Annex A: Terms of reference

This inquiry was commissioned from the Royal Society jointly by the Chief Scientific Adviser and the Permanent Secretary of the Department for Environment, Food and Rural Affairs, on behalf of the Prime Minister and the Secretary of State. The commission stressed that the inquiry should be ‘clearly independent’: this meant that the terms of reference were agreed mutually between the Society, OST and DEFRA and that the membership of the Committee appointed to carry it out, how the work was done and the publication of the report were matters solely for the Society to determine.

The agreed terms of reference were as follows.

To review scientific questions relating to the transmission, prevention and control of epidemic outbreaks of infectious disease* in livestock in Great Britain, and to make recommendations by Summer 2002.

The inquiry should take close account of related inquiries, notably the administrative inquiry into the handling of the 2001 foot and mouth outbreak and the policy commission on the future of agriculture. It should cover:

a. Transmission/prevention

- the research base for identifying present and future risks of disease—what we know about risks to Great Britain posed by animal diseases worldwide; whether we know enough; and whether early warning/horizon scanning arrangements are scientifically and logistically adequate;
- the availability, scientific efficacy and adequacy of preventive measures (including vaccination) in the light of assessment of the risks, including the risks associated with current and future livestock practices.

b. Controls

- the availability, scientific efficacy and safety of current technology (including vaccines) and methods for the surveillance, control and eradication of infectious livestock diseases in Great Britain;
- the potential for enhanced use of quantitative epidemiological models in understanding and predicting the spread of disease and the impact of policy options.

The review should:

- pay particular regard to any hazards to human health;
- identify any actual or potential constraints such as ethics, costs and benefits, economic incentives and social concerns.

*Transmissible diseases that have the potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic or public health consequence and that are of major importance in the international trade of animals or animal products. [This is the definition of animal infectious diseases included in List A of the Office International des Epizooties (OIE).]
Annex B: Conduct of the Inquiry

I PEOPLE

The Council of the Royal Society appointed the following Committee in September 2001 to carry out the Inquiry.

Sir Brian Follett, FRS, Inquiry Chair

Mr Peter Allen, Farmer and member of the Council of the National Farmers Union
Professor Patrick Bateson, SecRS, Provost of Kings College Cambridge and Biological Secretary and Vice-President of the Royal Society
Mr David Black, Practising veterinarian in Cumbria
Professor Fred Brown, FRS, US Department of Agriculture, Plum Island Animal Disease Centre; formerly Deputy Director, Animal Virus Research Institute, Pirbright
Mr Roger Eddy, Senior Vice-President of the Royal College of Veterinary Surgeons, and practising veterinarian
Ms Suzi Leather, Deputy Chair, Food Standards Agency
Professor Simon Levin, Department of Ecology and Evolutionary Biology, Princeton University
Professor Karl Linklater, Principal, Scottish Agricultural College
Ms Jeanette Longfield, Coordinator of Sustain, The Alliance for Better Food and Farming
Professor Ian McConnell, Director of Research, Department of Clinical Veterinary Medicine, University of Cambridge
Dr Angela McLean, Department of Zoology, University of Oxford
Professor Andrew McMichael, FRS, Director, Weatherall Institute of Molecular Medicine, University of Oxford
Dr Jenny Mumford, Director of Science, Animal Health Trust, Newmarket
Professor Robin Weiss, FRS, Windeyer Institute of Medical Science, University College London
Dr Jorgen Westergaard, Former Principal Administrator – Animal Health and Welfare Unit, European Commission

The Working Group subsequently appointed three specialist Subgroups comprising members of the main Committee and others, to look in detail at specific issues.

Subgroup A: Surveillance and diagnostics

Remit To look at the effectiveness of present surveillance, and recommend any improvements required; and to assess the state of diagnostic science and technology, its application, and scope and prospects for further improvement in the short and long term

Chair Professor Karl Linklater
Members Mr Peter Allen
Professor Fred Brown, FRS
Professor Robin Weiss, FRS
Mr Gareth Davies
Dr Bill Taylor
Subgroup B: Prediction, prevention and epidemiology

Remit
To look at techniques actually or potentially available to model disease outbreaks, under a wide range of possibilities, and to consider the information needs of those models; to consider the epidemiology of the diseases in the UK and overseas, and the range of preventive measures available

Chair
Professor Patrick Bateson, SecRS

Members
Mr David Black
Dr Angela McLean
Professor Simon Levin
Ms Jeanette Longfield
Sir David Cox, FRS (Nuffield College)
Dr Marcus Doherr (University of Bern)
Sir Martin Holdgate (President of the Zoological Society of London; former Chief Scientist, Department of the Environment 1979–1985)
Professor Valerie Isham (Department of Statistics, University College, London)

Subgroup C: Vaccination

Remit
To examine the current potential for vaccination both as part of control strategies and its potential as a prophylactic agent, along with the scope for further development in the science and technology

Chair
Professor Ian McConnell

Members
Mr Roger Eddy
Professor Andrew McMichael, FRS
Dr Jenny Mumford
Professor Peter Beverly (Director, Edward Jenner Institute)
Professor Ivan Morrison (Institute for Animal Health)
Sir John Skehel, FRS (Director MRC National Institute for Medical Research)

The Working Group and Subgroups were supported by the following Secretariat.

