislation was less robust. Matters were aggravated in 2001 by an exceptionally wet winter and spring, with flooding and high groundwater levels. In addition, the records of the location of private water supplies were incomplete.

The Veterinary Instructions said that, where burial presented problems, burning was the alternative. A meeting between Ministers and the Chief Veterinary Officer on 21 February emphasised the need for swift slaughter and disposal, and agreed that "the most effective way of disposing of potentially large numbers of carcasses without putting public health at risk would be to burn them...[although] the environmental consequences would possibly need to be raised with the Environment Agency."

It was not long before the volume of carcasses was posing serious problems. Farms were much larger in 2001 than in 1967. Average herd and flock sizes had doubled (5.4.2). As a result, the logistics of disposal became more complex. For example, in Cumbria in the early weeks, four individual cases generated 1,458 cattle and 17,270 sheep for slaughter — and a further 15 dangerous contact farms to be culled. A pro rata calculation on these 15 dangerous contacts would give a total of some 90,000 carcasses linked to the four original cases.

### 12.2 Pressure builds

The option of rendering carcasses was first considered on 5 March. A Deputy Chief Veterinary Officer, at a veterinary management meeting, was charged with checking if there were any blockages in the slaughter and disposal chain, and whether there was a role for the military to help in containing the outbreak. The following day it was agreed to investigate the use of air curtain incinerators. On 10 March, it was agreed that off-farm disposal should be used in areas where narrow roads prevented transportation of burning equipment to the farm site. By 12 March, the Veterinary Instructions contained guidelines on disinfecting and monitoring carcasses awaiting disposal. Carcasses were disinfected, but close monitoring of carcass heaps was not routine. There were fears that heaps of carcasses could contribute to disease spread by rats. There is a small theoretical possibility that such transmission could occur.

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Later on in the outbreak, on 21 June, the Secretary of State for Environment, Food and Rural Affairs, Margaret Beckett, said that the Department of Health had advised that the greatest hazard for public health would result from leaving carcasses out in the open.

The public health aspects of disposal, other than those associated with groundwater, were only belatedly considered. The Department of Health was not routinely represented at the Joint Co-ordination Centre in the early phase. Not until 24 April did the Department of Health issue guidance on minimising the risks to public health. There was the added complication of the possibility of BSE in cattle over 30 months old. The existing FMD Veterinary Instructions did not address this. Record keeping early in the outbreak was poor, so the age of cattle buried or burned at a given location was not always known. Policy was developed during the first weeks of the outbreak and some disposal sites were retrospectively assessed.

The Spongiform Encephalopathy Advisory Committee made a recommendation on the disposal of pyre ash in May 2001.
Several organisations were responsible for aspects of environmental and health control (12.3.1). Local authorities were responsible for air quality near pyres, use of commercial landfill, and private water supplies, but they were not actively involved by MAFF early enough, nor systematically. In some regions local authority officers have told us that the Regional Disease Control Centre seemed unaware either of the legal responsibilities of local councils or at which tier of local government responsibility lay.

43. We recommend that training for those with responsibility for managing disease control include the relevant legal frameworks and the structure and responsibilities of local government.

44. We recommend that all agencies with responsibility for public health be actively involved in designing disease control strategies and in contingency planning and communications.

The Environment Agency had developed a risk-based hierarchy that identified rendering and high temperature incineration as the preferred options. However, rendering capacity was limited and not conveniently located. There were a few high temperature incinerators capable of taking whole cattle carcasses, but these were already fully committed. By the end of the outbreak the summary disposal statistics in England and Wales were as shown in 12.3.2.

In Scotland, 98% of carcasses from infected premises were burnt on-farm. The remainder were rendered. The majority of other Scottish animal carcasses were buried at Birkshaw Forest.

The risks to the environment and public health associated with disposal have been shown to be minimal. There were 212 water pollution incidents, only three of which were classified as ‘major’ incidents. The majority of incidents, including the three classified as ‘major’, were associated with problems of disposal of slurry arising from movement restrictions.

12.4 Mass burial and landfill

By 10 May the problem had been overcome. The disposal backlog had been reduced to 350 by a combination of military logistical support and the creation of mass burial sites.

Mass burial sites generated significant opposition from local communities who were concerned about possible environmental damage and risks to health. Fears were aggravated by the fact that the concept of mass carcass burial was new and hence the design of the sites was novel. There were also concerns that the transport of infected carcasses into the area could, of itself, spread the disease. Such concerns were not allayed by leaking wagons which were seen on some occasions. We have not found any evidence that this was a mechanism of spread but, at the height of the outbreak when emotions were high and the stress on rural communities immense, the uncertainties associated with disposal did not reassure local people.

### 12.3.1 Organisations with responsibility for environmental and public issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Lead organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government policy and legislation affecting the environment</td>
<td>Department for Environment, Food and Rural Affairs (DEFRA)</td>
</tr>
<tr>
<td>Scottish Environmental Protection Agency</td>
<td>National Assembly for Wales</td>
</tr>
<tr>
<td>Air pollution i.e. noise, smoke, small problems</td>
<td>The local authority (except when they relate to a site at which the Environment Agency regulates emissions to the air)</td>
</tr>
<tr>
<td>Environmental health</td>
<td>Department of Health</td>
</tr>
<tr>
<td>Planning permission</td>
<td>The local planning authority</td>
</tr>
<tr>
<td>Contaminated land</td>
<td>The local authority (but sometimes the Environment Agency will have a lead role)</td>
</tr>
<tr>
<td>Supply of public drinking water</td>
<td>The local water company</td>
</tr>
<tr>
<td>Monitoring of quality of private drinking water supplies</td>
<td>The local authority</td>
</tr>
<tr>
<td>Sites of Special Scientific Interest and nature reserves</td>
<td>English Nature</td>
</tr>
<tr>
<td>National Parks</td>
<td>The appropriate National Park Authority</td>
</tr>
<tr>
<td>Rights of way and access to the countryside</td>
<td>Countryside Agency</td>
</tr>
<tr>
<td>Drinking water quality</td>
<td>Drinking Water Inspectorate (public supplies)</td>
</tr>
</tbody>
</table>

Source: Information supplied by Environment Agency North East Region, Northumbria Area

### 12.3.2 Summary disposal statistics

<table>
<thead>
<tr>
<th>Disposal method</th>
<th>Provisional statistics</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning (on farm)</td>
<td>Over 950 sites</td>
<td>Based on available DEFRA/National Assembly for Wales data for England and Wales.</td>
</tr>
<tr>
<td>Burial (on farm)</td>
<td>900 sites</td>
<td>DEFRA/National Assembly for Wales estimate for England and Wales.</td>
</tr>
<tr>
<td>Mass burial</td>
<td>61,000 tonnes at four sites</td>
<td>DEFRA/National Assembly for Wales estimate for England and Wales to August.</td>
</tr>
<tr>
<td>Commercial landfill</td>
<td>95,000 tonnes at 29 sites</td>
<td>Environment Agency estimate for England and Wales to September.</td>
</tr>
<tr>
<td>Rendering</td>
<td>131,000 tonnes at seven plants</td>
<td>DEFRA/National Assembly for Wales estimate for England and Wales to October.</td>
</tr>
</tbody>
</table>

Source: Environment Agency, December 2001
The speed with which decisions were taken, from site selection to construction and use, meant that there was little or no time for consultation. In many instances, Environment Agency groundwater authorisation was given retrospectively. In one case, Eppynt in Wales, the paucity of existing geological information and the lack of time for a thorough site investigation meant that the authorisation proved to be inappropriate and the site had to be closed.

The lack of consultation angered local communities who were not always told of the plans before work had commenced. Local MAFF officials were left with a difficult community liaison task to manage over the following weeks and months. One front line official explained how protesters squirted her with liquid they claimed was leachate, and dumped chopped liver on her car. Such incidents appear to have been rare. Protest was strong but generally peaceful.

Mass disposal sites still remain a contentious issue even with the passage of time. They appear to have blighted the communities nearby. They cost significant sums of money to maintain and monitor. The National Audit Office report on the 2001 FMD outbreak contains further financial details.

Commercial landfill could, in theory, have accommodated all the stock slaughtered for disease control purposes and via the Livestock Welfare (Disposal) Scheme, thereby removing all the costs of construction and ongoing management associated with the mass burial sites. Of the 111 landfill sites identified as suitable only 29 were used, taking 95,000 tonnes of carcasses. Few landfill operators were willing to accept carcasses. In the face of this reluctance, driven largely by public and local authority opposition, the Government would have had to direct the individual landfill licence holders to take carcasses. The risks of being directive were seen to be too great. This problem could have been avoided if planning for mass disposal had been undertaken and standby arrangements with landfill operators put in place in advance.

We believe that much anguish could have been avoided and resources could have been saved had disposal been given due consideration during the period following the Drummond Report. There are lessons here for the future.

Open and honest communications with local communities at such times of tension are vital. Decisions about mass disposal would never have been popular, but the lack of information and perceived insensitivity to local concerns aggravated the situation. In addition, local communities that eventually accommodated a mass burial site, received no compensation from the Government at all. Such a payment might have gone some way to mitigating the distress felt by those in local communities.

45. We recommend that local communities be consulted on mass disposal sites according to best practice guidelines, and that the question of compensation for communities accommodating emergency disposal sites be researched. We recognise that this is a complex legal area nationally and at EU level.

12.5 Role of the Environment Agency

The Environment Agency’s links with MAFF at the outset were not good. The Agency reported to us that they had to press to get involved in some regional centres. Where on-farm burial was occurring, the Agency did desk-based assessments of the proposed site, as far as possible with a three-hour turn around time. They also carried out assessments of the proposed mass burial sites. They were able to draw upon a variety of data sources and the local expertise of their area based staff. This approach was satisfactory where the data available were robust. But there were sometimes errors in the grid references supplied to the Agency for on-site burial. There were limited data on the exact source of private water supplies. In Wales, the geological database produced by the British Geological Survey was not sufficiently complete to make reliable assessment for mass burial.

12.6 Cleansing and disinfection

Once carcasses had been disposed of, farms had to undergo cleansing and disinfection before restrictions could be lifted. The National Audit Office FMD Report contains a detailed case study on cleansing and disinfection and the associated costs which accords with the picture we have established.

A major complaint presented to us was that the delay in completing the cleansing and disinfection process, and the associated delay in removing restrictions, not only had adverse implications for the farmer, but also added to delays in reopening footpaths.

We were also told how cleansing and disinfection was sometimes undertaken by contractors who had little or no knowledge of farms or farming. There was no standard approach to follow because the structure of farms varied widely. Different contexts presented different cleansing problems. The National Trust, for example, experienced difficulties when inexperienced contractors and officials attempted to apply inappropriate cleansing strategies for listed buildings.

A water company in the North East explained to us how failure to involve them in planning and on-going discussion came close to creating a local water incident. Huge volumes of water were drawn from the network for cleansing and disinfection.

12.7 The Livestock Welfare (Disposal) Scheme

The need for some form of welfare scheme had been apparent early in the epidemic. The movement and trade restrictions, particularly in Surveillance and Protection Zones, were likely to lead to welfare problems if they extended for any length of time.
During the classical swine fever outbreak in 2000 MAFF had had to introduce a welfare scheme for pigs, not principally because of movement restrictions but because of the absence of a market for susceptible animals. That scheme had been administered by the Intervention Board, a body whose main responsibility was intervention in the Common Agricultural Policy. The Intervention Board had disposed of over 180,000 pigs during the classical swine fever outbreak. The staff in MAFF and the Intervention Board who had experience of the classical swine fever scheme were asked early in March 2001 to draw up a similar scheme for the FMD outbreak.

The principle behind the classical swine fever scheme had been that it was a scheme of last resort. It was expected that farmers would want to retain their animals if at all possible. Initially the scheme had only offered free collection and disposal. Pressure from the farming industry resulted in the introduction of payments which eventually reached about 70% of the animals’ value. The industry itself topped up the payments (via a £4 million Government loan repaid by levy).

In designing the scheme for FMD, MAFF was anxious to avoid such a negotiation of rates. So, in striking a balance between the principle of a scheme of last resort and the desirability of buy-in from the farming industry at the outset, the proposed Livestock Welfare (Disposal) Scheme rates were set at around two-thirds of market value and notified to the EU, as required by law, on 16 March.

However, on 22 March, at a meeting at Number 10 attended by the Prime Minister and the English and Welsh Ministers for Agriculture, representatives of the farmers’ unions in England, Wales and Scotland arrived to negotiate the payment rates. The English Minister for Agriculture and his officials had anticipated pressure from the unions. He had been prepared to move the average level of compensation up to 70% but this was less than the unions were asking for. The Minister and his officials expressed concern that higher rates would create an alternative market. In the event, the meeting agreed the Minister’s proposal in relation to pigs and hoggets but also agreed the unions’ proposals of 90% for breeding animals and 80% for clean cattle. The scheme was announced later that day with these increased rates.

Those who had developed and were to run the scheme, but who had not been present at the Number 10 meeting, knew that the increase in rates would attract far greater participation in the scheme than had been planned for. The scheme became a first port of call rather than a last resort. It was soon deluged, and outstripped the capacity of the Intervention Board to handle claims.

One aspect of the last resort design was that it would not require any veterinary input to check and prioritise applications. Farmers would only apply if in real need and with the support of their local vet. The generous nature of the scheme that was negotiated, encouraged applications in cases that were not yet serious or not even genuine welfare cases.

The Intervention Board did not have the resources or expertise to manage prioritisation and verification. At the start of the outbreak it only had one vet. It later had three vets. The RSPCA provided valuable input to prioritising cases on strictly welfare grounds.

Matters were made worse because the Livestock Welfare (Disposal) Scheme had been designed, sensibly, so as to slaughter only when the disposal route was clear, and to use spare rendering capacity. Yet on the day after launch all spare rendering capacity had been commandeered to deal with FMD culled animals. Furthermore the outbreak was spreading and so were the associated restricted zones, generating still more welfare problems.

The Intervention Board had picked up the administration of this scheme at a time when it was on the brink of a large-scale reorganisation and was in the process of developing major new computer systems. The organisation had no regional structure yet the FMD outbreak was being regionally managed. The Livestock Welfare (Disposal) Scheme was a paper-based system. It was unable to cope from the outset with the scale of take up.

Pressure on the Livestock Welfare (Disposal) Scheme was a recurrent theme in situation reports to the Joint Co-ordination Centre and COBR over the following weeks:

“Huge backlog of cases. Intervention Board appear to be totally overwhelmed by the size of the problem. The scheme is simply not working”.

“The Minister heard about the difficulty of contacting the Intervention Board. Consideration should be given to increasing the capacity of the helpline.”

“The blockage was in disposal. Until landfill or rendering capacity could be unlocked... the scheme was effectively stalled”.

At Inquiry meetings around the country regular reference was made to the inadequacies of the Livestock Welfare (Disposal) Scheme. The numbers were so large and the ability to deal with them so small. For example, in Wales twice as many animals were slaughtered on welfare grounds as were for purposes of disease control.

The blockage on disposal continued as it proved difficult to negotiate access to commercial landfill for disposal of welfare carcasses. “There is already confusion on the ground, hostility and suspicion and increasing local authority action or threat of action to halt the process. In some cases the co-operating landfill contractors are being strong armed or threatened with suspension of other contracts to prevent them from taking this waste. There needs to be much more of a high level communicate and persuade exercise” (Status report to Joint Co-ordination Centre/COBR 4 April 2001).
Disposing of unpleasant waste attracts public opposition at the best of
times. In the midst of the FMD crisis the public had little sense of the
distinction between diseased and welfare carcasses. There were concerns
about all types of disposal. Trying to persuade landfill companies, local
authorities and the public to accept carcasses against this backdrop was
bound to be very difficult. When landfill capacity was successfully
contracted prices were up to ten times those in normal circumstances.

One third of the applications to the scheme came from Wales, but there
had been only limited landfill available in Wales so most of these animals
were disposed of in England. The location of disposal facilities supports
the case for retaining a national rather than a devolved approach to
disease management.

