



House of Commons

Environment, Food and Rural  
Affairs Committee

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**Badgers and cattle TB:  
the final report of the  
Independent Scientific  
Group on Cattle TB**

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**Fourth Report of Session 2007–08**

*Volume I*

## Environment, Food and Rural Affairs Committee

The Environment, Food and Rural Affairs Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Environment, Food and Rural Affairs and its associated bodies.

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The following members were also members of the Committee during this inquiry

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### Committee staff

The current staff of the Committee are Chris Stanton (Clerk), Nerys Welfoot (Second Clerk), Marek Kubala and Joanna Dodd (Inquiry Managers), Andy Boyd and John-Paul Flaherty (Committee Assistants) and Mandy Sullivan (Secretary).

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## Overview

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1. Cattle TB is an infectious disease that is one of the most serious animal health problems in Great Britain today. The number of infected cattle has been doubling every four and a half years. The consequential growing cost of the disease to the taxpayer and to the farming industry is unsustainable. In “hot spot” areas where the prevalence of the disease is highest, the farming industry has reached a breaking point as the disruption to business in both human and economic terms has become unacceptable. The final straw for many farmers has proved to be the introduction of a new system of valuations for their slaughtered cattle which has proved inequitable in many cases.

2. The increase in incidence of cattle TB suggests that the Government’s current method of controlling the disease, that of surveillance, testing and slaughter, is not working effectively. Our visit to Devon, one of the hot spot areas, illustrated the growing frustration felt by farmers in that region who are sceptical that testing and biosecurity, measures recommended by central government, are not able in the short-term to break the cycle of infectivity between cattle and badgers.

3. Our Report does not intend to be the definitive account of the disease. Our inquiry initially focussed on the conclusions of the Independent Scientific Group on Cattle TB (ISG), which was set up by the Government in 1998 to conduct the Randomised Badger Culling Trial (RBCT) in order to establish the effects of badger culling on the incidence in herds of cattle TB. The ISG published its final report in June 2007. The ISG concluded: “After careful consideration of all the RBCT and other data presented in this report, including an economic assessment, we conclude that badger culling cannot meaningfully contribute to the future control of cattle TB in Britain.”<sup>1</sup> However, a subsequent review of the ISG’s Final Report, produced by the then Government Chief Scientific Adviser Sir David King at the Government’s request, produced a different interpretation of the same basic data. Both reports said that badger culling would have an overall beneficial effect. However, whilst the ISG concluded that culling would make a “modest difference” in the incidence of cattle TB, the King report concluded that at 300km<sup>2</sup>, culling “would have a significant effect on reducing TB in cattle”.<sup>2</sup> It appears that the main conclusions of the two reports differ mainly because the ISG concluded that it was not practically or economically feasible to carry out culling on the scale necessary to gain beneficial effects. Sir David King’s group of experts did not include the practicalities or costs of culling in its considerations.

4. Our conclusion is that there is no simple solution that will control cattle TB. The Government must adopt a multi-faceted approach to tackling the disease, using all methods available. The Government’s strategy for cattle TB should include: more frequent cattle testing, with more frequent and targeted combined use of the tuberculin skin test and the gamma interferon test; the evaluation of post-movement cattle testing; greater communication with farmers on the benefits of biosecurity measures; the

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1 Department for Environment, Food and Rural Affairs, *Bovine TB: The Scientific Evidence: Final Report of the Independent Scientific Group on Cattle TB*, June 2007, p 14

2 Sir David King, *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007

deployment of badger and cattle vaccines when they become available in the future; and continued work on the epidemiology of the disease.

5. The Committee recognises that under certain well-defined circumstances it is possible that culling could make a contribution towards the reduction in incidence of cattle TB in hot spot areas. However, as there is a significant risk that any patchy, disorganised or short-term culling could make matters worse, the Committee could only recommend the licensed culling of badgers under section 10 of the Protection of Badgers Act 1992 if the applicants can demonstrate that culling would be carried out in accordance with the conditions agreed between the ISG and Sir David King, which indicated that there might be an overall beneficial effect. These were that culling should: be done competently and efficiently; be coordinated; cover as large an area as possible (265km<sup>2</sup> or more is the minimum needed to be 95% confident of an overall beneficial effect); be sustained for at least four years; and be in areas which have “hard” or “soft” boundaries where possible. We recommend that no application for a licence should be approved by Natural England, which already has statutory responsibility for the granting of culling licences, without scrutiny to ensure that it complies with the conditions set by the ISG and Sir David King. It is important that were such a cull approved, other control measures should also be applied. Any cull must also be properly monitored by Defra. It is unlikely that such culling would be sanctionable in more than a limited number of areas. We recognise that culling alone will never provide a universal solution to the problem.