Dr Malcolm Anderson Secretary to Subgroup C
Ms Melissa Barrell Administrative Assistant
Dr Peter Collins Director Science Policy, Royal Society
Dr Geoffrey Findlay Inquiry Secretary
Ms Saskia Gretton Inquiry Administrator
Mr John Horton Secretary to Subgroup A
Dr Keith Root Secretary to Subgroup B and Manager Science Policy, Royal Society

The Working Group and Subgroups commissioned consultants to advise on particular issues, as follows.

Dr Jonathan Adams (Evidence Ltd) Bibliometric study on foot and mouth and other infectious diseases
Dr Dennis Alexander (VLA) Avian Influenza and Newcastle Disease
Dr Philip Mellor (IAH) Bluetongue and African Horse Sickness
Dr David Paton (IAH) Classical Swine Fever
Dr Suzanne Plesner Jensen FMD literature survey
Dr John Ryan (FAO) International trade and disease control regulations
Veterinary Epidemiology and Economics Research Unit, Reading University (VEERU) Study of the economic impact of vaccination strategies for FMD in the UK
Dr PJ Wilkinson (IAH) African Swine Fever

The Royal Society expresses its warm appreciation to all the above contributors to the Inquiry.
II CONDUCT OF THE INQUIRY

On 9 August 2001 the Secretary of State for Environment, Food and Rural Affairs announced the establishment of three inquiries: on the future of farming and food (chaired by Sir Don Curry and published in January 2002), on lessons to be learned from the foot and mouth disease outbreak 2001 (chaired by Dr Iain Anderson, to be published in July 2002), and the present Inquiry.

The Royal Society published the membership of its Inquiry Committee on 12 September 2001.

The Inquiry issued a preliminary call for evidence on 12 September 2001, seeking comments on the major scientific questions that it should address, the key areas of science and the main diseases that should be covered, and the people and organisations whose views should be sought. A more detailed call for evidence was issued on 12 October, asking a series of questions under each of the main topics being examined. As well as being put on the Society’s website and being sent to those we knew to be interested, the detailed call for evidence was advertised in Farmers Guardian, Farmers Weekly, Journal of the American Veterinary Medical Association, Nature, Science, Veterinary Record and Veterinary Times. Some 400 written submissions were received in response.

The main Committee, and the Subgroups, also held formal and informal meetings with numerous individuals and organisations, commissioned consultants to prepare background papers on specific topics, and examined the relevant scientific literature. The main Committee visited the Institute for Animal Health Pirbright Laboratory and held a Focus Group on animal welfare issues. Subgroup A held Focus Groups on diagnostic techniques and on surveillance, and Subgroup B organised a workshop on modelling.

In addition to these evidence sessions, members of the main Committee visited Cumbria, Dumfries & Galloway, and Abergavenny and spoke with many individuals and organisations affected by the 2001 FMD outbreak. The visit to Cumbria included an open meeting attended by nearly 100 people.

All those who gave formal written and/or oral evidence are listed in Annex C. The evidence itself may be seen on the Society’s website (www.royalsoc.ac.uk), and on the CD-ROM enclosed with this report. The Society is most grateful to those who helped the Inquiry in this way.

The Chairman and Secretary participated in an international conference organised by the European Union, in Brussels on 12–13 December, on control and prevention of FMD.

The main Committee held eight plenary meetings, on 3 October, 19 December, 30 January, 25 February, 15 April, 26–27 April, 20 May and 10 June. The Council of the Royal Society reviewed the draft report on 12 June.

In order to allow those interested to follow the progress of the Inquiry, the Society established a dedicated webpage where various items relevant to the Inquiry were placed, and published progress reports on 8 October 2001, 21 November 2001 and 24 January 2002.

The Society was reimbursed for costs incurred in conducting the Inquiry. These totalled £425 000.
Annex C: List of those who gave evidence

In issuing our calls for evidence, we indicated that we intended to make evidence received publicly available unless the author concerned asked us to keep the evidence confidential. We have done this by placing it on the Society’s website (www.royalsoc.ac.uk) and by putting it onto the CD-ROM enclosed with this report.¹ For practical reasons we have excluded from the website and CD-ROM material that has already been published elsewhere (since it is already publicly available), and particularly long submissions (where we have included sufficient material to allow readers to judge whether they wish to see the remainder, and information on where it can be found).

The following is a list of the individuals and organisations that gave formal evidence to the Inquiry, in writing (W) and/or orally (O).

The submissions, of course, represent the views of their authors and not necessarily the views of the Royal Society.

The Royal Society is most grateful to those who assisted the Inquiry by providing evidence.

Individuals

Adhihetty, Kumu – Farm Animals Welfare Council (W)
Affleck, Jim – Geo-Rheological Survey Company Ltd (W)
Alcorn, Mike – British Veterinary Poultry Association (W + O)
Aldridge, Brian – Ash Moor Joint Report (W)
Alexandersen, Professor Soren – Institute of Animal Health (O)
Allan, Dr Duncan (W)
Allen, Dr William Maurice – Veterinary Laboratories Agency (W)
Allender, Jacquita & Alistair (W)
Anderson, Dr Euan – formerly Pirbright Laboratory, Institute of Animal Diseases (W)
Anderson, Ian – Scottish Executive, Environment and Rural Affairs Department (O)
Anderson, Dr John – Institute of Animal Health (O)
Anderson, Ray – DEFRA (O)
Anderson, Professor Roy, FRS – Imperial College (W + O)
Anscome, Jane – Abbey Veterinary Centre, Abergavenny (O)
Archer, Libby – Horserace Betting Levy Board (W)