Applications to the scheme were handled by the office of the Intervention
Board in Newcastle, and then passed to the Board’s office in Reading for
slaughter and disposal arrangements to be made. The volume of
applications, limited numbers of staff, inexperienced staff on helplines and
the absence of a computerised system with any linkage to other farm
databases all contributed to delays in processing. There were duplicate
entries in the system, representing 676,000 animals. An improved database
system eventually helped to detect and eliminate them. This duplication,
combined with last minute withdrawals, was at the root of problems such
as contractors arriving to slaughter only to find that the job had already
been done or was no longer needed.

The RSPCA played a valuable role in assisting with local welfare problems
and in pressing for prioritisation of urgent cases. They also contributed to
avoiding welfare problems on the ground by supplying many tons of fodder
and bedding and, on occasion, tents for lambing.

There were numerous instances of severe welfare problems and long
delays. Some animals died before arrangements could be made for
slaughter. However we have heard, from many quarters, that some farmers
took advantage of the scheme and disposed of healthy animals. The
RSPCA provide a case study in their submission in which they observe that
the animals in question were worth around £50 per head but would have
been valued at £81 by the Scheme. The National Audit Office reported that,
in early April 2001, COBR noted that payment levels were providing
incentives to farmers to let their livestock become welfare problems.
Livestock Welfare (Disposal) Scheme rates were revised downwards in late
April and again in late July following review and consultation. A related
scheme for light lambs was introduced on 3 September and, given a longer
lead in time and fewer animals, ran more smoothly.

No contingency plan for any large-scale welfare disposal scheme existed.
The scheme was conceived and developed during the early weeks of the
outbreak and the last minute nature of it, coupled with the rise in payments
in response to farming pressure, rendered much of the planning useless as
it undermined key design principles of the scheme. DEFRA’s interim FMD
contingency plan of March 2002 has not addressed welfare issues.

The welfare scheme whose design had worked in the classical swine fever
outbreak, would probably have come under strain, even without the last
minute increase in rates. In the different context of FMD, the duration and
geographic spread of the disease made the prospect of sale of potential
welfare cases in future markets less likely. The extensive and extended
nature of the outbreak created more welfare cases than anyone would have
predicted and put pressure on limited disposal resource. Farmers have told
us that very limited movements, strictly for welfare reasons, ought not to be
incompatible with disease control so long as they are subject to strict
biosecurity controls. This warrants consideration in our view.

46. We recommend that the Government consider the welfare
implications of disease control policies, as part of contingency
planning for FMD and other diseases, and seek to identify
strategies that minimise the need for slaughter and disposal on
welfare grounds.
13.1 Vaccination

Vaccination was one of the most hotly debated, yet misunderstood, aspects of the FMD epidemic. Our Inquiry concentrated on policy matters surrounding vaccination, while the Royal Society Inquiry examined the scientific issues.

The debate about vaccination in 2001 has to be seen in the specific context of animal vaccination. There are two aspects to this: disease control and the implications for international trade.

Vaccination can be used in different ways to control an FMD outbreak (13.1.1). The UK considered the use of emergency vaccination during 2001. It never considered routine mass vaccination of all animals against FMD.

13.1.1 Vaccination terminology

<table>
<thead>
<tr>
<th>Vaccination terminology</th>
<th>Description</th>
</tr>
</thead>
</table>
| Routine (or prophylactic) vaccination | - Mass vaccination for long-term prevention when FMD is endemic or recurrent.  
- Not permitted within the EU. |
| Protective vaccination | - Emergency vaccination of a limited number of animals in a restricted area (‘vaccination to live’). |
| Suppressive vaccination | - Emergency vaccination and subsequent slaughter of a limited number of animals in a restricted area (‘vaccination to die’). |

13.2 International Animal Health Code

Different disease control strategies have different implications for international trade and regaining disease-free status, as described in the International Animal Health Code of the international organisation, the OIE (13.2.1) and discussed in section 14.3. The Code sets the standard for the World Trade Organisation. However, individual member countries decide how to incorporate the rules into their own national arrangements.

The International Animal Health Code had not, until May 2002, explicitly taken account of the use of emergency protective vaccination in which vaccinated animals were allowed to live out their normal economic lives. The disease status of countries which vaccinated their animals, but did not subsequently slaughter them, was not clear. In particular, the period that countries using emergency protective vaccination had to wait until they regained ‘FMD-free without vaccination’ status could have been 12 months, two years or longer, depending on how the Code was interpreted.
13.3 EU Policy

The EU holds the highest status of ‘FMD-free without vaccination’. This permits Member States to export animals and meat to any country in the world. As part of preparation for the single European market in 1993, the EU decided to harmonise its approach to vaccination. Previously, most Member States used routine vaccination to prevent outbreaks of disease. The exceptions were the UK, Ireland, Greece and Denmark.

The EU conducted a cost-benefit analysis of disease control strategies (14.4). The benefits of a stamping out policy outweighed those of mass vaccination campaigns because the frequency of FMD outbreaks in the EU had decreased over the years. Accordingly, the routine use of FMD vaccines was prohibited and Member States phased out vaccination between 1991 and 1993 following provisions contained in amending Council Directive 90/423/EEC (5.4.4).
“Ten years after vaccination was brought to an end in Europe the debate that it provokes has not lost any of its intensity. Its supporters and its opponents confront one another in a dialogue in which the certainties on one side are matched only by the confidence on the other.”

French Senate Inquiry Report into FMD 2001, Chapter No. III (English translation)

Although routine vaccination is no longer an option for EU Member States, the International Animal Health Code permits FMD-free countries to use emergency vaccination in the event of disease outbreaks. A Member State can only use emergency vaccination with the approval of the EU Standing Veterinary Committee. In 1999, the European Commission Scientific Committee on Animal Health and Animal Welfare adopted a report entitled ‘Strategy for Emergency Vaccination against FMD’. It contained guidelines, including criteria to aid decision-making related to protective vaccination, and recommended that contingency plans should provide estimates of the total number of vaccine doses required.

By 2001, therefore, the use of vaccination to tackle an FMD outbreak anywhere in Europe was subject to European law. No Member State could act unilaterally. In the event of an outbreak, each country needed to consider its response in the light of the European legal framework.

In the UK, the initial policy approach was not to use vaccination but to rely on the traditional stamping out policy. The Netherlands, by contrast, with its large export market, opted for suppressive vaccination. This involved implementing a planned vaccination programme, developed in the wake of the 1999 classical swine fever outbreak, followed by slaughter of vaccinated animals. The strategy meant that disease-free status could be regained three months after slaughter of the vaccinated animals when exports could resume. It allowed a more orderly process for slaughter and disposal, although some have argued that more animals were culled than might have been had stamping out alone been implemented. The numbers culled – 267,992 animals on 2,763 affected premises for 26 infected premises – led to public criticism of the policy.

13.4 Contingency planning for vaccination

We found no evidence that the UK took heed of the 1999 European report guidelines in altering UK strategic policy. Contingency planning for vaccination was minimal.

Instructions for vaccination were prepared in the Veterinary Instructions. The version available at the start of the outbreak had been produced in May 1998, and provided an outline procedure. It recognised that the existing legislation was out-of-date and required revision in light of EU Directive 85/511 (5.4.4).

In a report prepared for the Inquiry, the Chief Veterinary Officer wrote, on 28 March 2002, that: “No estimate has been made of the human resource requirements for a vaccination programme. For the purpose of this paper the assumption is made that a stamping out policy would be operated first and that, if sufficient trained resources were immediately available as outlined, vaccination could be avoided.”

Plans for vaccination during the FMD outbreak had to be developed at the same time as fighting the disease.

13.5 Proposed vaccination of cattle in Cumbria

Vaccination was considered within the first week of the outbreak, but generally thought to be impractical. Nevertheless, a flurry of activity ensued. MAFF commissioned papers from experts, such as scientists at the Pirbright Laboratory, and information was gathered urgently. They concluded that, due to the widespread nature of the infection, vaccination would have little to contribute to disease control at that stage. The scientific and practical pros and cons of vaccination options and their implications for trade should have been thought through in advance of the outbreak.

At a meeting on 12 March, the Prime Minister was content with the decision not to vaccinate and it was recorded that the Chief Veterinary Officer “noted that some people were advocating vaccination as a viable alternative strategy. However, he saw a number of insurmountable difficulties with it, not just in terms of disease control but in terms of the UK’s ability to export meat and livestock, and the negative impact on UK tourism. He believed it very unlikely that the EU would press us to introduce a vaccination programme.”

The disease picture continued to worsen from mid-March onwards. Daily numbers of cases continued to rise. On 19 March, the Chief Veterinary Officer visited Cumbria and decided that a plan of action was urgently needed in case vaccination were required. Cattle that had been housed over the winter were to be released to spring pasture over the following weeks. The density of infection in sheep in Cumbria was such that dairy cattle were at great risk if they were let out before the infected sheep had been culled. Options were considered and cost-benefit analyses conducted. With the State Veterinary Service already fully stretched, ADAS Consulting Ltd was engaged on 23 March to draw up operational plans for a vaccination programme.

Vaccination in Cumbria was considered primarily as a means to protect cattle from the disease and allow them to live out their normal economic lives. The aim was to reduce the numbers of cases and release resources for other priorities.

Within the proposed vaccination zone, control measures required by the EU would have had practical implications for food production, such as milk pasteurisation and treatment of meat products. The Government did not plan to pay compensation, even though EU law provides for partial reimbursement of Member States for any compensation paid for losses incurred as a result of post-vaccination controls.

Vaccination was discussed by the FMD Science Group many times throughout the epidemic. From their first formal meeting on 26 March, most of their early meetings dealt with vaccination and the use of models to predict its impact on disease control. On 10 April, the Group unanimously recommended vaccination of the housed cattle in Cumbria, providing that it did not detract from the slaughter and disposal operations, and that co-operation from the farmers was secured. They advised that it would not reduce the spread of the disease but would prevent the loss of many valuable animals, and that the decision must be taken quickly since delays would decrease the benefit.
MAFF made the necessary preparations. On 27 March, it recommended to the Prime Minister that, “a programme of emergency vaccination of cattle should be undertaken as a matter of urgency.” Authorisation from the EU Standing Veterinary Committee was applied for on the same day. It was approved and then adopted on 30 March. 500,000 doses of high potency vaccine (O1 Manisa strain) were available from the International Vaccine Bank at the Pirbright Laboratory. 156 vaccination teams recruited by ADAS Consulting Ltd were put on a three-day standby. Nothing happened.

### 13.6 Lack of support for vaccination

For all the urgency, discussions were still taking place with industry groups. The farmers’ unions were neither convinced of the scientific rationale nor the need for vaccination, given the implications for export markets. Furthermore, support would depend on assurances that the food industry would accept products from vaccinated animals.

The food industry was nervous that consumers would not buy food products from vaccinated animals (13.6.1), despite the Food Standards Agency’s assertion that there were no health risks. The issue came to a head at a summit meeting called by the Prime Minister at Chequers on 12 April. It was Maundy Thursday, the day before the Easter weekend. This was a critical time for the tourist industry. The disease was still raging. The number of daily cases had fallen to around 30 per day from the peak of 50 recorded on 30 March. Much of the country was still under strict movement controls. On 2 April, the Prime Minister had postponed local elections planned for 3 May.

In a note of the meeting at Chequers, the Prime Minister had summarised the situation: “The NFU remained strongly opposed to vaccination. But they also said that this opposition depended in large part on fears that the retailers would shun the products of vaccinated livestock. If the industry decided that it would accept the products, farming opinion could shift quite quickly.”

The farmers’ unions remained resolutely opposed to vaccination throughout the crisis. Vaccination was postponed when the Cumbrian farmers agreed to keep their cattle housed for longer to allow time for the risk to be removed by culling the infected sheep in the area. In fact, the 3km cull in Cumbria was resisted and only partially completed. On 18 April, the Government announced that vaccination was still being considered and that industry views were being sought. But, without the full co-operation of farmers, a vaccination campaign could not have been effective. By the following week, the reasons for vaccination were less compelling. The cattle had been let out and the epidemic was in decline. The plans for vaccination in Cumbria were abandoned.

Vaccination was seriously considered on several occasions. However, the decision to vaccinate as an additional control measure was overshadowed by the lack of support on the ground.

### 13.6.1 Consumer attitudes to FMD vaccination

The decision on whether to vaccinate animals against FMD relied, in part, on the anticipated reaction of consumers to food products from vaccinated livestock. Surveys throughout the crisis gave equivocal answers. A definitive view could only have been gained by testing consumer behaviour in the marketplace.

The Food Standards Agency made clear, both at the Prime Minister’s meeting with the food industry on 12 April and in its announcement on 27 April, that products from FMD vaccinated animals posed no additional risks to food safety, in the same way that produce from livestock routinely vaccinated against other diseases can be consumed without concern. Consumer organisations concluded that it was unlikely to be an issue for consumer choice and therefore that products would not require special labelling. The Soil Association and organic producers supported this view.

Despite these assurances, some parts of the food industry had worries about consumer confidence. They feared that vaccination would generate a two-tier market. Consumers might demand labelling and have a preference for other sources of produce, such as imported meat.

The consequences of the decision on vaccinating cattle in Cumbria were made clear by the Prime Minister when he met the food industry, as recorded on 12 April: “If the case for vaccination were rejected by the industry, the result could be the slaughter of a large part of the dairy herd. The public might respond very negatively to this, and to the fact that the situation had come about because of resistance to vaccination by the farming and food industries.”

Surveys conducted by the Institute of Grocery Distribution revealed two main areas of concern and confusion for consumers: the indecision over the use of vaccination and the motives behind the livestock cull. Most consumers preferred vaccination to slaughter. Some consumers believed that products from FMD vaccinated animals were safe but still preferred not to consume them.

### 13.7 Vaccination re-visited

The vaccine stocks held at the Pirbright Laboratory reached their expiry date at the end of May 2001, but commercial supplies of vaccine were delivered (1.5 to 3 million doses per month) until January 2002 and stored at the Metal UK site, next door to the Pirbright Laboratory, on behalf of DEFRA.

In May, the settle outbreak and general disposal problems led to vaccination again being raised at COBR meetings. The outbreak in Thirsk in July also prompted DEFRA to consider vaccinating cattle in that area. However, in each case, vaccination was rejected.
Some special cases for vaccination were considered carefully but also rejected. For example, it was decided not to vaccinate rare breeds or hefted sheep. Some breeds represent rare genetic stock which cannot easily be replaced, although ova and semen can be stored in gene banks. Hefted sheep result from years of careful breeding during which knowledge of the parcel of land, the ‘heft’, is passed on from ewe to ewe lambs. As part of the policy adjustments announced on 26 April, rare breeds and hefted sheep were exempted from the contiguous cull provided that strict biosecurity was maintained.

Following appeals from hefted sheep farmers and others to vaccinate their animals, the Foot and Mouth Disease (Control of Vaccination) Regulations 2001 were introduced on 5 July. These prohibited vaccination without a licence from the Secretary of State as the disease free status of the whole country or defined zone would have been affected by the use of vaccination. Proposals to vaccinate hefted sheep on the Brecon Beacons in Wales were considered in depth during July. The pros and cons were assessed, including the contribution to disease control, the costs and the economic impact on agriculture and tourism, and practical issues of implementation. COBR advised against vaccination, but considered how the culling policy might be modified if the disease proved to be much more widespread than the initial epidemiological analysis suggested. In the event, a major programme of blood-testing confirmed the initial epidemiological analysis. Further culling was not needed.

The final major consideration of vaccination started towards the end of July, when the dense pig farming areas in Humberside would have been at risk had the disease spread eastwards from the Thirsk area. If the pig farms had become infected, FMD could have spread widely because pigs excrete large amounts of airborne virus. Options for the pre-emptive vaccination of pigs and cost-benefit analyses were considered against various assumptions. None of the risk scenarios transpired, although DEFRA Ministers made clear to the Inquiry that the potential impact on disease control was so great as to override all doubts about vaccination.