6. The National Farmers Union (NFU) has put forward a proposal for an organised licensed cull by farmers, or their contractors. They believe it would fulfil the conditions agreed by the ISG and Sir David King. If the NFU is able to meet the licensing requirements laid down by Defra, can satisfy Natural England both that it would conduct any cull in accordance with its animal welfare requirements and would satisfy the conditions agreed by the ISG and Sir David King, we accept that a licence for such a cull could be granted.

7. Crucial gaps in the knowledge about cattle TB and the way it spreads remain. If Defra is to save expenditure in the long run it must continue to fund work to fill the gaps. Central to this work must be an answer to the question of what is the precise mechanism of the infection between badger and cattle. Defra’s approach to future research into aspects of cattle TB must not be determined simply by its wish to reduce its overall level of spending on combating the disease.

8. Defra currently faces budgetary pressures. However, simply saying that more money cannot be found for spending on measures to control cattle TB is not a solution. The measures we have recommended will require an increase in financial support from Defra. However, this is necessary if the Government wants to avoid ever-increasing expenditure forecast in future years, which could total as much as £1billion between now and 2013. Ministerial assertions, driven by Defra’s budgetary control problems, that the budget for cattle TB will be reduced are unrealistic. Defra has a continuing responsibility to seek to end the incidence of this disease just as it does with BSE. Defra is now justified in making a case to HM Treasury for a “spend to save” policy. But in so doing it will once and for all have to commit itself to a strategy with clear goals against which progress can be measured.



emerged that Professor Sir David King, the then Government Chief Scientific Adviser, had been asked by the then Secretary of State for Environment, Food and Rural Affairs to review the conclusions of the ISG Report—he reported in July 2007—and the current Secretary of State has announced that he would wait to hear the conclusions of the Committee before making a decision on whether or not badger culling would form part of the Government strategy for dealing with cattle TB. In the light of these developments, we decided to take further evidence.

12. When it announced its initial two evidence sessions, the Committee chose on that occasion not to invite written evidence but, instead, interested parties were invited to suggest questions for us to put to witnesses. The Committee took evidence on six occasions. A list of witnesses can be found on page 63. We are most grateful to all those who gave evidence to our inquiry.

13. We also made two visits during the course of our inquiry. We met farmers, vets and NFU officials in a cattle TB “hotspot” area in Devon who provided us with an insight into the commercial and human dimension of the effect on farming of the disease. We also visited the Veterinary Laboratories Agency (VLA) in Weybridge to hear how work towards cattle TB vaccines is progressing. We also received a private briefing on the practicalities of the RBCT from Defra officials. Both visits and the briefing were extremely useful to our inquiry and we are grateful to those who met us.

## 2 Background

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### Cattle TB in Great Britain

14. Since the late 1980s there had been a steady rise in numbers of cattle TB breakdowns in herds in Great Britain and an increase in the number of reactor cattle culled following a positive result to the TB test: but now the numbers of breakdowns are doubling every four and a half years.<sup>11</sup> Most breakdowns are clustered in “hot spot” areas in South West England, South West Wales, Staffordshire and Derbyshire. It is expected that at the current growth rate the disease will spread to other areas of England and Wales. It is unclear how far the increase in the number of new breakdowns is a genuine increase in the spread of the disease or instead the effect of the introduction of a stricter testing regime which has found a higher proportion of cases.

15. The past year has seen the Government’s attention focused on outbreaks of several serious animal diseases: Avian Influenza; Foot and Mouth disease and Bluetongue. However, cattle TB has proved to be the most serious, persistent and expensive livestock disease in recent years. Professor Sir David King told the Committee that “Britain’s biggest endemic animal health issue is TB in cattle”.<sup>12</sup>

16. Animal health is a devolved issue, but the Government’s *Strategic framework for the sustainable control of bovine tuberculosis (bTB) in Great Britain*, published in 2005, was produced in association with the Welsh Assembly Government and the Scottish Executive. The framework provides for the development of national approaches in recognition of the differences in disease incidence within Great Britain. Cattle TB is not currently a significant problem in Scotland and therefore the Scottish Executive’s emphasis is on prevention rather than cure. Cattle TB is a significant problem in the island of Ireland, where there are extremely few disease-free areas. Further information on how Cattle TB is being tackled there can be found in the Annex to this Report.