Baird, JH – British Veterinary Association (W)
Baker, Professor Ray, FRS – Biotechnology and Biological Sciences Research Council (W + O)
Barber, Beverley – Country Land & Business Association (W)
Barley, Jason – Sheep Veterinary Society (O)
Barnett, Dr P – Institute of Animal Health (O)
Barrett, Dr Tom – Institute of Animal Health (O)
Barribal, Jane – Farmtalking.com (W)
Barzilai, Dr Simon (W)
Bateman, Geoffrey – Environment Agency (O)
Bates, Marcus – National Pig Association (W)
Bayley, Janet – National Foot and Mouth Group (W + O)
Beale, John (W)
Beat, Alan & Rosie – Farmers (W)
Beecham, Sir Jeremy – Local Government Association (W)
Bell, Dr Jon – Food Standards Agency (W)
Bell, Robin – DEFRA (O)
Bell, Rosemary (W)
Belscham, Dr Graham – Institute of Animal Health (O)
Biggar, Donald – Farm Business Steering Group (W)

¹In a very small number of cases, after taking legal advice, we have redacted extracts of evidence – for example, personal or confidential information about third parties – where publication would potentially expose the Royal Society to legal action.
Biggs, Professor Peter, FRS – former Director Animal Disease Research at the Agricultural and Food Research Council (W)
Birch, Dr Colin (W)
Bishop, Professor Steve – Roslin Institute (W)
Blamire, RV – Veterinarian (W)
Boardman, Suzanne – Wildlife Information Network (W)
Borysiewicz, Sir Leszek – Academy of Medical Sciences (W)
Bostock, Dr Chris – Institute of Animal Health (W + O)
Bowman, Matthew – Farmer (O)
Bier, Box (W) – Medical Research Council (W)
Bradnock, Peter – British Poultry Council (W)
Braun, Gilbert (W)
Breeze, Roger – United States Department of Agriculture (W)
Bromwell, Mr & Mrs (Farm visit, Crickhowell)
Broom, Professor DM – University of Cambridge (W)
Brown, Dr ACM – China–EU Centre for Agricultural Technology (W)
Brown, David – Livestock Auctioneers Association (W)
Brown, Richard – Strathbogie Veterinary Centre (W)
Brownlie, Professor Joe – Royal Veterinary College, British Cattle Veterinary Association (W + O)
Bungard, Peter – Gloucestershire County Council (W)
Burge, Richard – Countryside Alliance (W)
Burke, Chris (W)
Burke, Professor Derek (W)
Butterworth, Andrew – Operating Platforms Ltd (W)
Campbell, Professor RH (W)
Capstick, Gordon – NFU County Chairman (O)
Carabin, Dr Helene – Imperial College (O)
Carter, Stephen – Priory Veterinary Surgery (W)
Catchpole, Dr Mike – Centre for Disease Surveillance and Control (O)
Catlow, David – British Veterinary Association (O)
Cheney, Clare – Provision Trade Federation (W)
Choraine, Pierre – Federation of Veterinarians of Europe (W)
Christian, Mike – Belle Vue Vets (W + O)
Clarke, Alan – Northumberland County Council (W)
Clarke, Dr Judy MacArthur – Farm Animals Welfare Council (W + O)
Clarke, Richard (W)
Cochrane, Graeme – Scottish Executive, Environment and Rural Affairs Department (O)
Cockbain, Will – NFU County Vice–Chairman (O)
Colaco, Camilo – ImmunoBiology Ltd (W)
Collins, Mark – Animal Health Trust, British Equine Veterinary Association (W)
Cook, David – University of Newcastle (W)
Cotgreave, Dr Peter – Save British Science Society (W)
Cowie, Fiona (W)
Crawley, David – Scottish Executive, Environment and Rural Affairs Department (O)
Crispin, Dr Sheila – University of Bristol (W)
Critchley, Mary – Warmwell (W)
Crouch, JRF – Veterinarian (W)
Cutler, Neil – National Farmers Union (O)
Davie, Dr AM – Geo-Rheological Survey Company Ltd (W)
Davies, Gareth – Independent veterinarian (W + O)
Davies, Glyn – National Assembly for Wales (W)
Davies, Glynne – Riverside Veterinary Centre, Abergavenny (O)
Deans, Michael T (W)
de Clercq, Kris – Chairman FAO EUFMD research group (O)
Desselberger, Dr Ulrich – Addenbrookes Hospital (O)
Dewhurst, CP (W)
Dexter, Dr Michael, FRS – Wellcome Trust (W)
Dobson, Georgina – Council for the Protection of Rural England (W)
Dobson, Jonathan (W)
Doel, T – Merial (O)
Donaldson, Dr Alex – Institute of Animal Health (W + O)
Done, Professor Stan – Pig Veterinary Society (O)
Donnelly, Dr Christl – Imperial College (W + O)
Donovan, Mike – Practical Farm Ideas (W)
Downes, Ms Jane – Meat Hygiene Service (O)
Duerden, Professor Brian – Public Health Laboratory Service (W)
Duff, Dr Keith – English Nature (W)
Duncan, Dr William – Royal Society of Edinburgh (W)
Duncombe, Dr Tracey – Society of General Microbiology (W)
Dunn, George – Tenant Farmers Association (W)