13.8 To vaccinate or not to vaccinate

To vaccinate or not in various locations and at various times created considerable controversy during the epidemic. The issues were complex, even for professionals with relevant clinical experience. The UK was not well prepared. Policy decisions and practical issues had not been thought through in advance. Attempts to work out strategies with interest groups at the height of the crisis caused confusion in the minds of the public and led to delays in taking clear decisions. Several opportunities for protective vaccination were considered in detail in association with EU officials. There were many conflicting points of view. Even when the science was clear, the practicalities and economics were not. Co-operation from the farming community as a whole was not achieved, and the concerns voiced by some sectors of the food industry about public acceptability of vaccinated products strongly influenced the decision not to vaccinate cattle in Cumbria.

47. We recommend that the Government establish a consensus on vaccination options for disease control in advance of an outbreak.

There are important conclusions to be drawn from these experiences.

- Emergency vaccination must form part of the strategic options available to manage any future outbreak.
- DEFRA should maintain an appropriate state of readiness, together with a shared understanding in the EU and among stakeholders, of the conditions where vaccination will be used.
- Export restrictions must be based on sound scientific evidence so that economic penalties are minimised.
- The farmers’ unions and other parties must engage with DEFRA to deliver this goal.

48. We recommend that the Government ensure that the option of vaccination forms part of any future strategy for the control of FMD.

49. We recommend that the State Veterinary Service maintain the capability to vaccinate in the event of a future epidemic, if the conditions are right.

“…science appears to have let us down, our industry did not have a suitable diagnostic test, nor had the debate on vaccination been conducted suitably between 1967 and the present outbreak, they had had plenty of time. That debate should have been conducted, the situations under which vaccination might have been used ought to have been clearly relayed to us all and then it would have saved a lot of the nonsense and debate that did go on.”
14.1 The Government’s estimate of the impact of FMD on the economy as a whole

The 2001 Pre-Budget Report estimated that the impact of the FMD epidemic on the country’s Gross Domestic Product, or GDP, was less than 0.2%, equivalent to nearly £2 billion. But, the impact on GDP is likely to be much less than the true costs of the disease.

This is because the GDP effect only measures the resulting loss of output. Some costs such as the human ones discussed below are not included at all and the loss of value of livestock is not captured properly. Furthermore, the resources employed in treating the disease and managing its consequences, whilst counting as production in the calculation of GDP, are resources which in the absence of the disease would largely have been productively employed elsewhere in the economy.

Although, losses to sectors directly affected by the disease were, from a macroeconomic perspective, largely offset by increased spending elsewhere, the impact on tourism in the affected areas was devastating. Some of that activity was diverted to other UK locations and to consumer spending on unrelated items. This reduced the effect on total output. It did not, however, reduce the severe costs that were imposed on or within particular sectors. Some consumers also suffered because they would have preferred to spend their money in the countryside but were unable to do so, and this is not captured by GDP.

It is, however, correct to measure the losses which resulted from FMD by the effect on value added in the producing sectors. Some high figures have been cited as a result of using gross revenue, before deducting the costs associated with that output or considering alternative uses. In particular, the costs associated with export restrictions are not the value of the exports affected, but the value of the exports less their cost of production, or the value of exports less the value which would be derived in lower value uses.

The Government has estimated the net costs on the sectors or types of businesses most adversely affected. These were agriculture and the food chain, together with those businesses directly affected by tourist expenditure. These estimates were published in a joint paper by DEFRA and the Department of Culture, Media and Sport. The paper shows how rural and urban areas were affected and assesses the regional impact. The impact on the wider rural economy is considered in section 9.11 of our report. While most of the effects will have occurred in 2001 some of the agriculture effects are likely to be felt for a number of years.

2 The Costs of Foot and Mouth Disease in the UK; joint paper by DEFRA and Department of Culture, Media and Sport, 2002.
All the estimates are limited by the nature of the available information. The impact on domestic tourism is subject to serious data limitations and has consequently drawn heavily on survey data. So cost estimates for businesses directly affected by tourist expenditure are presented in broad ranges.

Agriculture

The main costs in this sector resulted from the slaughter and disposal of livestock, either to control the disease directly or to deal with animal welfare problems. The Government compensated farmers for their loss of livestock by some £1.34bn. This figure includes compensation for any infected materials seized or destroyed.

During the crisis, professional valuers determined the value of the animals for compensation purposes. The average compensation for cattle rose from around £500 in the early weeks of the outbreak to a peak of around £1500 in May, before falling back to around £1200 in September. The average compensation values for sheep rose from an initial £100 to £300 in July and then also declined. A standard rate card was introduced in March 2001. To encourage its use the standard rates were based on the upper quartile of market prices before the February outbreak. The rates ranged from £150 to £1100 for cattle and £32 to £150 for sheep.

In some cases, it is likely that the compensation paid to farmers exceeded the amount which they would have expected to obtain for their animals in normal conditions, possibly by substantial amounts. It was judged necessary to pay farmers on a generous basis to ensure their co-operation in the slaughter policy. The costs of this represented a transfer of resources from taxpayers at large to the farming community.

The outbreak imposed other costs on this sector (14.1.1). These were estimated at £355m on agricultural producers. Some £175m was incurred as a result of the restrictions on animal movements.

Farmers within or close to infected areas, whose farms were subject to Form D restrictions suffered greatly. They incurred the costs of keeping animals and were subject to strict movement controls. However, they received no compensation.

Food chain

There were further costs imposed on the food chain; most markedly on auction markets, slaughterhouses and food processors. These activities were disrupted by the movement and export bans. The Government estimates that the total loss of value added for these sectors was some £170m.

| 14.1.1 Sectoral Economic Effect of FMD (Agriculture, Food Chain and Tourism) 2001 - 2005 |
|------------------|--------|
| Sector            | £ million |
| Agricultural producers | -355 |
| of which:          |        |
| Market prices¹    | -50    |
| Export loss²      | -130   |
| Withholding costs²| -175   |
| Consequential costs³ | -35   |
| Sheep Annual Premium⁴ | -120 |
| Agrimoney aid      | +155   |
| Food Industry      | -170   |
| of which:          |        |
| Auction Markets    | -95    |
| Abattoirs          | -40    |
| Processors/hauliers| -35    |
| Tourism⁵ (range)   | -2700 to -3205 |
| Indirect effects   |        |
| Agriculture/food chain⁶ | -45    |
| Tourism⁷ (range)   | -1835 to -2180 |

¹ Market prices represents a loss of revenue associated with price changes consequent upon the changed pattern of marketings.
² Export loss is an additional effect associated with lower quality domestic uses (e.g. pet food) for supplies diverted from export.
³ Withholding costs are the extra costs and deterioration in quality associated with holding animals on farm beyond optimum marketing dates.
⁴ Consequential losses are those associated with the loss of production whilst farms are prevented from re-stocking.
⁵ Sheep Annual Premium/Over Thirty Months Scheme/Agrimoney are associated subsidy changes, some of which are co-funded by the EU budget.
⁶ Losses of gross value added.
⁷ Additional (indirect) costs.
⁸ Estimates from input-output multipliers to all industries linked to tourism.

Source: DEFRA and the Department of Culture, Media and Sport
Tourism

Overall, the tourist sector, both rural and urban was estimated to have lost between £2.7 and £3.2bn of value added in 2001 as a result of FMD. Within these figures there were winners and losers. Some businesses only a few miles apart from an FMD outbreak were affected in very different ways. Some were hardly affected or even have had increased business, while others were forced to close.

Differential effect on rural and urban areas

The costs for agriculture, food and tourism were disaggregated to derive estimates of the differential impact on rural and urban areas. The loss in rural areas was in the range £2.2 to £2.5bn, while the loss in urban areas was in the range £0.8 to £1bn. The vast majority of these costs related to reduced spending on domestic tourism.

Regional impact

The Government also derived regional estimates of the costs to agriculture and the food industry. Approximately two thirds of the costs occurred in England, with around one sixth each in Scotland and Wales.

Indirect costs

The industries which supply agriculture, the food industry and tourist related businesses, also suffered. The aggregate effect on these industries was estimated at £1.9 to £2.3bn. Within this, the overall impact on suppliers to the agriculture and food industries was a relatively modest £85m because FMD led to increases in the demand for some types of input, such as feed, as well as reductions in demand for other inputs. It was not possible to derive rural or regional estimates for these indirect costs.

Public sector

In addition to £1.34bn in compensation for the losses associated with livestock slaughter, the Government met other costs linked with the outbreak. These are set out in table 14.1.2. Total costs to date to the public sector were £2.8bn.

Although some farmers were compensated for the vast majority of their losses, businesses affected by reduced tourist expenditure received little compensation.

14.2 Human and other costs

The above figures relate only to those effects that have proved relatively easy to measure. The outbreak also had further impacts, including the stress caused to farmers and others, restrictions on access to the countryside, health effects and environmental costs.

In many areas affected, the social structure and sense of community were severely damaged. There was often little social contact as many were confined and unable to go about their usual life.

14.1.2 Expenditure on FMD by Government¹

<table>
<thead>
<tr>
<th>Activity</th>
<th>Actual Expenditure to 24 May 2002 (£ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments to farmers</td>
<td></td>
</tr>
<tr>
<td>Compensation paid to farmers for animals culled and items seized or destroyed</td>
<td>1,130</td>
</tr>
<tr>
<td>Payments to farmers for animals slaughtered for welfare reasons²</td>
<td>211</td>
</tr>
<tr>
<td>Total payments to farmers</td>
<td>1,341</td>
</tr>
<tr>
<td>Direct costs of measures to deal with the epidemic</td>
<td></td>
</tr>
<tr>
<td>Haulage, disposal and additional building work</td>
<td>252</td>
</tr>
<tr>
<td>Cleansing and disinfecting</td>
<td>295</td>
</tr>
<tr>
<td>Extra human resource costs</td>
<td>217</td>
</tr>
<tr>
<td>Administration of the Livestock Welfare (Disposal) Scheme, including operating costs, disposal charges and slaughter fees</td>
<td>164</td>
</tr>
<tr>
<td>Payments to other Government departments, local authorities, agencies and others</td>
<td>73</td>
</tr>
<tr>
<td>Miscellaneous, including serology, slaughterers, valuers, equipment and vaccine</td>
<td>68</td>
</tr>
<tr>
<td>Claims against the Department</td>
<td>5</td>
</tr>
<tr>
<td>Total direct costs of measures to deal with the epidemic</td>
<td>1,074</td>
</tr>
<tr>
<td>Other costs</td>
<td></td>
</tr>
<tr>
<td>Cost of government departments’ staff time</td>
<td>100</td>
</tr>
<tr>
<td>Support measures for businesses affected by the outbreak¹</td>
<td>282</td>
</tr>
<tr>
<td>Total other costs</td>
<td>382</td>
</tr>
<tr>
<td>Total costs</td>
<td>2,797</td>
</tr>
</tbody>
</table>

¹ All costs are provisional pending completion of a DEFRA project to investigate the full costs of the outbreak.
² Includes payments of £205.4 million under the Livestock Welfare (Disposal) Scheme and £5.3 million under the Light Lambs Scheme.
³ Includes money available under European Union market support measures for agri-monetary compensation in respect of currency movements.

Source: DEFRA, NAO

“...it is a tragedy that an animal illness has been translated into one that had severe impact on the mental health of our patients.”

GP, Devon
Haydon Bridge High School in Hexham, Northumberland, serves the local community with 750 pupils coming from a 700 sq km catchment area. It has a boarding house for 50 weekly boarders. There is also a School Farm, on site, with beef and dairy cattle and sheep.

Many pupils come from farming families and so, coupled with the farm on site, the school had a unique insight into the effects of the outbreak. In the early days, the only way to make appropriate decisions was through information gathered in consultation with other schools, forming a partnership of 19 schools in Northumberland, and through a local NFU representative who happened to be a school Governor. Communications from either County Hall or DEFRA invariably came by post so they were already out of date on arrival. Often they were inconsistent. County Hall’s advice on disinfectant mats was that they should be banned for health and safety reasons. DEFRA, on the other hand, insisted on their use if the school wanted to have its Form D notice lifted in early September and be open for the autumn. The Form D has been placed on the school and its farm in late August, as the Hexham hotspot raged. Neither the school nor the farm was told that this had happened.

Early in the epidemic, on Friday 2 March, 40% of students (286) were absent. With exams approaching, the school found itself in a very difficult position: how to maintain the education of its students, while at the same time maintain biosecurity on the farms?

"By now (3-4 March), all of the community is within a restricted area. A whole swathe of students, and six staff could be absent for weeks rather than days. This is confirmed by even more phone calls and by reference to the Internet. How ironic that information travels fast; many of our students not at all. How frustrating that our long-standing pleas for improved I.T. facilities in this most rural area have often fallen on deaf ears. We still have to use the post to send work home – and to receive urgent messages from County Hall."

The school and its Ridley Hall boarding home had the added burden of a financial cost due to the outbreak. The £10,000 bill was first sent to County Hall and then on to DEFRA. As of the end of May 2002, the school had not received any payment.

During our inquiry visits, we heard many examples of poor communication, all of which led to increased stress and mental hardship for the local populations.

Many members of the public were denied access to, and hence enjoyment of, the countryside. Government officials also suffered in trying to manage the epidemic.

We received a number of submissions regarding the perceived health risks from mass pyres and the disposal sites. These issues were raised by North Cumbria’s director of Public Health in his submission to the Cumbria Inquiry into FMD. He felt strongly that the Department of Health should have been brought in earlier to advise on such matters and to reassure the public.

In addition to the human or health effects, there were also environmental impacts resulting from the disease control measures, most notably those associated with carcass disposal. These are discussed further in section 12.

Although such costs were often difficult to measure, they remain legitimate components of an overall assessment of the effects of animal disease control strategies, and should be taken into account in decision making.

50. We recommend that Government make explicit the extent to which the wider effects of disease control strategies have been identified, measured and taken into account in policy decisions.

14.3 The benefits of FMD control strategies

The financial costs of the 2001 epidemic mostly fell on those outside the farming community: taxpayers at large, other businesses related to agriculture and, most importantly, other businesses in rural areas. Many farmers were substantially compensated for the financial costs of the epidemic: others were not. The human costs in terms of stress and isolation did however fall disproportionately on farming families and rural communities. It is reasonable to ask what was gained in return for all these costs, both those that were possible to measure, and those where measurement was much more difficult.

The benefits of FMD control accrue to farmers, rural communities and society as a whole. In addition to maintaining exports of livestock and livestock products, benefits include lower costs of livestock production, better animal health, maintaining foreign tourism, and avoiding constraints on UK travellers abroad.

The total livestock and livestock products export market was worth £2,343.4m and £1,314.7m in 1995 and 2000 respectively (14.3.1). As a result of the ban on exports, some products intended for export were diverted to the domestic market, albeit possibly sold at lower prices or as inferior products.

"There are children out there in our schools now we are still giving counselling to, they are still traumatised and will continue to be so."

Public Meeting, regional visit to the North West
The ability to maintain these exports is significant for those engaged in the agricultural export trade. From a national economic perspective, however, the value of maintaining exports of £1.3bn is not material in relation to the total costs incurred in controlling the 2001 epidemic.

But failure to control FMD would substantially increase the costs of UK livestock production; possibly by such an amount as to make a large proportion of current livestock production unviable.

On narrow economic grounds, it is difficult to see why costs as substantial as those of the 2001 epidemic should be met by people not engaged in agriculture. In most industries, in which there is a possibility that a failure within the industry will impose substantial costs on people outside the industry, there is an expectation that the costs of failures will mostly be met by the industry concerned.

We accept that it is neither possible nor acceptable that the farming industry should bear the full costs associated with that control. There are wider benefits of controlling FMD, which accrue to the country as a whole. The implication of this is that the public should bear at least some of the costs of maintaining a healthy and extensive livestock industry. But, in return, the farming industry must recognise that it, along with others, has responsibilities for the rural economy and should contribute to its future development.

We therefore support the position of the Policy Commission on the Future of Farming and Food. The way ahead for agriculture, including animal disease control, must be seen in the context of an overall strategy for the rural economy in which the agricultural sector is but one of a number of interests. In the heat of the 2001 epidemic, policy was driven mostly by the urgent needs of the agricultural sector. In longer term planning for future contingencies, a wider range of interests must be considered.

51. We recommend that the interests of all the sectors likely to bear the brunt of any costs be properly represented and taken into account when designing policy options to control animal disease outbreaks.