17. In Wales, where cattle TB is a serious concern, the Wales Action Plan takes forward the aspects of the GB Animal Health and Welfare Strategy over which Wales has direct control, setting out what is being done and reporting on progress.<sup>13</sup> In 2006, Wales implemented a Biosecurity Intensive Treatment Area (ITA) in South West Wales within which biosecurity interventions are actively promoted to improve herd health by reducing the spread of the disease. The gamma interferon test,<sup>14</sup> used alongside the tuberculin skin test in certain circumstances, is being rolled out across Wales as part of the national surveillance regime. The Welsh Rural Affairs Minister will receive advice from the Wales TB Action Group on the measures that it considers are appropriate in relation to wildlife.

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11 Q 9

12 Q 351

13 Department for Environment, Planning and Countryside, *Animal Health and Welfare Strategy: Welsh Assembly Government Action Plan 2007–08*

14 The gamma interferon test is a laboratory based blood test. Gamma interferon is an immunological hormone that is produced after the stimulation of blood cells with antigens such as bovine tuberculin.

On the issue of culling badgers, the Welsh Rural Affairs Minister has been quoted as saying that Wales “will not follow London’s agenda if it is not right for Wales”.<sup>15</sup>

18. On 22 January 2008, the Rural Development Sub-Committee of the National Assembly for Wales published a report on its inquiry to investigate “how the Welsh Assembly Government could contribute to the containment of *M. bovis* through its existing powers; and review the long-term management and reduction of *M. bovis* through animal health and welfare best practice and control processes, acknowledging available scientific evidence.”<sup>16</sup> The Committee concluded that it was necessary for the Welsh Assembly Government to adopt “an holistic approach” in order to control and eventually eradicate the disease in both the wildlife and cattle population.<sup>17</sup> The Committee recommended the adoption of a combination of measures, including increased on-farm biosecurity, the speedy and accurate identification and management of reactors and at-risk cattle herds and the understanding and control of TB in the wildlife population. To achieve the last measure, it recommended that an Intensive Treatment Area be created to provide further evidence on the effects on the spread of TB of culling wildlife in an area with hard boundaries.<sup>18</sup>

19. Despite the publication of Defra’s strategic framework for the sustainable control of cattle TB, there is a lack of evidence to indicate that the written strategy is achieving the overall strategic aim of controlling the disease. Lord Rooker told the Committee: “We have a serious disease in a food production animal [...] It is growing and everything we seem to do is not constraining it at the present time.”<sup>19</sup>

20. The Government’s current method of controlling the disease involves surveillance, testing, compulsory slaughter and compensation. Due to the slow progression of infection, cattle rarely show the obvious clinical signs of cattle TB, such as weakness, coughing and loss of weight. It is normally detected by tests or at the slaughter house. Defra have implemented a national programme of herd testing for *M. bovis* where animals in most herds are subjected to a diagnostic test (using the skin test) at prescribed intervals. The frequency of testing depends on recent incidence at a parish level of herds with confirmed TB, ranging from annually to four yearly testing.<sup>20</sup> Routine TB surveillance tests are paid for by the Government. The intra-dermal tuberculin (skin) tests are the primary screening tests, whilst the gamma interferon blood test is currently only approved as an adjunct to the skin test to help confirm correct diagnosis of the disease. Defra estimates that the tuberculin test detects approximately 80% of all the infected cattle in a herd at any one test.<sup>21</sup> The ISG reported that several studies of naturally and experimentally infected cattle

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15 “Minister promises a TB policy ‘specific for Wales’”, *Farmers Weekly*, 27 July 2007

16 Rural Development Sub-committee, Inquiry into bovine tuberculosis, January 2008

17 Ibid, p 1

18 Ibid, recommendation 7

19 Q 538

20 *Final Report of the Independent Scientific Group on Cattle TB*, p 57

21 <http://www.defra.gov.uk/animalh/tb/pdf/tbinyh.pdf>

have highlighted the limitations of the tuberculin skin test and its consistent inability to identify a significant number of TB infected cattle.<sup>22</sup>

21. Research has found that the gamma interferon test has better sensitivity than the skin test (i.e. the ability correctly to identify infected cattle), but that the tuberculin skin test provides a higher level of specificity (the ability to correctly identify non-infected cattle as negative, and thereby avoiding “false positives”). The specificity of the gamma interferon test is not sufficiently high enough for it to be used as the primary diagnostic for routine herd testing,<sup>23</sup> but research has shown that in combined use with the skin test it can produce higher levels of sensitivity than the skin test alone.