Edelsten, Dr Martyn – Centre for Tropical Veterinary Medicine, University of Edinburgh (W)
Edington, Professor N – Royal Veterinary College (W)
Edwards, Professor Steven – Director, Veterinary Laboratories Agency (W + O)
Ellwood, Professor Derek – University of Newcastle Medical School (W)
Emberton, John – Farmer (W)
Etherden, David – Cumbria County Council (W)
Eykyn, Alicia – FMD Forum (W)

Fergusson, Professor Neil – Imperial College (W + O)
Ferris, Dr Nigel – Institute of Animal Health (O)
Finney, Professor John – University College London (W)
Fletcher, Carolyn – Barwise Aberdeen Angus (W)
Foote, Jon (W)
Forster, Robert – National Beef Association (W)
Fountain, Douglas – Veterinarian (O)
Fullerton, Dr Helen (W)

Gardner, Leslie – Scottish Executive, Environment and Rural Affairs Department (O)
Garland, Dr Tony – Veterinarian (W + O)
Gibbens, Jane – DEFRA (W)
Gibson, David – Third Planet Solutions Ltd (W)
Gill, Ben – National Farmers Union (O)
Gill, Jeff – Royal College of Veterinary Surgeons (W + O)
Gilliland, John – Veterinarian (O)
Goligher, Sue – DEFRA (W)
Goodman, Dr Dougal – Foundation for Science and Technology (W)
Graham, Supt. George – Dumfries and Galloway Constabulary (O)
Grantham, Simon (W)
Grantley-Smith, Martin – Meat and Livestock Commission (W)
Green, Adrian M – Farmer (W)
Green, Roger – Royal College of Veterinary Surgeons (W + O)
Greenhill, Suzanne and Peter (W)
Greig, Dr Alastair – Scottish Agricultural College (W)
Grenfell, Dr Bryan – University of Cambridge (O)
Groombridge, Keith & Jean (W)
Guy, Edward – Public Health Laboratory Service (W)
Gwyther, Liz (W)

Halliwell, Professor Richard – Faculty of Veterinary Medicine, University of Edinburgh (W)
Hamblin, Dr Anne – Royal Veterinary College, London University (W)
Hamblin-Boone, Russell – British Retail Consortium (W)
Hancock Ian – University of Newcastle Medical School (W)
Hancock, Dr Roger – Veterinary Laboratories Agency (O)
Hancox, Martin (W)
Harman, Sir John – Environment Agency (W)
Harris, Mr and Mrs John (W)
Harris, Judith – Office of Science and Technology (O)
Harrison, Wendy – National Farmers Union (O)
Harwood, David – British Cattle Veterinary Association (W + O)
Hayward, Andrew – DEFRA (O)
Henderson, Al (W)
Henton, Richard G – National Farmers Union of Scotland (W)
Hern, Jane C – Royal College of Veterinary Surgeons (W)
Hird, Vicki – Sustain (O)
Holden, Patrick – Soil Association (O)
Holdgate, Sir Martin – former Chief Scientist Department of the Environment (W)
Holliday, Peter and Alison (farm visit, Cumbria)
Holliday, Roger (farm visit, Cumbria)
Holliman, Andrew – Veterinarian (O)
Horton, Richard – National Farmers Union Wales (O)
Hovell, Professor Ramsay – University of Khartoum (W)
Hughes, Peredur – National Farmers Union Wales (O)
Hughes-Davies, TH (W)
Hume, David (W)
Hunter, Dr Archie – Centre for Tropical Veterinary Medicine, University of Edinburgh (W)
Hutcheson, Gregor – Council for the Protection of Rural England (W)
Inglewood, Lord, former MEP (W + O)
Jackson, Dr Peter – University of Cambridge (W)
James, Mary – National Farmers Union Wales (O)
Jeggo, MH (W)
Jinman, Peter – Jinman & Partners, Hereford (O)
Johnson, Alastair – British Veterinary Poultry Association (O)
Johnson, Dr Barry – Royal College of Veterinary Surgeons (O)
Jones, Carwyn – Welsh Minister for Rural Affairs (O)
Jones, Lowri – Young Farmers Club (O)
Jones, Michael (W)
Jones, TO (W)
Jordan, Ian – Dumfries and Galloway Council (O)
Jutzi, Samuel – Food and Agriculture Organisation (W)
Keeler, Martin (W)
Keeling, Dr Matt – University of Warwick (O)
Kenyon, Alastair – Fields Veterinary Group, Newport (O)
Kibblewhite, Dr Mark – Environment Agency (O)
King, Dr Andrew – Institute of Animal Health (O)
King, Professor David, FRS – Chief Scientific Advisor, Office of Science and Technology (W + O)
King, Dr Elaine – National Federation of Badger Groups (W)
Kirkwood, James – Humane Slaughter Association (W)
Knowles, Nick – Institute of Animal Health (W)
Komorowski, Ed – Dairy Industry Federation (W)
Lachmann, Sir Peter, FRS – Academy of Medical Sciences (W)
Ladell, G (W)
Lambourn, Anne (W)
Landeg, Fred – DEFRA (O)
Lanyon, Lance – Royal Veterinary College, London University (W)
Laurence, CJ – Royal Society for the Prevention of Cruelty to Animals (W)
Lawry, F. John (W)
Lawson, Dr Richard (W)
Lee, Judith – Veterinarian (O)
Lewis, Chris (W)
Lewis, Dr DMB (W)
Lillington, Paul (W)
Lindsay, Brian – National Dairy Farm Assured Society (W)
Little, Dr Tony – British Veterinary Association (O)
Lombard, Dr Michel – Merial, France (O)
Long, Dr Alan – Vegetarian Economy and Green Agriculture (W)
Longley, David – Lakeland Veterinary Association (W + O)
Lynn, David – Natural Environment Research Council (W)
Lysons, Mrs Ruth – Merrythought Local Veterinary Investigation Centre (O)