14.4 Cost benefit analysis of FMD control strategies

A comprehensive cost-benefit analysis of the 1967 outbreak concluded that the economic benefits of FMD control exceeded the costs of control, whether through slaughter or vaccination, by a substantial margin. However, a full scale updating of the costs and benefits of controlling FMD was not carried out. Such an updating is overdue. A number of factors is likely to have changed since the 1960s. For example, tourism has grown in significance both in terms of GDP and employment. The values that society places on, for example, the environment and avoiding the unnecessary suffering of animals is unlikely to be the same now as it was some 30 years ago.

52. We recommend that cost-benefit analyses of FMD control strategies should be updated and maintained. These should be undertaken at both the UK and EU level.

14.3.1 The livestock and livestock products export market

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Beef and veal</td>
<td>540.1</td>
<td>600.1</td>
<td>60.1</td>
<td>6.6</td>
<td>660.2</td>
<td>606.7</td>
</tr>
<tr>
<td>Pig meat (exc bacon &amp; ham etc)</td>
<td>200.3</td>
<td>245.7</td>
<td>45.3</td>
<td>17.7</td>
<td>245.7</td>
<td>163.0</td>
</tr>
<tr>
<td>Ham etc.</td>
<td>15.1</td>
<td>16.3</td>
<td>12.2</td>
<td>1.1</td>
<td>27.3</td>
<td>23.4</td>
</tr>
<tr>
<td>Live pigs</td>
<td>29.7</td>
<td>35.5</td>
<td>5.8</td>
<td>0.7</td>
<td>35.5</td>
<td>36.2</td>
</tr>
<tr>
<td>Sheep meat</td>
<td>307.5</td>
<td>313.8</td>
<td>6.4</td>
<td>3.8</td>
<td>314.2</td>
<td>317.6</td>
</tr>
<tr>
<td>Live sheep</td>
<td>106.0</td>
<td>72.0</td>
<td>0.0</td>
<td>0.0</td>
<td>106.0</td>
<td>72.0</td>
</tr>
<tr>
<td>Milk/milk products</td>
<td>611.7</td>
<td>796.1</td>
<td>184.5</td>
<td>466.1</td>
<td>898.2</td>
<td>1,262.2</td>
</tr>
<tr>
<td>Poultry</td>
<td>191.6</td>
<td>229.9</td>
<td>38.2</td>
<td>28.8</td>
<td>230.0</td>
<td>258.8</td>
</tr>
<tr>
<td>Total</td>
<td>2,022.0</td>
<td>2,343.4</td>
<td>341.5</td>
<td>241.3</td>
<td>2,363.5</td>
<td>2,584.7</td>
</tr>
</tbody>
</table>

Source: DEFRA

15.1 Introduction

Good communications are essential to any organisation’s business. The same applies to government. In times of crisis government has a special responsibility to communicate clearly and accurately to the population at large.

Throughout the work of our Inquiry, ‘communications’ was a recurring theme. It touched, and sometimes enraged, many people affected by the epidemic.

This section summarises how the Government communicated, what others did and what more could be done to ensure that communications are well targeted and effective should a serious animal disease break out. As the DEFRA director of communications said to the Inquiry: “If there is an information vacuum, then mis-information and myth creep in.”

15.2 The principles of good communications

The guiding principle for government in a crisis is to explain policies, plans and practices by communicating with all interested parties clearly and consistently in a transparent and open way. This should be done quickly, taking account of local circumstances.

The elements that underpin that guiding principle are as follows:

- be honest and open;
- ensure the facts are right;
- correct any mistakes as soon as possible;
- provide information that is up-to-date;
- provide as much local or regional detail as possible;
- tailor information to different audiences;
- communicate internally as well as externally;
- make maximum use of available technologies;
- be inclusive;
- communicate promptly.

These are useful yardsticks by which to assess the capacity and flexibility of any communications system during a crisis. While some were practised during the FMD epidemic, others were not.
15.3 The national response

When the first case of FMD was diagnosed on 20 February 2001, MAFF’s press office had a small staff and no regional structure. It did not immediately reinforce its numbers nor set off an emergency response. It was, understandably, not geared up to the 24 hours a day, 7 days a week routine that crisis management demands. There were no trigger mechanisms to alert MAFF to the potential for increased demand on its communications resources. Only from the weekend of 24-25 February did such measures start to be put in place.

In the early hours of any crisis, speed and clarity of communication matters. Just as with tracing the spread of FMD, so presenting a clear message about the nature of the disease is critical.

53. We recommend that the Government build into contingency plans the capacity to scale up communications systems and resources rapidly at the onset of any future outbreak of animal disease.

54. We recommend that a government-wide crisis communication strategy be developed by the Civil Contingencies Secretariat with specific plans being prepared at departmental level; for example by DEFRA and the devolved administrations in Scotland and Wales in the context of animal disease control.

As the disease spread, MAFF put in hand a number of initiatives. A website was opened on day one and updated thereafter. Daily briefings led by the Minister of Agriculture and the Chief Veterinary Officer were started on 21 February. These briefings gave a factual account of the spread of the disease. Journalists to whom we spoke said how much they welcomed them. Much of the early press coverage was factual and positive. For example, on 23 February, The Times described the Government as having acted with “exemplary speed”. The following Monday 26 February the Sun said of Nick Brown, the Minister of Agriculture, that “he has acted with calm authority quickly making the right decisions while avoiding creating an atmosphere of panic”.

As the crisis deepened, daily briefings become more of a burden than a benefit. The Head of the Pirbright Laboratory said that preparation for media interviews took up a disproportionate amount of his time.

Face-to-face daily media briefing is not essential in a crisis. What is vital is that accurate information is provided quickly and is easily accessible.

On 25 March 2001, the daily MAFF briefings were discontinued. National press briefing came from Number 10 and the Cabinet Office. Media briefings should add value and information. The twice daily political lobby briefings by Number 10 made little sense when there was nothing new to say and briefing political journalists made less sense than briefing specialist journalists, some of whom felt excluded. This was particularly so at the time of the development of the contiguous cull.

15.4 Communications with stakeholders

The weekly stakeholder meetings set up by MAFF every Friday were valuable. The first of these was on the first Friday of the outbreak, 23 February. They continued on Fridays throughout the whole crisis. Participants at these meetings told us how useful they were. However, dissemination of information from those meetings was inconsistent. Some stakeholders got information onto their websites quickly. The Food and Drink Federation showed us examples of the electronic briefing notes sent to all their members within hours of the close of stakeholder meetings. By contrast the Department’s website was sometimes not updated quickly. This caused confusion.

MAFF regional offices and local government frequently received information informally via local stakeholders, before they received it officially. Sometimes, when regulatory changes were made, local officials were not given enough warning. This caused confusion among farmers and others seeking information.

Local helplines were established. But operators were overstretched and did not have enough up-to-date, detailed knowledge. In some cases, local offices took on support from the local NFU or used voluntary helpers to deal with the large number of callers. We were told that, at the start of the crisis, many Disease Control Centres were unable to deal with offers of help from local communities.

Information was not fully co-ordinated on a national and local scale. COBR meetings did not have consolidated management information for the purposes of overall strategic management of the crisis (9.3 and 11.3).

55. We recommend that DEFRA develop its regional communication strategy and ensure that it has effective systems for disseminating clear and concise information quickly to all its regional offices. This should be developed in the context of cross-government crisis management planning, in consultation with the Regional Co-ordination Unit and Government Offices.
58. We recommend that the State Veterinary Service revise all its disease control Forms A-E and information about exotic animal diseases in liaison with the Plain English Campaign.

15.7 The regional and local media

FMD affected different areas in different ways. The pattern and size of disease spread varied enormously. At one end of the scale Cumbria had over 40% of all outbreaks. At the other end Northamptonshire had only one case. Local communications should reflect such differences.

The regional media during the epidemic fulfilled a special role. They were always on hand, pressing the local agenda on what they saw as a London-imposed national agenda. The Western Morning News, Western Daily Press, The Journal (Newcastle), Northern Echo, Yorkshire Post, News & Star, Cumberland News, The Scotsman and Dumfries & Galloway Standard and others saw clearly how the national crisis was affecting their local communities.

There were media campaigns on local issues, especially the issue of disposal. Local stories often became national headlines, none more so than Phoenix the Calf (15.7.1).

MAFF was slow to strengthen its regional media capacity. Initially it relied too much on local staff who had no media training or background. As it became clear that they would not be able to cope, the local Central Office of Information became more involved. Regional Operations Directors, appointed in mid- to late March, took over co-ordination of local communications.

A section of the media that received widespread praise in the course of our Inquiry has been local radio. It provided the vital service of telling local people what was happening and where in their locality. At its best it was up-to-date, accessible and regularly available. In Devon, BBC local radio station provided twice daily programmes at set times giving updates on all aspects of FMD. In Cumbria, BBC radio broadcast updates seven times a day, five times in the morning and twice in the afternoon. In Yorkshire, BBC North Yorkshire split its frequencies and broadcast special news updates in the morning, at lunchtime and in the early evening.

56. We recommend that DEFRA resource its website to ensure it is a state-of-the-art operation. In any future outbreak, the website should be used extensively, and a central priority should be to ensure that it contains timely and up-to-date information at national and local level.

15.6 Direct communications

Over the course of the epidemic the Department sent out 16 mailings including a video on biosecurity. The Disease Control Centres also sent out information directly. For example, the Exeter Disease Control Centre alone sent out over 30 information sheets.

It has been difficult to assess the value of these mail shots. We were told that they were often ineffective. By the time some of the mail shots were read, they were already out-of-date.

Some of the routine disease notices were poorly written. The Animal Health Act (1981) Form D notices, which put farms under a movement standstill, have been widely criticised in our public meetings and in meetings with individual farmers for being poorly written and lacking clear explanatory notes.

57. We recommend that DEFRA commission research into the effectiveness of its direct communications during the FMD outbreak of 2001 so that all the lessons may be learned, acted upon and the results published.
15.8 The international media

The international media was prominent throughout the crisis, viewing the epidemic from a different standpoint from the national and regional media.

Pictures of mass pyres spread around the world. Tourists chose not to visit a burning Britain. As far as the outside world was concerned, Britain was in the grip of yet another animal plague: it was not only unhealthy to eat British food – it was also unwise to visit Britain.

59. We recommend that communications strategies during a crisis take special account of the needs of the international media.

15.7.1 Phoenix the Calf

The Charolais-cross calf Phoenix was born in Devon on Friday 13 April, Good Friday. Her herd was culled five days later. When the disposal teams arrived to remove the carcasses, Phoenix was found unharmed. The media called for her to be saved. These appeals reached a peak around 24 and 25 April. On 26 April, the contiguous cull policy was refined and Phoenix’s life was spared.

The Government firmly denied that Phoenix had influenced its policy change. The decision to change policy had been made some days before Phoenix came to the nation’s attention. It had already been arranged that the Minister of Agriculture, Nick Brown, would make a statement explaining the policy change in the House of Commons on 26 April.

However, on the evening news bulletins of 25 April and in The Mirror the next morning, the implication was that policy had been changed specifically in order to save Phoenix. We do not believe this to be so. In evidence to the Inquiry the Prime Minister’s Director of Communications and Strategy said that “we [Downing Street] agreed with MAFF on the 25th that the Phoenix story was becoming a real distraction, and that, as Nick’s statement would have the coincident effect of sparing Phoenix, that should be communicated to the media. This was during the evening of April 25th in time for the late bulletins. This did not pre-empt the statement, other than to say that Nick Brown would be making this statement, and it would be clear from what he said that the individual circumstances of the likes of Phoenix would be taken into account.” (See CD-ROM annexes.)

In any future outbreak, the local media should be used to the full. DEFRA should provide tailored information to local radio stations or local newspapers in time for their deadlines, working with the Government Office network and the Government News Network. Similar arrangements should be made in Scotland and Wales.

Central government should consider how best it can support and strengthen regional communications in times of crisis. Regional Operational Directors responsible for local communications should be trained in media skills.

In any future outbreak, the local media should be used to the full. DEFRA should provide tailored information to local radio stations or local newspapers in time for their deadlines, working with the Government Office network and the Government News Network. Similar arrangements should be made in Scotland and Wales.

Central government should consider how best it can support and strengthen regional communications in times of crisis. Regional Operational Directors responsible for local communications should be trained in media skills.
16.1 Biosecurity

Biosecurity entered the farming vocabulary during 2001. Few people were familiar with the concept at the start of the outbreak. It involves measures to prevent the spread of disease, such as cleansing and disinfecting vehicles and equipment (16.1.1). It can be as simple as washing one’s hands.

16.1.1 DEFRA’s eight key precautions against FMD

1. Keep livestock separate
2. Deal with sheep last
3. Keep yourself clean
4. Keep the farm secure
5. Keep unnecessary vehicles away
6. Clean and disinfect
7. Avoid visiting other farms
8. Look for early signs of disease

Source: DEFRA

As biosecurity contributes greatly to disease prevention and control, it should be part of routine farming practice. The pig farming sector has already understood this. Most pig farmers learned the lesson from the classical swine fever outbreak in 2000 and increased their biosecurity standards.

However, in the FMD epidemic, the implementation of good biosecurity practice was patchy. The Trading Standards Institute commented that, “…the concept of disinfection as well as cleaning with water was new to many in the farming community.” There were claims that vets and Government officials breached biosecurity. DEFRA informed us that they investigated all such claims. In most cases, they were shown to be groundless. However, it seems likely there were some breaches of tight biosecurity by officials and contractors. Although it can never be proved, this may have contributed to disease spread.

60. We recommend that farmers, vets and others involved in the livestock industry have access to training in biosecurity measures. Such training should form an integral part of courses at agricultural colleges.
Understanding of biosecurity across the countryside was mixed. Disinfectant-soaked mats or straw that lay across roads raised public awareness, but many were of limited practical value. The disinfection area needed to be wide enough, regularly cleaned and replenished in order to do its job. Some mats were allowed to become filthy and to dry out. Others were too small.

61. We recommend that the livestock industry and government jointly develop codes of practice on biosecurity. They should explore ways to communicate effectively with all practitioners and how incentives might be used to raise standards.

At the start of the outbreak, MAFF prepared information on biosecurity, which was mailed and put on its website on 5 March. Several communications and reminders to farmers about biosecurity were made during the outbreak. Organisations such as the farmers’ unions distributed information to their members. Limited resources prevented monitoring and enforcement of the procedures. Even though farmers realised these were important, some did not implement measures as rigorously or as often as they should. Some did not know what to do, and others found biosecurity difficult to implement and a burden to normal farming practice. Motivation to clean and disinfect a farm vehicle as it passed from location to location was low if the disease was not apparent. Washing soda is an effective disinfectant for FMD, but many bought expensive disinfectants unnecessarily.

On 10 May, FMD was reported in Settle. Sheep in the area had passed through Longtown market in February, but the disease did not become apparent until the cattle were let out onto pasture and became infected. Despite control measures employed at the time, the disease spread. Since infection could be traced to normal farming practices, such as movement of people or equipment between different locations, further attempts to improve levels of biosecurity were required. In June, a video was produced and, on 6 July, it was distributed to farmers. It emphasised the importance of biosecurity and outlined eight key precautions.

As the disease was dying out across most of the country, resources could be focused on ‘hotspots’ that sprang up in the late summer. The Thirsk cluster of cases caused alarm because the disease could have spread to the dense pig farming areas to the east. On 29 July, the first Restricted Infected Area, the so-called ‘Blue Box’, was declared and introduced strict enforcement of biosecurity and movement restrictions (16.1.2). Two more ‘Blue Boxes’ were declared – around the Penrith spur on 7 August and around Alnendale and Hexham on 26 August.

Until the imposition of Restricted Infected Areas, biosecurity measures were not implemented effectively. Almost 80% of the spread of the disease was ‘local’ (16.1.3). This suggested breaches in biosecurity. Some argue that more emphasis on preventing spread by movement restrictions and biosecurity, in addition to rapid slaughter of infected premises and dangerous contacts would have been sufficient to control the epidemic without pre-empitive slaughter strategies.