McConnell, John – University of London (W)
McDowell, David – Royal Society for the Prevention of Cruelty to Animals (O)
MacDuff, Major Lindsey – Chief of Staff to Brigadier Hugh Monroe, 52 (Lowland) Brigade (O)
McIntosh, Derek – Scottish Executive, Environment and Rural Affairs Department (O)
McIntyre, Wuffy – National Farmers Union Scotland (O)
MacKay, David – Veterinary Medicines Directorate (W)
McManus, Siobhan – Humane Slaughter Association (O)
Majendie, Susanna – British Equine Veterinary Association (W)
Mandale, Iain – National Farmers Union (O)
Marshall, Alan – Veterinarian (O)
Marshall, Alistair – National Farmers Union of Scotland (O)
Martin, Robert – Farmer (O)
Martlew, Eric, MP (W + O)
Mellor, Dr Phillip – Institute of Animal Health (O)
Mortimer, Philip (W)
Mottram, Toby – Silsoe Research Institute (W)
Murray, RD – Division of Farm Animal Studies, University of Liverpool (W)

Narang, Dr Harash (W)
Newth, Rodney – British Llama and Alpaca Association (W)
Nolan, Andrea – Committee of Heads of Veterinary Schools (W)
Norris, Dr Ken – University of Reading (W)

Ottaway, P Berry – Institute of Food Science & Technology (W)
Owen, Deirdre (W)
Owen, Janet – Pig Veterinary Society (W)

Paters, Dr Hilary (W)
Paton, Dr David – Institute of Animal Health (O)
Paull, Nicky (W)
Payne, Richard – Veterinarian (O)
Pearson, Dr JE – Office International Epizooties (W + O)
Peel, Jonathan – Food & Drink Federation (W)
Peterson, Ann – National Pig Association (W)
Phillips, Hazel – National Consumer Council (W)
Pitchford, Joe – DEFRA (O)
Plowright, Dr Walter, FRS – former Head of Microbiology, AFRC Institute for research on Animal Diseases (W)
Pluimers, Dr Frits – Chief Veterinary Officer, Netherlands (O)
Potter, Richard – Pig Veterinary Society (O)
Potts, JH – Lancashire County Council (W)
Powell, Glyn – National Farmers Union Wales (O)
Price, E Leslie (W)
Pritchard, David – DEFRA (W)
Pritchard, John – Livestock Specialist, China (W)
Purcell, Mrs Jennifer – West Craven Foot and Mouth Action Group (W)
Pyke, Beverley James (W)

Quilty, Edmund – Office of Science and Technology (O)
Quinn, Lawrie MP (W)

Raine, John – National Farmers Union (O)
Reeves, Nick – Chartered Institution of Water and Environmental Management (W)
Reid, Professor Hugh – Moredun Research Institute, Edinburgh (O)
Richards, Iain – Veterinarian (O)
Richardson, Dr Alan – Veterinarian (W)
Ritchie, Neil – Scottish Executive, Environment & Rural Affairs Department (W)
Roeder, Peter – Food and Agriculture Organisation of the United Nations (W + O)
Rogers, Peter – National Assembly for Wales (O)
Rossides, Stephen – National Farmers Union (O)
Rotheram, Peter – Association of Port Health Authorities (W)
Rudman, Peter – National Farmers Union (W + O)
Rushton, Martin (W)

Samuel, Dr Alan – Institute of Animal Health (W)
Sandu, Mrs G (W)
Schild, Dr Geoffrey – National Institute for Biological Standards and Control (O)
Scott, Andrew – British Veterinary Association (W + O)
Scott, Dr Gordon R (W)
Scudamore, Jim – Chief Veterinary Officer, DEFRA (W + O)
Shadduck, John – Optibrand Ltd (W)
Shadwick, Mark (O)
Shannon, Dr David – formerly Chief Scientist, DEFRA (O)
Shimshony, Arnon – Israeli Veterinary Services and Animal Health (W)
Shingley, Sheila – Institute of Animal Health (W)
Sibbert, David – Trading Standards Institute (W)
Sibley, Dick – Royal Veterinary College, British Cattle Veterinary Association (W + O)
Sinclair, Shaun – Abbey Veterinary Centre, Abergavenny (O)
Smith, Anthony – FMD team in Yorkshire Dales (W)
Smith, IGN (W)
Smith, J – Retired veterinarian (W)
Smith, James – Veterinarian (W)
Smith, Richard (W)
Smith, Robert – Abbey Veterinary Centre, Abergavenny (O)
Smith, Sue (W)
Smith-Maxwell, AL (W)
Soar, Mike – Merrythought Local Veterinary Investigation Centre (O)
Soldan, Dr Andrew (O)
Sparagano, Dr Oliver – University of Newcastle (W)
Spence, Robin – National Farmers Union of Scotland (O)
Stephenson, Peter – Compassion in World Farming (O)
Stevenson, Bob – Usk Veterinary Centre (O)
Stevenson, Ian – Ulster Farmers’ Union (W)
Stockdale, Tom (W)
Sumption, Dr Keith – Centre for Tropical Veterinary Medicine, University of Edinburgh (W + O)
Sutmoller, Dr Paul (W + O)
Swarbrick, Olaf (W)