62. We recommend that the use of Restricted Infected Area (‘Blue Box’ Biosecurity arrangements) procedures be built into contingency plans.
16.2 Autumn movements

The seasonal pattern of the livestock industry necessitates extensive animal movements during the autumn. Without movements on this scale, serious welfare problems develop very quickly. Livestock movements, however, represent an epidemiological risk – which is why restrictions on movements are an important disease control measure. DEFRA and the industry knew that a tension would develop between these two opposing demands, and that it would need to be resolved by the autumn. This was the genesis of what would eventually become the Autumn Livestock Movement Scheme.

There were conflicting views within Government. On the one hand, the Chief Scientific Adviser was concerned that permitting extensive movements would undermine the seemingly fragile control that had been established over the disease, particularly in view of the fresh outbreaks in North Yorkshire and the North East in the summer. On the other, DEFRA and the Chief Veterinary Officer wished to ensure that the Scheme would go sufficiently far to meet the needs of the livestock industry that it would avoid widespread non-compliance.

Although both points of view were valid, they were not resolved until late in the development of Autumn Livestock Movement Scheme. As a result, finalisation of the policy was delayed by three to four weeks. It was not until 17 August that work began to develop the computer systems that would underpin the Scheme. With the Scheme due to become operational just one month later, on 17 September, the chances of a successful launch were low.

The delays impacted on the clarity with which the Scheme could be communicated to those affected and on the time available for local authorities, who would deliver the Scheme, to get their own computer systems up and running. Despite considerable effort on the part of the local authorities, it was an almost impossible task. During the first fortnight of September, the Local Authorities’ Co-ordinating Body on Food and Trading Standards repeatedly pressed DEFRA to defer the start date.

From the outset, the computer system that supported the Scheme did not function as planned. There were problems of capacity and with the system’s ability to approve or reject applications on the basis of geographic and disease control information.

As one local authority put it: “We received in excess of 300 applications [on the first day of the Scheme] with a similar number received today. We were unable to access the DEFRA Autumn Livestock Movement Scheme computer until 1630 hours yesterday. When we did access the system we found the applications that we were submitting were refused in each case and this was despite a manual cross reference proving that the application should have been accepted. The computer system did not provide any meaningful or satisfactory reason for the refusal. Of course by the time we realised this was not just a one off problem, the DEFRA helpline to local authorities had closed.”

In addition, and in common with the Livestock Welfare (Disposal) Scheme, many staff who operated the Autumn Livestock Movement Scheme helplines had little initial knowledge of the Scheme. Later on, however, staff were allocated to manage relationships with individual farmers. The Scheme improved considerably as a result of this action.

For some farmers, the confusion surrounding the Autumn Livestock Movement Scheme was the final straw. A farming representative in the Tees Valley told us that, for hill farmers, it was the worst experience they had during the entire outbreak. Many were in desperation after months of restrictions.

In trying to strike the right balance between risk management and compliance, it would probably have been impossible to satisfy in full the requirements of the farming industry. However, their hopes and expectations of what the system would be capable of delivering turned to confusion, frustration and anger.

63. We recommend that disease control policies be developed in consultation with those local authorities responsible for implementing them.

The Scottish Executive did not need to manage autumn movements in the same way as DEFRA. Scotland was designated disease free on 11 September and was able to relax restrictions on animal movements. While Scotland was still fighting the disease, its policies had slight differences from those in England and Wales. However, from this point, policy development began to differ significantly.
During the heat of the crisis, the priority had been disease eradication, with MAFF in ‘fire fighting’ mode. As the disease declined and officials perceived the end to be in sight, they were able to consider forward planning. Towards the end of April, they began to formulate the ‘exit strategy’.

A crisis exit strategy is a plan for returning to normal. In the specific case of the FMD outbreak, several objectives influenced thinking: the need to demonstrate that the UK was free from FMD; the need to remove FMD restrictions around the country; the desirability of returning to EU and international trade; the need to resume normal domestic livestock trade; the aim of reopening the countryside and recovering domestic and international tourism. All of these were linked to regaining internationally recognised FMD-free status. The International animal health organisation, the OIE, set the standards for this, but, in practical terms, the EU’s approval and requirements were paramount.

16.3.1 Serological surveillance

Serological surveillance provides statistical proof that FMD is no longer present in the country. Blood samples are tested for specific antibodies which will indicate if an animal has been infected with FMD. If the blood tests are negative, disease-free status can be regained after three months of the last FMD case, if vaccination is not used. If new cases are detected during the surveillance programme, the clock is set to zero.

The serological tests were similar to those used for diagnosis (8.1.1). During the outbreak, the Pirbright Laboratory validated the solid phase competitive (SPC) ELISA which allowed more samples to be tested than the original liquid phase blocking (LPB) ELISA. Inconclusive results were confirmed by the virus neutralisation test.

All the sheep that tested positive were killed. During the heat of the crisis, when the virus was actively circulating, positive sheep were confirmed as FMD cases. As the disease declined, veterinary judgement was applied to decide whether the result confirmed a case or not, especially when only one sheep in the flock tested positive. Further investigations, such as testing throat fluid samples for FMD virus, were conducted as necessary. If the sheep had recovered from the disease and virus was no longer present, FMD was not confirmed and the other animals were saved from slaughter.

16.3 Exit strategy

Different exit strategy approaches were assessed depending on the balance of priorities, and within the context of continued disease control. If the domestic situation was a priority, restrictions could be unwound, allowing the countryside and rural businesses, especially tourism, to return to normal as soon as areas were free of disease. By contrast, if international trade was a priority, restrictions would need to remain until the EU was satisfied that the areas were demonstrably free of disease via strict serological surveillance (16.3.1) within the 3km Protection Zones and 10km Surveillance Zones.

From May to July 2001, exit strategy options were negotiated with the EU. They were considered, with input from economic cost/benefit analyses and in consultation with industry representatives. Although regionalisation had been a possibility (Northern Ireland had earlier been recognised as FMD-free), Great Britain was treated on a whole country basis – England, Scotland and Wales – by the EU Standing Veterinary Committee and the OIE, as regards exports and disease freestatus. Restrictions on exports were gradually lifted county by county from October.

The exit strategy depended on the UK’s serological testing capacity. Before the outbreak, the Pirbright Laboratory had been able to test about 400 ELISA samples a week. With increased resources, often due to the voluntary return of former staff or students, it was able, by April-May, to test 40,000 ELISA samples a week. From May onwards, other facilities were engaged to perform ELISA tests: Centre for Applied Microbiology and Research at Porton Down; various Veterinary Laboratories Agency facilities; and the Animal Health Trust at Newmarket. By the end of the outbreak, testing capacity was 200,000 ELISAs per week. Only the Pirbright Laboratory, however, had the appropriate containment facilities to conduct the confirmatory virus neutralisation tests.

The handling of the exit strategy would have been more straightforward and some issues not have arisen, if the Government had been better prepared in the early stages of the crisis.

16.4 UK declared FMD-free

The last confirmed case was in Appleby, Cumbria on 30 September 2001, 221 days after the first. However, not until three months after the last infected animal was slaughtered, with completion of the required surveillance, could the UK be declared disease free. All counties became FMD-free on 15 January 2002 and the UK regained its international FMD-free status at an OIE meeting on 22 January 2002. The EU Standing Veterinary Committee lifted the remaining export restrictions on 5 February 2002.
In looking ahead we return to our three principal aims set out in section 3 – keeping disease at bay, reducing vulnerability and minimising the impact of any future outbreaks.

The focus of our Inquiry was the 2001 FMD outbreak. But the lessons to be learned have wider applicability. The purpose of our recommendations is to help prepare the country for the range of exotic diseases which pose a potential threat. Disease control is an international issue. The UK contributes to global policy individually and through its membership of the European Union and the OIE. Our recommendations are designed to help the UK shape the framework of international regulations.

17.1 Keeping disease at bay

The OIE List A sets out those exotic diseases which can spread rapidly. An outbreak of any of these diseases can have severe economic consequences and implications for international trade (17.1.1).

The general tools for disease control are stamping out, movement restrictions, biosecurity and, if appropriate, vaccination. The control strategies for a given disease depend on its biological characteristics, on species susceptibility, on the methods of transmission, and on the availability and effectiveness of vaccines.

Swine vesicular disease only affects pigs. The clinical signs of swine vesicular disease and FMD in pigs are indistinguishable, but the implications of the diagnosis are significantly different. The OIE is considering the removal of swine vesicular disease from List A. But the consequences of a suspect case of FMD not being reported because it is dismissed as swine vesicular disease are serious.

64. We recommend that the UK should urge the OIE to consider the implications, for the detection and control of FMD, of the removal of swine vesicular disease from the List A of notifiable diseases.

Swine vesicular disease, classical swine fever and FMD can all be carried to the UK on the wind. For example, the small 1981 FMD outbreak on the Isle of Wight occurred when airborne virus was spread from Brittany. Such transmission can not be prevented although, as in 1981, there may be advance warning of the risk.
The role of the Pirbright Laboratory

The Pirbright Laboratory plays a vital role in horizon scanning. As the World Reference Laboratory for FMD and seven other diseases classified as List A by the OIE, it holds data on reported outbreaks from around the world. In addition to research, the Pirbright Laboratory provides statutory diagnostic, surveillance and testing services to DEFRA, the Council of the European Commission, the OIE and the UN's Food and Agriculture Organisation. It also maintains a vaccination bank.

Under normal circumstances DEFRA funds projects at Pirbright on an annual basis. DEFRA's Science Directorate, the State Veterinary Service and the Biotechnology and Biological Sciences Research Council all fund strands of the Pirbright Laboratory's research and surveillance work.

There is no coherent assessment of the full range of work undertaken by Pirbright in relation to the national surveillance and control strategies. In our view there should be.

The service arrangements in place in 2001, covered the processing of 300 samples a year for MAFF, but contained no procedure for increasing the level of provision in an emergency. The Pirbright Laboratory met the huge demand placed upon it during the outbreak as the result of extraordinary effort by those concerned, including a number of former staff and research students who volunteered to return to the laboratory to help.

Pirbright handled 15,500 diagnostic samples and over one million serology samples. It used additional laboratories, and brought in personnel from other establishments. But the contractual arrangements to support this activity were only put in place after the event.

The arrangements for funding, planning and monitoring the performance of the Pirbright Laboratory should be strengthened and formalised.

Pirbright did not itself have in place a contingency plan for managing large-scale epidemics. The Laboratory was not consulted when the original FMD contingency plans were drawn up. The only reference to the Laboratory in DEFRA's current interim FMD contingency plan relates to training.

In recent years, Pirbright has experienced difficulties in recruiting and retaining staff at all levels. In 1983 it employed 13 vets. Now there are four.

65. We recommend that the Pirbright Laboratory resources, and research programmes, be fully integrated into the national strategy for animal disease control, and budget provisions be made accordingly.

Illegal Imports Forum

Illegal imports, contaminated meat is another potential entry route.

DEFRA has an action plan to reduce the risk of exotic animal and plant disease entering the country. The key elements are:

- Risk assessment;
- Co-operation between agencies to achieve effective inter-agency co-ordination of checks;
- Effective intelligence to target smuggling;
- Legal powers to give enforcement officers new powers from April 2002 to search baggage, etc, for illegal imports of meat;
- European action to clarify and, if necessary, tighten enforcement of rules on third country imports reaching the UK via other EU states; to reform rules on personal imports;
- Publicity to clarify the UK’s rules on imports of animal and plant products, and the reasons for them;
- Deterrence to give better information to passengers and shippers of the consequences of bringing illegal food imports into the UK.

To take this programme forward DEFRA held an 'Illegal Imports Forum' earlier this year. The farming unions in England, Scotland and Wales, representatives of Local Authorities, the Port Authorities, HM Customs and Excise, meat importers, airline companies and others attended the Forum.

Horizon scanning and surveillance

The risk of introduction of disease by illegal imports cannot be entirely eliminated. Horizon scanning – assessing the magnitude and location of global threats to pick up early warning signs is necessary. The role of the Civil Contingencies Secretariat in horizon scanning has been described in section 11.

17.1.1 International Animal Health Code List A diseases

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<tr>
<th>Disease</th>
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<tr>
<td>Foot and mouth disease</td>
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<tr>
<td>Vascular stomatitis</td>
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<tr>
<td>Swine vesicular disease</td>
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<tr>
<td>Rinderpest</td>
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<tr>
<td>Paste des petits ruminants</td>
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<tr>
<td>Contagious bovine pleuropneumonia</td>
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<tr>
<td>Lumpy skin disease</td>
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<tr>
<td>African swine fever*</td>
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<tr>
<td>Classical swine fever*</td>
</tr>
<tr>
<td>Highly pathogenic avian influenza*</td>
</tr>
<tr>
<td>Newcastle disease*</td>
</tr>
<tr>
<td>Bluetongue*</td>
</tr>
<tr>
<td>Sheep pox and goat pox</td>
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<tr>
<td>African horse sickness*</td>
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<tr>
<td>African swine fever*</td>
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<tr>
<td>Contagious bovine pleuropneumonia</td>
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<tr>
<td>Highly pathogenic avian influenza*</td>
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<tr>
<td>Lumpy skin disease</td>
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<tr>
<td>Newcastle disease*</td>
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Those marked * are discussed by the Royal Society in its Inquiry into Infectious Diseases in Livestock.

Foot and Mouth Disease 2001: Lessons to be Learned Inquiry
Surveillance

A MAFF report on veterinary surveillance in 1999-2000 commented on the "major influence of expert advisory committees [such as the Spongiform Encephalopathy Advisory Committee] in determining surveillance priorities … Once recommendations are made by these committees they often become urgent political priorities for Government … but because the recommendations of the committees are taken up on an ad hoc basis they can have major resource consequences… A clear published strategy for veterinary surveillance may assist in accommodating these external demands more efficiently."

DEFRA is currently developing a strategy for enhancing UK veterinary surveillance of animal health.

66. The State Veterinary Service, together with the Pirbright Laboratory, should increase their horizon scanning and threat assessment capabilities for major infectious animal diseases.

Routine surveillance involves vets employed by the State Veterinary Service, the Meat Hygiene Service and the Veterinary Laboratories Agency, vets in private practice, and farmers and others working in the livestock industry. These agencies should all work closely together to achieve the common goals of the new surveillance strategy.

67. We recommend that, in developing the surveillance strategy, there be the widest possible involvement of those with a role to play in surveillance.

Veterinary recruitment

We have referred elsewhere to the difficulties in recruiting veterinary staff to the State Veterinary Service, especially in the South East, and to the reduced number of vets in large animal practice.

Demand for places on veterinary courses far exceeds availability. There may be scope in the longer term to increase the supply of places for veterinary training.

68. We recommend that DEFRA and the Department for Education and Skills jointly explore with the veterinary professional bodies and higher education institutions the scope for increasing the capacity of undergraduate and postgraduate veterinary provision. Equivalent work should be done in Scotland and Wales.

There were many occasions during the 2001 epidemic when vets in short supply were overburdened with animal health tasks that could have been done by someone with a lower level of expertise. There may be merit in recognising this and developing the concept of the veterinary ‘paramedic’.

69. We recommend that Government develop opportunities for increased use of veterinary ‘paramedics’.

The issue of recruitment and retention of State Veterinary Service vets dates back at least to the time of the 1968 Northumberland Report. The shortage of vets varies across the country. The most acute pressure on the State Veterinary Service is in London and the South East. By contrast, recruitment in Scotland and Wales is easier. The Chief Veterinary Officer told us that the State Veterinary Service had tried ways to address this, including salary increases, but with only limited success. Tackling recruitment and linking it to the availability of vets is sensible. Reducing the number of vets based in central London and increasing the number of posts in the regions would have the added advantage of increasing the level of veterinary expertise available in the regions to manage future disease outbreaks.

70. We recommend that as many functions of the State Veterinary Service as possible be relocated from London, to regional centres, particularly to Scotland and Wales.

17.2 Reducing vulnerability

The goal we have set out is one of gradual reduction of risk. Increasing knowledge and expertise in the industry will help to achieve that goal.

Agricultural education and training

Vets, farmers and others involved with the 2001 FMD epidemic told us that there were wide variations in the level of knowledge of animal diseases and how best to implement animal health and biosecurity practices. Farmers have an important part to play in monitoring animal health and in disease control. Yet training is minimal. For example, take-up of training within the agriculture industry is currently low, at 1.9 days per person per year on average.