Taylor, Angus – Veterinarian (W)
Taylor, Derek – Fife Council (W)
Tearle, Ian – Health Forum (W)
Tedder, Professor Richard – Royal Free and University College Medical School (W + O)
Tennant, Toby (W)
Thomas, David – State Veterinary Service (SVS Head of FMD operations during the 2001 FMD outbreak) (O)
Thompson, Ian – Merrythought Local Veterinary Investigation Centre (O)
Thompson, Dr Stephen – University of Newcastle (W)
Thorne, Toby (W)
Thorne, Sarah – West Devon Borough Council (W)
Thornycroft, Chris and Eleanor (W)
Thrusfeld, Michael (W)
Twentyman, Keith – National Farmers Union (O)
Tyrrell, Ken – Veterinarian (W)
Tyno, David – British Veterinary Association (W)

Uffold, John – McCartneys Auctioneers (W + O)
Utting, Nick – National Farmers Union (O)

Van Aarle, Paul – Biotechnology and Biological Sciences Research Council (W + O)
Vernon, Ruth – British Cattle Veterinary Association (O)

Waller, Veronica – National Farmers Union (O)
Walker, Mrs P – North Yorkshire Smallholders Society (W)
Walker, Roger – Shropshire County Council (W)
Wannop, Alistair – Farmer (O)
Watkins, Dr Ruth – Country Land & Business Association, FMD Forum (W + O)
Weare, Steve – Food Standards Agency (W)
Welford, Rod – Millcroft Veterinary Group (W + O)
Western, Richard – Western & McAllister, Brecon (O)
White, David – Biotechnology and Biological Sciences Research Council (W)
Wickenden, Michelle – Natural Environment Research Council (W)
Wight, Peter – Marks & Spencer (W)
Wileman, Dr Tom – Institute of Animal Health (O)
Wilesmith, Professor John – Veterinary Laboratories Agency (O)
Wilkinson, Brian – Devon County Council, Devon FMD Inquiry (W)
Wilkinson, Dr Phil – Institute of Animal Health (O)
Williams, Dr David (W)
Williams, Kirsty – National Assembly for Wales (O)
Wilson, Collin – Abbey Veterinary Centre, Abergavenny (O)
Wood, Kate – Veterinarian (W)
Woods, Abigail – Wellcome Unit for the History of Medicine, University of Manchester (W)
Woods, Peter – Vets for Vaccination (O)
Woolhouse, Professor Mark – Royal School of Veterinary Studies, University of Edinburgh (W + O)
Woolridge, Dr Marion – VLA (O)
Wright, Karen & Lawrence (W)
Wright, Matthew – DEFRA (W)
Wright, Richard – English Nature (W)

Young, Dame Barbara – Environment Agency (W)
Organisations

Abbey Veterinary Centre, Abergavenny
Academy of Medical Sciences
Animal Health Trust
Association of Port Health Authorities

Barwise Aberdeen Angus
Belle Vue Vets
Biotechnology and Biological Sciences Research Council
British Cattle Veterinary Association
British Equine Veterinary Association
British Llama and Alpaca Association
British Poultry Council
British Retail Consortium
British Veterinary Association
British Veterinary Poultry Association

Campaign Against Unnecessary Slaughter of Alpacas and Llamas
Chartered Institution of Water and Environmental Management
Committee of Heads of Veterinary Schools
Compassion in World Farming
Council for the Protection of Rural England
Council of the European Union
Country Land & Business Association
Countryside Alliance
Cumbria County Council

Dairy Industry Federation
Department for Environment, Food and Rural Affairs
Devon County Council, Devon FMD Inquiry
Dumfries and Galloway Constabulary
Dumfries and Galloway Council

English Nature
Environment Agency
European Commission for the Control of FMD
European Commission DG Health and Consumer Protection

Farm Animals Welfare Council
Farm Business Steering Group
Farmtalking.com
Federation of Veterinarians of Europe
Fields Veterinary Group, Newport
Fife Council
FMD Forum
Food and Agriculture Organisation of the United Nations
Food & Drink Federation
Food Ethics Council
Food Standards Agency
Foundation for Science and Technology

Geo-Rheological Survey Company Ltd
Gloucestershire County Council

Health Forum
Hong Kong DNA Chips Ltd
Horserace Betting Levy Board
Humane Slaughter Association
ImmunoBiology Ltd
Institute of Animal Health
Institute of Food Science & Technology
Institute of Science in Society
Israeli Veterinary Services and Animal Health

Lakeland Veterinary Association
Lancashire County Council
Livestock Auctioneers Association
Local Government Association

McCartneys Auctioneers
Marks & Spencer
Meat Hygiene Service
Meat and Livestock Commission
Medical Research Council
Merial, France
Merrythought Local Veterinary Investigation Centre
Meteorological Office
Millcroft Veterinary Group
Moredun Research Institute, Edinburgh

National Assembly for Wales
National Beef Association
National Consumer Council
National Dairy Farm Assured Society
National Farmers Union
National Farmers Union of Scotland
National Farmers Union Wales
National Federation of Badger Groups
National Foot and Mouth Group
National Institute for Biological Standards and Control
National Pig Association
Natural Environment Research Council
North Yorkshire Smallholders Society
Northumberland County Council

Office of Science & Technology
Office International des Epizooties
Operating Platforms Ltd
Optibrand Ltd

Pig Veterinary Society
Practical Farm Ideas
Priory Veterinary Surgery
Provision Trade Federation
Public Health Laboratory Service

Riverside Veterinary Centre, Abergavenny
Roslin Institute
Royal College of Veterinary Surgeons
Royal Netherlands Academy of Arts & Sciences
Royal Society for the Prevention of Cruelty to Animals
Royal Society of Edinburgh
Annex D: Glossary

adjuvant compounds added to vaccine to enhance the immune response
aerosol a suspension of fine solid or liquid particles in gas
aetiology causes of a disease or abnormal condition
agronomy a branch of agriculture dealing with field-crop production and soil management
AHS African horse sickness
AI avian influenza
anthelmintics expelling or destroying parasitic worms especially of the intestine
antibody a protein produced in the blood that fights diseases by attacking and killing bacteria or viruses
antigen a substance that causes the production of antibodies in the body
antisera serum containing antibodies
anti-viral intended to treat an infection or disease caused by a virus
APMV-1 avian paramyxovirus type 1
artiodactyla large group of mammals with even toes: either cloven hoof with two toes, or a spreading foot with four. Group includes swine, hippopotamuses, camels, giraffes, deer, pronghorns and bovids
ASF African swine fever
assay method for measuring the amount of a substance
atrophic rhinitis wasting away and inflammation of the mucous membrane of the nose
basal epithelial progenitor cell layer for epithelial tissue such as skin
BBSRC Biotechnology and Biological Sciences Research Council
BCVA British Cattle Veterinary Association
beef suckler calf that will enter the food chain
BHV bovine herpes virus
biosensor device that is sensitive to a physical or chemical stimulus and transmits information about a life process
biphasic having two phases
BPP bovine pleuro-pneumonia
brucellosis infection with or disease caused by brucellae
BSE bovine spongiform encephalopathy
BT bluetongue
BVA British Veterinary Association
BVD bovine viral diarrhoea
BVDV bovine viral diarrhoea virus
campylobacter rod-shaped bacterium, sometimes pathogenic in domestic animals and humans
clostridium anaerobic soil or intestinal bacterium
coccidiosis infestation with or disease caused by coccidia
colostrum milk secreted for a few days after giving birth and characterized by high protein and antibody content
contagious (of a disease) able to be caught by touching someone with the disease or a piece of infected material
CSF classical swine fever
culicoides biting midges
cull to kill animals, especially the weaker or diseased members of a particular group
cyanosis bluish or purplish discoloration (as of skin) due to deficient oxygenation of the blood
DC dangerous contact
DEFRA Department for Environment, Food and Rural Affairs
diagnosis the art or act of identifying a disease from its signs and symptoms
distomatosis congenital state of having two mouths
DTI Department of Trade and Industry
dyspnoea difficult or laboured respiration
EBL enzootic bovine leucosis
echinococcosis infestation with or disease caused by an echinococcus
E. coli Escherichia coli: a bacterium that exists widely. Certain strains can exist in food that has not been cooked properly and can cause serious or fatal illness
EEE Eastern equine encephalitis
ELISA enzyme-linked immunosorbent assay
emergency vaccination vaccination during an outbreak
encephalitis inflammation of the brain
endemic (of a disease) established in a country
endometritis inflammation of the mucous membrane lining the uterus
enterovirus a genus of picornaviruses that typically occur in the gastrointestinal tract but may be involved in respiratory ailments, meningitis and neurological disorders
enzootic abortion very common infectious abortion in sheep caused by chlamydial infection
epicardium visceral part of the pericardium that closely envelops the heart
epidemic the appearance of a particular disease in a large number of animals/people in the same period of time
epidemiology a branch of medical science that deals with the incidence and distribution of disease in a population
epithelial a membranous cellular tissue that covers a free surface or lines a tube or cavity of an animal body
EU European Union
EUFMD European Commission for the Control of Foot-and-Mouth Disease
exotic (of a disease) not normally present in a country
finishing fattening of prime animals for slaughter
FMD foot-and-mouth disease
FMDV foot-and-mouth disease virus
haemorrhagic any of a diverse group of arthropod-borne virus diseases characterized by sudden onset, fever, aching, bleeding in the internal organs, skin rash and shock
HIV human immunodeficiency virus
HPAI highly pathogenic avian influenza
husbandry branch of agriculture concerned with the production and care of domestic animals
hydatidosis widespread cysts in the tissues caused by the intermediate stages of tapeworm parasites
IAH Institute for Animal Health
ICPI intracerebral pathogenicity index
IHN infectious haematopoietic necrosis
immunity protection against a particular disease by virtue of the immune system being primed to react against it
immunocompromised having the immune system impaired or weakened
immunogenic producing an immune response
incubate (of harmful bacteria or viruses) to grow and reproduce, but not yet produce the effects of disease in a human or an animal
infection an illness caused by the movement of an organism into a living thing
IP infected premise
IPN infectious pancreatic necrosis
ISA infectious salmon anaemia
IVPI intravenous pathogenicity index
JE Japanese B encephalitis
lachrymation secretion of tears especially when abnormal or excessive
leptospirosis any of several diseases of humans and domestic animals that are caused by infection with leptospires
lesion abnormal change in structure of an organ or part due to injury or disease
listeriosis serious type of food poisoning, caused by listeria, which is particularly harmful to babies before they are born.
LPAI low pathogenic avian influenza
LVI local veterinary inspector

maedi visna slow virus infection of lungs and central nervous system in sheep caused by an AIDS-like lentivirus