Better biosecurity procedures are required. We have heard anecdotal reports that biosecurity standards have already started to slip since the end of the FMD outbreak.

Colleges, universities and training organisations should ensure therefore that their curriculum reflects changing demands on those working in the livestock industry. Additional support should be provided to increase understanding of the importance of biosecurity.

71. We recommend that Government support a national action group charged with the responsibility of producing a plan to tackle the gaps in practitioners’ knowledge of preventing and managing infectious diseases of livestock. To be effective this will need a timetable, milestones for achievement and incentives.

72. We recommend that colleges, universities and training organisations provide courses to equip those working in the food and livestock industries, and those owning susceptible animals, with the skills and knowledge to enable them to recognise the signs of animal disease early and take appropriate action to prevent its spread.

The report of the Policy Commission on the Future of Farming and Food made a number of recommendations on developing knowledge and skills, which we endorse.
The Government announced on 26 March 2002 its intention to ‘carry out a review of the effectiveness of training and education provision for farmers and other land managers’.

The experience gained by the farmers, vets and others who experienced the 2001 outbreak must be captured and kept alive.

73. We recommend that DEFRA commission a handbook for farmers on identifying and responding to animal disease, drawing on the experience of 2001.

It is essential that the high level of knowledge and expertise about FMD that has been generated during the 2001 epidemic is not lost but maintained for future generations to use.

74. We recommend that training for Local Veterinary Inspectors in exotic diseases be intensified, and consolidated into ongoing training strategies.

Farm assurance and licensing

The production of animal feedstuffs, the movement of livestock to slaughter and the slaughter process itself are all subject to regulation. Intensive pig and poultry farms are highly regulated.

By contrast, the day-to-day practices of the sheep farming sector are less tightly controlled.

The NFU told us that the agricultural industry has a permanent responsibility to maintain and improve standards of hygiene and biosecurity. The NFU believes that initiatives already in hand, such as the farm assurance schemes, are the best way to demonstrate quality and raise standards.

The report of the Policy Commission on the Future of Farming and Food discusses assurance schemes in some detail and makes related recommendations, which we endorse. Those recommendations do not, however, explicitly incorporate disease awareness and biosecurity.

75. We recommend that farm assurance schemes take account of animal health and welfare, biosecurity, food safety and environmental issues.

Further consideration should be given to more formal licensing systems. In particular, there is scope for examining whether so-called ‘negative licensing’ might provide further incentives. Under such arrangements, farmers and dealers would be issued with a licence which could be withdrawn following repeated infringements of codes of practice or failure to meet standards.

76. We recommend that the livestock industry work with Government to undertake a thorough review of the assurance and licensing options to identify those arrangements most likely to reward good practice and take-up of training, and how such a new system might be implemented.

17.3 Minimising the impact

Disease control strategies and the legal position

The Animal Health Act 1981 provides the legal basis for activities carried out by the Government to control animal diseases, including FMD. Schedule 3 of the Act relates to slaughter of animals to control FMD. It reads:

```
3.–(1) The Minister may, if he thinks fit, in any case cause to be slaughtered—
(a) any animals affected with foot-and-mouth disease, or suspected of being so affected; and
(b) any animals which are or have been the same field, shed, or other place, on in the same herd or flock, or otherwise in contact with animals affected with foot-and-mouth disease, or which appear to the Minister to have been in any way exposed to the infection of foot-and-mouth disease.
```

The Act provides a legal basis for the slaughter of animals at infected premises, as well as animals classified as dangerous contacts. But the Act does not provide such a clear basis for control methods based on slaughtering animals where there are not grounds for suspecting that they have been exposed to infection.

Lord Whitty told the Inquiry that the legality of the contiguous cull had been “an issue”. The Act permits slaughter of animals “which appear to the Minister to have been in any way exposed to the infection of foot-and-mouth disease”. The Minister, acting on the advice of his senior veterinary advisers, judged animals on contiguous premises to have been exposed to FMD. Those premises were, therefore, culled on that assumption.

It is a matter for the courts to determine whether the powers available to the Minister were sufficient to support the use of the contiguous cull as a disease control strategy. However, we consider the powers to be insufficiently clear. This lack of clarity contributed to a sense of mistrust of the Government, which was made worse by poor communication of the rationale of the cull.

77. We recommend that the powers available in the Animal Health Act 1981 be re-examined, possibly in the context of a wider review of animal health legislation, to remove any ambiguity over the legal basis for future disease control strategies.

Restrictions on animal movements

The intermingling of animals that occurred when sheep were bought and sold in markets in February 2001 was such a significant factor in transmitting infection that restrictions on movements after market exposure are still in place as a precaution against future spread of the disease. We listened to the arguments on the merits and practicalities of continuing to impose movement restrictions. We understand the economic and practical implications that such bans have for current farming practice.
But the consequences of relaxing these restrictions could, in some circumstances, be devastating. A long-term solution to the problem of movement restrictions must strike an appropriate balance between the legitimate interests of the industry and the need for long term disease control.

78. We recommend that the Government retain the 20-day movement restrictions pending a detailed risk assessment and wide ranging cost-benefit analysis.

This recommendation should be kept under review so that, should the risks change, a modified approach can be adopted.

Animal tracing and electronic tagging

Tracing of animal movements from Longtown Market was essential to the disease control effort. However, in the absence of a robust system for identifying the movements of individual sheep, MAFF had to appeal, as late as 8 March 2001, to farmers to come forward if they “…believe they have received sheep from Longtown Market held on either 15 or 22 February…”.

In future, animal identification should be by electronic tagging using the best available technology. There are practical implications of introducing such a policy that need to be worked out in detail, in advance. A full cost benefit analysis should be completed before the new system is introduced. There are many benefits, in terms of disease control, from such improved traceability.

The NFU, in its submission to the Inquiry, said that “Cost-effective electronic identification and traceability of sheep must be developed and delivered to the industry as a matter of urgency.” The National Sheep Association told us that it would support “the urgent development, funded by government, of electronic tagging of sheep to be deployed at an individual level if the technology was both reliable and affordable.” Trials both in Great Britain and abroad are already providing an encouraging foundation for progress.

79. We recommend that Government develop a comprehensive livestock tracing system using electronic tags to cover cattle, sheep and pigs, taking account of developments at EU level. The Government should seek to lead the debate in Europe on this issue.

Insurance and compensation

Much of the cost of the 2001 outbreak to the farming industry was externalised. Farmers whose animals were culled were entitled to compensatory payments under current legislation. The notion of value is particularly complex in large-scale outbreaks where the normal operation of the market may break down for long periods. The Northumberland Report discussed many of the issues surrounding valuation and made proposals for an indexed scheme to allow for valuation and immediate payment based on pre-outbreak prices and subsequent indexing to adjust compensation in the light of exit values.

Whether compensation is the appropriate reimbursement mechanism or whether a system closer to insurance arrangement should operate is a complex question. It is beyond the competence of this Inquiry to judge the relative merits of compensation or insurance schemes, or to make recommendations about how such schemes might work.

DEFRA has set up the Working Group for Animal Disease Insurance, involving representatives of the farming and insurance industry. It provides a suitable forum for making progress in this area, and is putting proposals to Ministers.

Previous reports into FMD outbreaks concluded that compensation for consequential loss – whether for farmers who suffered losses because of movement restrictions, for rural tourist businesses who lost income through loss of customers, or for secondary industries affected by the loss of business in farming and tourism – is neither desirable nor feasible. We agree with this conclusion. The DEFRA working group is the appropriate forum to explore these matters further.

However, it is important to recognise the long-lasting divisions caused in rural communities by the perceived unfairness of providing compensation for only one small group of those affected. These effects should be taken fully into account during any consideration of compensation issues.

80. We recommend that the joint DEFRA Industry Working Group for Animal Disease Insurance ensure that its scope and membership is set widely enough to address valuation and compensation issues highlighted by the 2001 outbreak. Clear deadlines should be set for reporting progress.

Interim contingency plan

In March 2002, DEFRA published an interim FMD contingency plan to respond to deficiencies in the previous plan. It builds on the experience gained during the 2001 outbreak, particularly in the areas of initial response and command and control structures. A contingency plan for the use of vaccination as a disease control measure is being taken forward separately.

The interim plan has a number of gaps which may be filled by a process of consultation and the widest possible involvement of all the relevant stakeholders. We also expect the lessons identified by this and other inquiries be fully incorporated in the final document.

81. We recommend that DEFRA develop further its interim plan, published in March 2002, in full consultation with all interested parties. Its relevance should be maintained through agreed programmes of rehearsal, practice, review and reporting. This work should be given priority for funding.
### 18.1 Glossary of terms

<table>
<thead>
<tr>
<th>FMD terms and definitions</th>
</tr>
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<tbody>
<tr>
<td><strong>Antibody</strong></td>
</tr>
<tr>
<td><strong>Biosecurity</strong></td>
</tr>
<tr>
<td><strong>‘Blue Box’ (Restricted Infected Area)</strong></td>
</tr>
<tr>
<td><strong>Case</strong></td>
</tr>
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<td><strong>‘Clean’ Vet</strong></td>
</tr>
<tr>
<td><strong>Clinical</strong></td>
</tr>
<tr>
<td><strong>Contiguous premises</strong></td>
</tr>
<tr>
<td><strong>Controlled Area</strong></td>
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<tr>
<td><strong>Dangerous contacts</strong></td>
</tr>
<tr>
<td><strong>‘Dirty’ Vet</strong></td>
</tr>
<tr>
<td><strong>Drover</strong></td>
</tr>
<tr>
<td><strong>ELISA</strong> (Enzyme-linked immunosorbent assay)</td>
</tr>
<tr>
<td><strong>Endemic</strong></td>
</tr>
<tr>
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<tr>
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</tr>
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<td><strong>Form A</strong></td>
</tr>
<tr>
<td><strong>Form D</strong></td>
</tr>
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</table>
Foot and Mouth Disease 2001: Lessons to be Learned Inquiry

18.2 Key facts

Some of the statistics showing the scale and impact of the epidemic are disputed. Different organisations have published statistics about the events. Some data are still being finalised. As discussed, in sections 9.3 and 11.3, there were no consistent and rigorous systems in place to collect the data and ensure their accuracy, especially in the early days of the crisis. While data collection understandably took second place to disease control for those on the ground, everyone directing the strategy from the centre needed accurate and up-to-date information to gauge how effectively policies were working and how they needed to change.

The following are some of the key facts and figures which illustrate the nature of the crisis.

There were 2,026 cases, or infected premises, in mainland Great Britain. The total for the UK as whole, including the four cases in Northern Ireland, is 2,030. Pre-emptive culling was carried out on a further 8,131 premises.

18.2.1 Numbers of cases confirmed per week, and total

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18.2.2 Numbers of cases confirmed per week, and total

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<tr>
<td>22/5</td>
<td>568</td>
</tr>
<tr>
<td>29/5</td>
<td>614</td>
</tr>
</tbody>
</table>

FMD terms and definitions continued

Hogget
A yearling sheep, between weaning and first shearing.

Incubation period
The incubation period of a disease is the time from when an animal first becomes infected to when it first exhibits clinical signs of disease. The incubation period is dependent on the dose of the virus, the route of transmission, the strain of the virus, the animal species and the conditions under which they are kept.

Infected animal
An infected animal is an animal which receives a sufficient dose of FMD virus such that it will go on to replicate the virus, excrete it and develop clinical disease.

Infected Areas
Areas under Infected Area Order Restrictions. On confirmation of FMD an Infected Area is imposed which extends to a minimum of 10km around the infected place.

Infected premises
Premises where FMD has been confirmed on clinical grounds by a vet or by a positive result in a laboratory test. Cases for which the subsequent laboratory tests prove negative are still counted as infected premises because a negative test does not necessarily mean that the animal was not infected.

Index case
The source case to which all other cases can be traced back, in a specified outbreak of disease or infection, in a particular region.

InterSpread
The epidemiological model used by the Veterinary Laboratories Agency.

Lesion
A blister, ulcer or abscess.

Light lamb
A light lamb, under the 2001 Livestock Welfare (Disposal) Scheme, was defined as one born since January 2001.

Livestock Welfare (Disposal) Scheme
A scheme for farmers whose livestock were facing welfare problems as a result of the movement restrictions related to FMD.

‘Page Street’
Location of MAFF/DEFRA Departmental Emergency Control Centre and Joint Co-ordination Centre, based in 1A Page Street, London SW1.

Protection zone
The area within a 3km boundary of an Infected Premises. Form D restrictions applied within the zone.

Rendering
The process involving the crushing of internal organs, entrails and other parts of discarded animal carcasses, followed by the indirect application of heat, enabling the separation of the ‘tallow’ (fat) and the ‘greaves’ (high protein solids), which are further processed to make meat and bone meal.

Serology
The scientific study of blood serum and antibodies.

Slaughter on suspicion
Premises where a veterinary inspection detects symptoms of the disease, but which were insufficient to confirm that FMD is present, and where animals were culled. If subsequent tests confirmed the disease the premises were classified as infected premises; cases which have proven negative or remain unconfirmed remain classified as slaughter on suspicion.

Swill
Food waste mixed with water for feeding to pigs.
The figures above (18.2.3) exclude around 4,000 other animals, chiefly goats and deer, slaughtered for disease control purposes, and around 3,000 other animals slaughtered under the Livestock Welfare (Disposal) Scheme. They also exclude a large number of new born lambs and calves not counted by MAFF/DEFRA’s database because, for the purposes of valuing, they were counted with their mother. It has not been possible accurately to estimate the number of lambs and calves involved. The total of 6.5 million animals slaughtered is, therefore, lower than some other estimates. (For example, articles in the press claimed that over ten million animals were slaughtered. This figure, which was wrongly attributed to the Meat and Livestock Commission, would allow for the slaughter of an additional 1.2 million lambs killed with breeding sheep.)

The totals slaughtered for welfare reasons included 1,768,000 sheep, cattle and pigs slaughtered under the Livestock Welfare (Disposal) Scheme, and 525,000 lambs under the Light Lambs Scheme. The purpose of the Light Lambs Scheme, which ran between 3 September and 26 October 2001, was to slaughter those lambs which faced welfare problems because of movement restrictions and the export ban.

### Foot and Mouth Disease 2001: Lessons to be Learned Inquiry

The figures above (18.2.3) include some cases where subsequent laboratory tests proved negative, although this does not mean necessarily that the animal was not infected. Slaughter on suspicion cases giving positive results or subsequently confirmed on clinical grounds, are classified as infected premises.

Animals slaughtered as part of a 3km cull were recorded as dangerous contacts, not contiguous premises, and will therefore include animals on some premises in Scotland, Wales and Cumbria that would otherwise have been regarded as contiguous.

### Number of animals slaughtered for disease control and welfare purposes

<table>
<thead>
<tr>
<th>Disease control</th>
<th>Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infected premises</td>
<td>Dangerous contact contiguous premises</td>
</tr>
<tr>
<td>Sheep</td>
<td>968,000</td>
</tr>
<tr>
<td>Cattle</td>
<td>301,000</td>
</tr>
<tr>
<td>Pigs</td>
<td>22,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
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</table>

Source: National Audit Office

The figures above (18.2.3) exclude around 4,000 other animals, chiefly goats and deer, slaughtered for disease control purposes, and around 3,000 other animals slaughtered under the Livestock Welfare (Disposal) Scheme.

They also exclude a large number of new born lambs and calves not counted by MAFF/DEFRA’s database because, for the purposes of valuing, they were counted with their mother. It has not been possible accurately to estimate the number of lambs and calves involved. The total of 6.5 million animals slaughtered is, therefore, lower than some other estimates. (For example, articles in the press claimed that over ten million animals were slaughtered. This figure, which was wrongly attributed to the Meat and Livestock Commission, would allow for the slaughter of an additional 1.2 million lambs killed with breeding sheep.)