MAFF Ministry of Agriculture, Fisheries and Food (formed into DEFRA in 2001)

mastitis soreness and usually swelling of the udder

MDV Marek’s disease virus

morbidity prevalence of disease in an animal population

mortality the number of deaths in a given time or place; the proportion of deaths to population; the number lost or the rate of loss or failure

MRC Medical Research Council

multivalent pool of antibodies that recognise different antigens or pathogens

myocarditis inflammation of the middle muscular layer of the heart wall

ND Newcastle disease

nematode elongated cylindrical worm parasitic in animals or plants or free-living in soil or water

nephropathy syndrome abnormal state of the kidney, especially one associated with or secondary to some other pathological process

neuraminidase inhibitors compounds that inhibit the enzyme neuraminidase

NSP non-structural viral proteins

oedema abnormal infiltration and excess accumulation of serous fluid in connective tissue or in a serous cavity

OIE Office International des Epizooties

orbiviruses viruses belonging to the family Reoviridae such as bluetongue and African horse sickness viruses

oropharyngeal relating to the mouth and pharynx

oropharynx part of the pharynx that is below the soft palate and above the epiglottis and is continuous with the mouth

OST Office of Science and Technology

ovine epididymitis inflammation of part of the genital tract in sheep

pandemic (of a disease) existing in almost all of an area or in almost all of a group of people, animals or plants

pasteurisation partial sterilization of a substance at a temperature and for a period of exposure that destroys objectionable organisms without major chemical alteration of the substance

pathogen any small life form, such as a bacterium or a virus, that can cause disease

PCR polymerase chain reaction

PDNS porcine dermatitis and nephropathy syndrome

petechia a minute reddish or purplish spot containing blood that appears in skin or mucous membrane especially in some infectious diseases

pharyngeal cavity relating to or located or produced in the region of the pharynx

PHLS Public Health Laboratory Service

Picornaviridae very small RNA viruses such as FMDV

PMWS post-weaning multi-systemic wasting syndrome

polymerase any of several enzymes that catalyze the formation of DNA or RNA from precursor substances in the presence of pre-existing DNA or RNA acting as a template

PPR peste des petits ruminants

prion protein particle that lacks nucleic acid and is believed to be the cause of various Infectious diseases of the nervous system (such as scrapie, bovine spongiform encephalopathy and Creutzfeldt-Jakob disease)

probang slender flexible rod with a sampling cup at one end used especially for removing samples from the esophagus

prophylactic intended to prevent disease

prostration complete physical or mental exhaustion

PRRS porcine reproductive and respiratory syndrome

pyrexia abnormal elevation of body temperature
quantitative trait loci quantitative measure of those genes involved in a particular function
quarantine period of time during which a person or animal that might have a disease is kept away from other people or animals so that the disease cannot spread
RCVS Royal College of Veterinary Surgeons
rinderpest an acute infectious febrile disease of ruminant mammals (such as cattle) that is caused by a paramyxovirus related to the virus causing measles in humans, and marked by diarrhea and inflammation of mucous membranes
RNA ribonucleic acid
rotavirus a virus that causes diarrhoea in vertebrates including humans
RSV respiratory syncitial virus
RT-PCR reverse-transcription PCR
ruminant even-toed hoofed mammal (such as sheep, giraffes, deer, and camels) that chews the cud
salmonella group of bacteria, some types of which live in food and cause illness in people who eat the food
serotype group of intimately related microorganisms distinguished by a common set of antigens
sinusitis inflammation of a sinus of the skull
sloughing loss of surface tissues by abrasion
soliped horse
SPF specific-pathogen-free
stomatitis inflammatory disease of the mouth
supraobital fossae bony depression in skull above the eye socket
SVD swine vesicular disease
SVS State Veterinary Service
swill waste food that has traditionally been fed to pigs
TB tuberculosis
titre level of compound in body fluids or tissue samples
torticollis twisting of the neck to one side that results in abnormal carriage of the head and is usually caused by muscle spasms
transcriptase polymerase that catalyzes the formation of DNA using RNA as a template, found especially in retroviruses
transcutaneous passing, entering or made by penetration through the skin
trypanosomiasis infection with or disease caused by trypanosomes
TSE transmissible spongiform encephalopathy
tupping copulating with (a ewe)
TVI temporary veterinary inspector
USDA US Department of Agriculture
vaccine booster challenge of an immunised animal with a second or subsequent vaccination with the same vaccine
VEE Venezuelan equine encephalitis
VEERU Veterinary Economics and Epidemiology Research Unit
vesicle membranous and usually fluid-filled pouch (such as a cyst, vacuole, or cell) in a plant or animal
VHS viral haemorrhagic septicaemia
viraemia presence of virus in the blood of a host
VLA Veterinary Laboratories Agency
WEE Western equine encephalitis
WNF West Nile fever
WTO World Trade Organization
zoonosis disease communicable from animals to humans under natural conditions
zoosanitary sanitary or biosecurity procedures applied to animals