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### Main disposal methods used during the outbreak

<table>
<thead>
<tr>
<th>Method</th>
<th>Pigs</th>
<th>Cattle</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning (including incineration, on-farm burning and mass pyres)</td>
<td>39%</td>
<td>41%</td>
<td>41%</td>
</tr>
<tr>
<td>Rendering</td>
<td>32%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>Landfill (including mass burial)</td>
<td>18%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Burying</td>
<td>11%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: National Audit Office

Notes

Numbers have been rounded, so may not total 100. These figures do not include animals slaughtered under the Livestock Welfare (Disposal) Scheme or the 3km cull. The other category comprises animals disposed of in abattoirs, and those recorded as ‘method uncertain, to be investigated further’.
### 18.3 Disease control statistics

#### Disease control statistics by local Disease Control Centre

<table>
<thead>
<tr>
<th>Disease Control Centre</th>
<th>Affected Counties, Metropolitan Districts and Unitary Authorities covered</th>
<th>Number of confirmed cases (infected premises)</th>
<th>Date of first confirmed case</th>
<th>Date of last confirmed case</th>
<th>Days with the disease</th>
<th>Number of vets working on 10 April 2001</th>
<th>% of confirmed cases which tested positive for the virus</th>
<th>% of infected premises slaughtered out within 24 hours of report</th>
<th>% of infected premises where disposal completed within 24 hours of slaughter</th>
<th>Average number of dangerous contract premises for each infected premises</th>
<th>% of dangerous contract premises slaughtered out within 48 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlisle</td>
<td>Cumbria</td>
<td>891</td>
<td>28-Feb-01</td>
<td>30-Sep-01</td>
<td>214</td>
<td>243</td>
<td>89</td>
<td>33</td>
<td>38</td>
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<td>53</td>
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<tr>
<td>Newcastle</td>
<td>Darlington; Durham; Newcastle upon Tyne; Northumberland; Stockton-on-Tees</td>
<td>190</td>
<td>23-Feb-01</td>
<td>29-Sep-01</td>
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<td>71</td>
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<td>53</td>
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<td>Ayr and Dumfries</td>
<td>Dumfries and Galloway</td>
<td>177</td>
<td>01-Mar-01</td>
<td>23-May-01</td>
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<td>65</td>
<td>27</td>
<td>51</td>
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<td>9</td>
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<td>Exeter</td>
<td>Devon</td>
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<td>17-Jun-01</td>
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<td>69</td>
<td>26</td>
<td>9</td>
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<td>12</td>
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<tr>
<td>Leeds</td>
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<td>07-Mar-01</td>
<td>18-Aug-01</td>
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<td>93</td>
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Source: National Audit Office

Notes

1. For certain local authority areas and counties, such as Cumbria, Devon and Dumfries and Galloway, there are small apparent differences between the number of infected premises shown here. This is because, in a few cases, where an infected premises lay on the edge of a county the case was sometimes handled by a Disease Control Centre in a neighbouring county.

2. There were a further 51 state vets based at Animal Health Divisional Offices that did not have confirmed cases.

3. Based on analysis by DEFRA of data extracted from the Disease Control System in May 2002. The figures are for the period of the entire epidemic.
Between 1954 and 1967, isolated outbreaks of FMD in the UK had occurred almost every year. Consequently, at the time of the last major outbreak in 1967-68, there was much greater awareness of the disease. Some of the key differences between the 1967-68 and 2001 epidemics are shown in the following table:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date the first case was confirmed</td>
<td>25 October 1967, at Bryn Farm in Shropshire.</td>
<td>20 February 2001, at an abattoir in Essex.</td>
</tr>
<tr>
<td>Date the last case was diagnosed</td>
<td>4 June 1968.</td>
<td>30 September 2001.</td>
</tr>
<tr>
<td>Length of epidemic</td>
<td>222 days.</td>
<td>221 days.</td>
</tr>
<tr>
<td>Speed of identification of the source case</td>
<td>Reported to the Department's vet within four days of the onset of clinical signs.</td>
<td>Reported to the Department's vets around three weeks after the likely onset of clinical signs.</td>
</tr>
<tr>
<td>Extent of initial 'seeding'</td>
<td>There were up to 24 almost simultaneous primary outbreaks deriving from a consignment of infected frozen lamb carcasses from Argentina distributed in Cheshire and Shropshire. This led to an early explosion in cases, with 400 cases occurring during one week in mid-November 1967.</td>
<td>There was one source case, but its identification, three weeks after infection, meant the disease had been spread around the country as a result of movements of, mainly, sheep through markets and dealers. At least 57 premises, in nine geographical groups, are now known to have been 'seeded' with infection by 20 February 2001. Each case would be likely to give rise to further cases because of the infectious nature of the virus with the result that the outbreak would be extremely large.</td>
</tr>
<tr>
<td>The extent to which the disease spread throughout the UK (18.4.1)</td>
<td>The disease was mainly concentrated in the Cheshire Plain, affecting in particular dairying areas of Cheshire, Staffordshire, Montgomeryshire, Denbighshire, Shropshire and Flintshire. There were outbreaks in 16 counties.</td>
<td>The disease was widespread and affected 44 British counties, unitary authorities and metropolitan districts from the Scottish Borders in the north, to Anglesey in the west, and to Cornwall in the far south west. There were concentrations of infection in Cumbria, Devon, Dumfries and Galloway, Northumberland and North Yorkshires.</td>
</tr>
<tr>
<td>Overall number of infected premises (18.4.2)</td>
<td>2,364</td>
<td>2,026</td>
</tr>
<tr>
<td>Number of animals slaughtered for disease control purposes</td>
<td>442,000 (49% cattle, 26% pigs and 25% sheep).</td>
<td>More than four million (85% sheep, 12% cattle, 3% pigs).</td>
</tr>
<tr>
<td>Suspected source of infection</td>
<td>Infected frozen lamb imported from Argentina.</td>
<td>Infected imported animal products.</td>
</tr>
<tr>
<td>Cause of spread</td>
<td>Mainly airborne, with relative humidity and wind speed and direction assisting spread. Cattle were the main species affected by disease. From mid-February 1968 there were 395 cases of re-infection on farms which had restocked. In 12 of these, re-recrudescence arose from incomplete cleansing and disinfecting of farms.</td>
<td>Initially, by movements of infected animals, particularly sheep, in which the virus was present but clinical signs had not been detected. Later by local spread, including through persons, machinery and vehicles that had been in contact with infected animals and where compliance with biosecurity measures had not been effective.</td>
</tr>
</tbody>
</table>

Source: National Audit Office

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cost to DEFRA</td>
<td>Around £370 million at 2001 prices, including £280 million paid out to farmers in compensation.</td>
<td>Over £3 billion, including £1.2 billion paid to farmers in compensation.</td>
</tr>
<tr>
<td>Introduction of national movement ban</td>
<td>After around a week, movement restrictions were extended to the counties adjacent to the Infected Areas to form a barrier zone and on 18 November 1967, 24 days into the epidemic, a Controlled Area (including national movement restrictions) was imposed across England and Wales. On 25 November, it was extended to Scotland.</td>
<td>A national movement ban was introduced just under three days after the first case had been officially confirmed.</td>
</tr>
<tr>
<td>State of UK livestock industry</td>
<td>Smaller and more compact farms. Fewer animal movements. Beef and sheep production more extensive, with the average number of livestock per holding less than half that in 2001. Movement of animals highly seasonal. Far fewer animals and much smaller land mass affected than in 2001.</td>
<td>Farm sizes and stock numbers have increased significantly since 1967-68, production cycles are shorter and seasonality has lessened. The livestock industry is more intensive and there are many more animal movements, particularly of sheep. As a result, the land mass of Great Britain affected and numbers of animals involved was considerably greater than in 1967-68, even though the number of cases was similar. While the cattle population had decreased by a quarter over the last 30 years to 9.5 million in Great Britain and the pig population by a half, to six million, the sheep population had grown by a half to 40 million in 2000, including 21 million breeding ewes. The sheep flock is the largest in the European Union.</td>
</tr>
<tr>
<td>Number of live sale auction markets in the UK</td>
<td>Over 800</td>
<td>170</td>
</tr>
<tr>
<td>Number of slaughterhouses in the UK</td>
<td>Over 3,000</td>
<td>Fewer than 500</td>
</tr>
<tr>
<td>Numbers of veterinary surgeons</td>
<td>An additional 645 vets were mobilised.</td>
<td>Over 1,800 vets were deployed at the peak of the outbreak.</td>
</tr>
<tr>
<td>Number of days before military deployed</td>
<td>12</td>
<td>25, though the Department had been liaising with the military from day 1.</td>
</tr>
<tr>
<td>Number of troops deployed</td>
<td>400</td>
<td>More than 2,000 at the peak.</td>
</tr>
</tbody>
</table>
Foot and Mouth Disease 2001: Lessons to be Learned Inquiry

18.5 Scotland

The outbreak in Scotland

Context
1. Size and importance of the livestock sector
   Pre-outbreak: 9.2 million sheep, 2 million cattle, and 0.6 million pigs. Agriculture contributed 1.4% of Scotland’s gross domestic product in 2000, with the livestock sector’s share 52%.

Preparedness
2. Date local contingency plans last updated before the outbreak

3. Date of last simulation exercise
   Local contingency plans were tested biennially by Animal Health Divisional Offices. The last exercise was held in Ayr in 1999.

4. Involvement of stakeholders
   Local exercises involved local and headquarters’ State Veterinary Service staff, Scottish Executive agricultural staff, local police, local authorities and Scottish Environment Protection Agency staff.

Course and extent of the outbreak
5. Date of confirmation of first case
   1 March 2001, near Lockerbie in Dumfriesshire (reported by owner on 28 February 2001).

6. Date of confirmation of last case
   30 May 2001 in Berwickshire.

7. Duration of outbreak between first and last cases
   90 days. The peak of the epidemic was between 21 and 28 March 2001, when up to seven new cases were being reported daily.

8. Date declared free of the disease

9. Epidemiological groups and seeding
   Two main groups: Dumfries and Galloway, with 177 infected premises; and the Scottish Borders, with 11 cases.
   The Dumfries and Galloway cases were a subset of the larger Cumbria cluster. Disease was seeded by movements of animals and persons to and from Longtown Market, Cumbria, prior to 23 February 2001.
   The Scottish Borders’ cases were a subset of the Northumberland epidemiological group.

10. Number of infected premises
    187

11. Number of dangerous contact premises slaughtered-out
    1,445

12. Number of animals slaughtered on infected premises
    132,000 – 73% sheep and 27% cattle.

13. Number of animals slaughtered on dangerous contact and slaughter on suspicion premises
    624,000 – 90% sheep, 9% cattle and 1% pigs.
   77% of these animals were slaughtered on premises non-contiguous to infected premises and 20% on contiguous premises, and 3% were ’slaughter on suspicion’ cases.

14. Number of animals slaughtered for welfare reasons
    307,000, including 188,000 ‘light lambs’, 49,000 sheep, 59,000 pigs and 11,000 cattle.

15. Proportion of country under Infected Area restrictions at one time
    10%, concentrated in the south, with two-thirds of farms in Dumfries and Galloway being affected.

Source: National Audit Office

Notes
1 Data on animals slaughtered and numbers of infected premises are based on DEFRA’s information. There are some small differences compared with the figures that have been presented by the Scottish Executive.
The outbreak in Scotland continued

Handling the outbreak

16. Animal Health arrangements

Under the Scotland Act of 1998, legislation on all animal health matters has been devolved to the Scottish Parliament and policy development and implementation made the responsibility of Scottish Ministers. However, the State Veterinary Service, headed by the Chief Veterinary Officer, has been retained as a British-wide body. This was because it was recognised that animal diseases show no respect for constitutional or geographical boundaries and there would be advantages from sharing research, analytical and veterinary resources. Concordats between the Scottish Executive and DEFRA set out an agreed framework for co-operation. They specify that DEFRA pays the compensation for notifiable diseases such as foot and mouth, but that the Scottish Executive provides the administrative support staff in State Veterinary Service offices in Scotland.

The Assistant Chief Veterinary Officer advises the Scottish Executive on animal health issues. The Scottish Executive’s Environment and Rural Affairs Department advises Scottish Executive ministers on policy and implementation of policy.

During the 2001 outbreak, Scottish Ministers were responsible for policy, but were party to Great Britain decisions taken on its handling and the scientific advice on which it was based. They operated within an agreed policy framework while taking account of local disease circumstances, Scottish topography and farm practices and the views of stakeholders. Consequently, there were some variations in the detailed implementation of Great Britain policy, for example in the movement licensing regime.

17. Organisational structure during the 2001 outbreak

On 28 February 2001, a Disease Control Centre was set up at the Ayr Animal Health Divisional Office. The Divisinal Veterinary Manager led on dealing with infected premises, dangerous contacts, epidemiology and surveillance. A Forward Field Station was also set up in Dumfries, close to the focus of infection using existing offices and the Dumfries and Galloway Council Emergency Centre. It included representatives from the emergency services, local authorities and the main contractor, Barr Limited.

On 26 March 2001, a tripartite Disease Strategy Group was set up in Edinburgh to have overall responsibility for management of the outbreak in Scotland. It comprised senior representatives from the Scottish Executive’s Environment and Rural Affairs Department, the State Veterinary Service and the armed services and oversaw the strategy and resource allocation. It met twice daily, formalising the arrangements for daily meetings which had been in place since the start of the outbreak.

On 30 March 2001, two days after the first case of disease was confirmed in Scotland, a Command and Control Centre was set up at Galashiels Animal Health Division Office.

18. Regional Operations Director: date of appointment and role


Termed the ‘Operations Co-ordinator’, he was appointed by the Scottish Executive to ensure logistics were in place to support the State Veterinary Service in dealing with infected premises and dangerous contacts and to support the armed services in dealing with the contiguous cull and pre-emptive sheep cull. He also promoted liaison between the armed services and state vets and took a key role in overseeing the 3km and contiguous cull in Dumfries and Galloway and the Birkshaw Forest mass disposal operation.

19. Dates and scale of military involvement

Operational in Dumfries and Galloway from 23 March 2001. Troops were deployed to Dumfries from the 52nd Lowland Brigades, 51st Highland Brigades and, from 29 March 2001, the 22nd Royal Artillery. They organised the transportation and destruction of carcasses for the 3km and contiguous culls. On 11 April 2001, the armed services set up a second operational base, at Newton Stewart, to deal with the outbreak in the Machars zone.

The number of soldiers deployed rose to a peak of around 470 in early April 2001.

Source: National Audit Office

The outbreak in Scotland continued

20. Pre-outbreak veterinary and related resources

Ayr Animal Health Division had 10 state vets, six animal health officers and 14 administrative and support staff. At the start of the outbreak, several state vets were sent on ‘detached duty’ to fight the disease in England. Galashiels had a complement of 8 state vets, 8 technical staff and 11.5 administrative staff.

21. Resources available at the height of the outbreak

In Dumfries and Galloway, peak staffing was in early May 2001. There were 190 vets, including 162 temporary veterinary inspectors, mainly drawn from Scottish private practices and agricultural colleges. There were also 62 animal health and field officers and 80 administrative and other support staff. Some 150 Dumfries and Galloway council staff supported the armed services and vets on a full-time basis.

Galashiels had between 30-40 vets at the peak.

Scotland was able to draw upon skilled Agricultural Officers from the Scottish Executive’s Environment and Rural Affairs Department, who were accustomed to visiting farms, to work as field officers, for example serving Form D notices and supervising preliminary cleansing and disinfecting of affected farms. The Scottish Department’s agricultural staff, as opposed to local authorities, carried out movement licensing.

22. Proportion of infected premises that tested positive for the disease

66%.

* Based on results available for 169 infected premises.

23. Features of disease control

From 17 March 2001, there was pre-emptive slaughter of livestock traced from Longtown Market in Cumbria, including around 570 sheep in the Inverness area.

From 22 March 2001 there was a cull of more than 400,000 sheep within 3 kilometres of infected premises.

The contiguous cull, introduced on 26 March 2002, was applied to all contiguous premises at the leading edge of the advancing epidemic.

Farmers’ unions were generally supportive of the contiguous and 3km culls and standards of biosecurity by farmers were considered to be comparatively high.

There were tight movement restrictions within the affected zone.

There was early involvement of local authorities.

24. Proposals to vaccinate

In March and April 2001 vaccination was considered and contingency plans made but veterinary advice was that vaccination would not speed up eradication or prevent further incidence of disease and would take limited resources away from disease control operations. Vaccination did not have the support of the livestock industry and was not pursued.

25. Speed of slaughter on infected premises:

- slaughtered-out within 24 hours of reported suspicions of disease
- slaughtered-out in more than 24 but less than 36 hours
- slaughtered-out in more than 36 but less than 48 hours
- slaughtered-out in more than 48 hours

49% (Great Britain 41%).

33% (Great Britain 32%).

3% (Great Britain 6%).

14% (Great Britain 22%).

Based on data from 69 infected premises with full report and slaughter times available on the Disease Control System. The remaining premises did not have hours given for the reports of disease, but, from the dates given for report and slaughter, in only around 40% of these other cases was slaughter likely to have been achieved within 24 hours.

Source: National Audit Office
## The outbreak in Scotland continued

<table>
<thead>
<tr>
<th>26. Speed of slaughter on dangerous contact premises:</th>
<th>30. External communications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• slaughtered-out within 48 hours of confirmation of related infected premises</td>
<td>On 2 March 2001, Scottish Executive and Dumfries and Galloway hotlines were set up for FMD queries. Information was also provided on the Scottish Executive’s website. Information letters were sent out by the Scottish Executive’s Environment and Rural Affairs Department to livestock farmers. Regular stakeholder meetings were held in Edinburgh and Dumfries. The NFU Scotland also played an important role in disseminating information.</td>
</tr>
<tr>
<td>• slaughtered-out in more than 48 but less than 72 hours</td>
<td>Costs</td>
</tr>
<tr>
<td>• slaughtered-out in more than 72 hours</td>
<td>31. Cost to DEFRA</td>
</tr>
<tr>
<td>14% (Great Britain 32%).</td>
<td>32. Average farm cleansing and disinfecting projected costs</td>
</tr>
<tr>
<td>13% (Great Britain 14%).</td>
<td>33. Valuers’ fees</td>
</tr>
<tr>
<td>73% (Great Britain 54%).</td>
<td>34. Uncompensated costs estimated by DEFRA to:</td>
</tr>
<tr>
<td>Based on data from 862 dangerous contact premises with full report and slaughter times available on the Disease Control System.</td>
<td>• Agricultural producers</td>
</tr>
<tr>
<td></td>
<td>• Food chain industries</td>
</tr>
<tr>
<td>27. Carcass disposal</td>
<td>35. Footpath closure and re-opening</td>
</tr>
<tr>
<td>Around 98% of carcasses from infected premises were disposed of by on-farm burns, the remaining 2%, comprising older cattle, were rendered in Motherwell. Around 1,400 sheep were buried on farm, following a Scottish Environment Protection Agency site assessment. Greater on-farm burial was not possible because of the soil and highly vulnerable aquifers (bodies of underground water) in the parts of Dumfries and Galloway affected by the outbreak. The Agency’s policy was to consider carcass burial on a site-specific basis and to permit burial only where environmental conditions were acceptable and the relevant code of good agricultural practice could be met. The Agency advised against the use of certain materials on pyres, such as tyres, plastic materials or treated timber. The Fire Service advised on pyre construction. For the 3km and contiguous culls the Birkshaw Forest mass burial site was used extensively from 29 March 2001. More than 70% of non-infected premises carcasses were buried at Birkshaw. A further 6% were rendered and 22% burned. Before late April 2001, there were mass continuous burns at Hoddam quarry and East Rigg (on Ministry of Defence land), for Dumfries and Galloway and, Crook Knowes, near Jedburgh, for the Scottish Borders. Ash from the pyres has been buried in landfill sites and the impact on groundwater quality continues to be monitored. Four Scottish slaughterhouses were contracted for disposal for the Livestock Welfare (Disposal) Scheme.</td>
<td>Similar experiences to rest of Great Britain. Footpaths closed on 27 February 2001, following an Order made in the Scottish Parliament allowing local authorities and animal health inspectors to prevent access to footpaths and other land. From early March 2001 a risk assessment approach was adopted but there was genuine concern about the spread of the disease and footpaths only gradually reopened. On 23 March 2001 a model risk assessment was launched and a Comeback Code distributed. The Code was produced by Scottish Natural Heritage on behalf of the Executive. On 15 May 2001 guidance was sent to local authorities in Provisional Free Areas stipulating that footpaths could only be closed if supported by a risk assessment that satisfied the Department. On 24 May 2001, this access guidance was extended to all of Scotland except the Infected Area. By the end of June 2001, most local authorities had re-opened their rights of way.</td>
</tr>
<tr>
<td>28. Speed of disposal on infected premises:</td>
<td>Source: National Audit Office</td>
</tr>
<tr>
<td>• disposed of within 24 hours of slaughter</td>
<td>Notes</td>
</tr>
<tr>
<td>• in more than 24 but less than 48 hours</td>
<td>2 Cleansing and disinfecting costs are based on costs in October 2001. DEFRA is updating the figures.</td>
</tr>
<tr>
<td>• in more than 48 hours</td>
<td></td>
</tr>
<tr>
<td>29% (Great Britain 44%).</td>
<td></td>
</tr>
<tr>
<td>42% (Great Britain 13%).</td>
<td></td>
</tr>
<tr>
<td>29% (Great Britain 43%).</td>
<td></td>
</tr>
<tr>
<td>Based on data from 142 infected premises with slaughter and disposal times available on the Disease Control System.</td>
<td></td>
</tr>
<tr>
<td>29. Speed of disposal on dangerous contact premises:</td>
<td></td>
</tr>
<tr>
<td>• disposed of within 24 hours of slaughter</td>
<td></td>
</tr>
<tr>
<td>• in more than 24 but less than 48 hours</td>
<td></td>
</tr>
<tr>
<td>• in more than 48 hours</td>
<td></td>
</tr>
<tr>
<td>88% (Great Britain 71%).</td>
<td></td>
</tr>
<tr>
<td>9% (Great Britain 9%).</td>
<td></td>
</tr>
<tr>
<td>3% (Great Britain 20%).</td>
<td></td>
</tr>
<tr>
<td>Based on data from 1,328 dangerous contact premises with slaughter and disposal times available on the Disease Control System.</td>
<td></td>
</tr>
</tbody>
</table>

Source: National Audit Office
18.6 Wales

The outbreak in Wales

<table>
<thead>
<tr>
<th>Context</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-outbreak: 11.5 million sheep, 1.3 million cattle, and 0.1 million pigs. Agriculture contributed 1.4% of Wales’ gross domestic product in 2000, with the livestock sector’s share 59%. Exports accounted for 45% of Welsh lamb and sheep production.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparedness</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Course and extent of the outbreak</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The outbreak in Wales was characterised by a succession of separate clusters with intervals between them.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Handling the outbreak</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Under the Animal Health Act 1981 all functions for dealing with FMD rest with the Department since they were not devolved to the National Assembly for Wales in 1998. All employees of the State Veterinary Service in Wales report to the Department. Because of the legal requirement under the Animal Health Act 1981 for the Department and the National Assembly to implement legislation jointly in Wales, in practice the DEFRA took decisions affecting Wales in consultation with the devolved administration. The National Assembly’s Rural Affairs Minister took an active role during the crisis in presenting policies decided in London and answering questions in the Assembly. On 26 March 2001, the National Assembly was asked by MAFF to establish an Operational Directorate on the lines of those set up in England Disease Control Centres, to support the State Veterinary Service. This was done under an agency agreement with MAFF, under Section 41 of the Government of Wales Act. All expenditure on FMD related issues came from DEFRA’s vote.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data on animals slaughtered and numbers of infected premises are based on DEFRA’s information. There are some small differences compared with the figures that have been presented by National Assembly for Wales.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: National Audit Office

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Course and extent of the outbreak

<table>
<thead>
<tr>
<th>Context</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of dangerous contact premises</td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>

| Disease | 713 |

<table>
<thead>
<tr>
<th>Area restrictions at one time</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>70,000 – 87% sheep, 12% cattle and 1% pigs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: National Audit Office

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The outbreak in Wales

| 13. Number of animals slaughtered on dangerous contact and slaughter on suspicion premises | 216,000 – 91% sheep, 6% cattle and 1% pigs. | 51% of these animals were slaughtered on premises non-contiguous to infected premises and 42% on contiguous premises, and 7% were ‘slaughter on suspicion’ cases. |

| 14. Number of animals slaughtered for welfare reasons | 833,000, including 596,000 sheep, 199,000 ‘light lambs’, 34,000 cattle and 5,000 pigs. |

| 15. Proportion of country under Infected Area restrictions at one time | 35% |

| Disease Control Centres were set up at the Animal Health Divisional Offices in Caernarfon (for Anglesey) and Cardiff (for eastern and south-central Wales). The Llandrindod Wells area office served as an outreach control centre for cases in Powys. It reported to Cardiff, but from mid-April 2001 it was given greater autonomy and was headed by a temporary Divisional Veterinary Manager. For serological testing in the Brecon Beacons, a temporary field centre was later set up. From 26 March 2001, a strategic Operations Centre was set up in the National Assembly’s emergency operations room in Cathays Park, Cardiff. A Regional Operations Director drawn from the Assembly’s staff headed the Centre. It co-ordinated the foot and mouth disease operation in Wales and was tasked with ensuring a multi-agency approach. The Operations Centre comprised 15 staff from the National Assembly for Wales, who operated under an agency agreement with the Department, and a similar number from the State Veterinary Service, military, police, the Environment Agency and, from 9 April, local authorities. The two main private sector contractors (Keyhounds and MDW Transport) also had a liaison point at the Operations Centre. |

| 16. Animal Health arrangements | | |

18. Regional Operations Director: date of appointment and role

| 26 March 2001. The Regional Operations Director was a senior National Assembly official. He reported to the head of the Joint Co-ordinating Centre in the Department’s headquarters, but operated under an understanding with the Department that he would consult and seek political guidance from Assembly Ministers. | | |
18 The outbreak in Wales continued

19. Dates and scale of military involvement

Deployed from 23 March 2001.

Soldiers from the 14 Signals Regiment were deployed in Anglesey, as well as Royal Air Force personnel. They became involved in unloading carcasses that it had been intended to burn on disused land adjacent to a RAF airfield at Mona. This plan was abandoned as a result of local opposition and successful negotiations on the availability of a suitable landfill site.

On the mainland, troops came from 160 Brigade and the Household Cavalry and also included Gurkhas, who helped round up sheep in the Brecon Beacons. From mid-June 2001, the Household Cavalry were replaced by a small Territorial Army transport and logistics unit.

At the height of the crisis more than 600 armed services personnel assisted, playing a key role in the logistics of slaughter and disposal, particularly for the contiguous cull.

20. Pre-outbreak veterinary and related resources

Cardiff Animal Health Division had eight full-time state veterinary officers: five at Cardiff and three at Llandrindod Wells. This was two below complement, but there were 2.5 temporary veterinary inspectors working on cattle tuberculosis cases. There were six animal health officers and 22 administrative staff. At the start of the outbreak, Cardiff Division lost three state vets on detached duty to fight the disease in England, along with two animal health officers and some administrative staff.

Caernarfon had four state vets (one below complement), along with the Divisional Veterinary Manager.

21. Resources available at the height of the outbreak

In Cardiff Division, there were 150 veterinary officers at the peak, chiefly temporary veterinary inspectors, recruited both locally and from overseas. Around 100 animal health officers and field staff, including staff from ADAS Consulting Ltd, and 200 administrative and other support staff were also involved. The latter included, in mid-April 2001, around 115 personnel provided by the National Assembly for Wales and administrative staff seconded from the Passport Agency.

In Caernarfon there were up to 40 vets at the height of the local outbreak.

22. Proportion of infected premises that tested positive for the disease

99%*  

* Based on results available for 103 infected premises.

23. Features of disease control

In Anglesey there was a pre-emptive cull of 47,000 sheep in a 50 square mile area.

On the mainland, the Chief Veterinary Officer made the decision that all sheep traded through Welshpool market on or after 19 February 2001 were to be culled. However in the light of a particular case, an infected premises at Llanfair Caereinion, where the tests came back negative, a decision was made to adjust the Welshpool cull to exclude lambs.

There was intensive serological testing of sheep for understanding and control of the outbreak in the Brecon Beacons from June 2001, where risk of spread was increased by common grazing.

A Movement Control Area was also introduced in the Brecon Beacons in July 2001 with local and long-distance movement licences revoked and intensified biosecurity monitoring.

Bio-security standards among farmers were considered to be comparatively poor by DEFRA. This was partly a result of the structure and nature of livestock farming in some areas, with parcels of land held away from the home farm and movements of personnel to help out other farmers and for sheep shearing.

24. Proposals to vaccinate

In July and August 2001 the option of vaccinating all sheep in the Brecon Beacons National Park was discussed. The Cabinet Office Briefing Room advised against vaccination although agreed that Wales could adopt vaccination if the disease spread wider than anticipated. The vaccination option was not implemented as initial culling stamped out the disease.

25. Speed of slaughter on infected premises:

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Great Britain</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 24 hours</td>
<td>42%</td>
<td>42%</td>
</tr>
<tr>
<td>But less than 36 hours</td>
<td>23%</td>
<td>23%</td>
</tr>
<tr>
<td>More than 36 but less than 48 hours</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>More than 48 hours</td>
<td>28%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Based on data from 99 infected premises with full report and slaughter times available on the Disease Control System.

26. Speed of slaughter on dangerous contact premises:

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Great Britain</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 48 hours</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>But less than 72 hours</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>More than 72 hours</td>
<td>26%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Based on data from 498 dangerous contact premises with full report and slaughter times available on the Disease Control System.

27. Carcass disposal

Around 62% of carcasses from infected premises were burned on farm, 35% rendered and only 2% (chiefly sheep) were buried. The lack of clay and the reliance on private water supplies meant that on-farm burial was not normally an option. The National Assembly also stated that there should be no burial of cattle in Wales. Rendering was not used as much because of a lack of capacity and priority being given to Devon and Cornwall.

Around a third of carcasses from non-infected premises were disposed of through burns, including mass burns at Eppynt, a further third by rendering and a quarter at landfill sites, including 43,000 sheep from the pre-emptive cull at the Penrhysogon landfill in Anglesey. A mobile air incinerator was used in the Welshpool area in May 2001. There were large public protests to the use of Eppynt, despite its remote location. Carcasses from the Livestock Welfare (Disposal) Scheme were disposed of mainly in landfill sites.

28. Speed of disposal on infected premises:

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Great Britain</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 24 hours of slaughter</td>
<td>62%</td>
<td>62%</td>
</tr>
<tr>
<td>More than 24 but less than 48 hours</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>More than 48 hours</td>
<td>26%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Based on data from 109 infected premises with slaughter and disposal times available on the Disease Control System.
29. Speed of disposal on dangerous contact premises:
   • disposed of within 24 hours of slaughter
   • in more than 24 but less than 48 hours
   • in more than 48 hours
   78% (Great Britain 71%).
   8% (Great Britain 9%).
   14% (Great Britain 20%).

30. External communications
   The National Assembly set up helplines on 27 February 2001. Helplines were also set up later in Divisional Offices. Over 100,000 calls were taken by the helplines in Wales during the crisis.

31. Costs
   Costs to DEFRA
   £102 million.
   £44,000 per farm (Great Britain £35,600 per farm). 2

32. Valuers’ fees
   Similar arrangements to England. DEFRA took the lead in dealing with this issue because of their legal functions under the Animal Health Act 1981.

33. Uncompensated costs estimated by DEFRA to:
   • Agricultural producers
   • Food chain industries
   £65 million.
   £23 million.

34. Footpath closure and re-opening
   On 27 February 2001 an Order was made enabling local authorities to make blanket closures of footpaths. On 20 March 2001 the National Assembly for Wales issued guidance to local authorities and the public on what activities could be undertaken in the countryside without adding to the risks of spreading the disease. Guidance issued on 23 May 2001 encouraged local authorities to re-open all public footpaths, except those near infected premises. By the end of June 2001 most local authorities had re-opened their rights of way.

Source: National Audit Office

Notes
2 Cleansing and disinfecting costs are based on costs in October 2001. DEFRA is updating the figures and the cost for Wales is expected to fall to around £38,000.