22. Reactor cattle which test positively are separated from the herd and sent for slaughter. Animals whose test result was inconclusive are separated from the rest of the herd (sometimes the whole herd is placed under movement restrictions). Then, if a follow-up test shows a positive reaction the animal is sent for slaughter, but if the animals have two consecutive clear tests they can rejoin the herd.

23. If TB is found in a herd restrictions are imposed on movements onto and off the premises until all animals in the herd have been tested and been found clear on two consecutive occasions, or after one subsequent test in the case of animals tested where infection was not confirmed. Enquiries are carried out to establish the origin of the disease, and animals previously moved off the farm are traced and tested, as are animals on neighbouring farms.<sup>24</sup>

24. A computerised National Cattle Tracing System identifies animals and herds that need testing. According to Lord Rooker, the system is overburdened by the scale of the operation and the resources available: “The computer system is out of date. It has black and white screens. I have not seen those for years. There is a massive paperwork trail both for the testing and also the checking and tracing. Administratively, it is a nightmare.”<sup>25</sup> This can be contrasted with the more up to date APHIS cattle tracing system operating in Northern Ireland.<sup>26</sup>

25. In March 2006, Defra implemented a new system of statutory pre-movement testing of cattle in England with the intention of helping to reduce the risk of spreading cattle TB between herds in high-risk areas and to herds in areas free from the disease. Under this system, all cattle over 42 days old moving out of a one- or two-yearly tested herd must have tested negative to a TB test within 60 days prior to movement unless the herd or movement meets an exemption. All pre-movement tests must be arranged and paid for by the herd owner (but routine cattle TB surveillance tests paid for by the Government can qualify as pre-movement tests, if animals are moved within 60 days after that test).<sup>27</sup> Scotland has

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22 *Final Report of the Independent Scientific Group on Cattle TB*, p 21

23 *Final Report of the Independent Scientific Group on Cattle TB*, p 144

24 Department for Environment, Food and Rural Affairs, *Regulatory Impact Assessment: pre-movement testing in England*, p 2

25 Q 538

26 See Annex.

27 <http://www.defra.gov.uk/animalh/tb/premovement/index.htm>

gone a step further and introduced post-movement testing in an attempt to prevent the spread of the disease north of the border.<sup>28</sup>

26. There are approximately 8.6 million cattle in Great Britain, 5.6 million of which are in England.<sup>29</sup> In 2006 approximately 5.5 million tests were carried out in Great Britain. The Veterinary Laboratories Agency (VLA) has forecasted that this number could rise to nine million by 2010, with the number of reactor animals slaughtered rising to 66,000.<sup>30</sup> Defra has estimated that testing will prevent approximately 610 new incidents of cattle TB a year (the total in 2006 was about 3,500 across Great Britain as a whole).<sup>31</sup> Vets and farmers in Devon told the Committee that the testing regime was already time consuming, demoralising and a seemingly never-ending cycle of paperwork.

### ***TB in the wildlife reservoir***

27. Previous studies have concluded that badgers are a wildlife “reservoir” for cattle TB and that there is compelling evidence that badgers are involved in transmitting infection to cattle.<sup>32</sup> Deer are also known carry the disease. Results of the Road Traffic Accident Survey, where patterns of *M. bovis* infection were investigated in badgers killed in road traffic accidents, give further perspective to the incidence of cattle TB in badgers.”<sup>33</sup> The Randomised Badger Culling Trial (RBCT) provided some evidence that cattle infected badgers with TB, which suggests that there could be a cycle of infection in areas where badgers live in close proximity to, and come into contact with, cattle.<sup>34</sup> However, what is still not known is the precise method of transmission of TB infection from badger to cattle, i.e. it is still not known whether direct contact is necessary for the transmission of the disease.<sup>35</sup>

28. There are also arguments about the extent of the impact of badgers on the rate of disease spread. The ISG concluded that cattle to cattle transmission was a very important factor in the spread of the disease in high incidence areas and that this was also the main cause of disease spreading to new areas.<sup>36</sup> However, Animal Health and local vets in the West Country believe that 70% of breakdowns in that region are attributable to badger to cattle transmission.<sup>37</sup> In evidence, Lord Rooker told us that Animal Health and the Veterinary Laboratories Agency had told the Government that the wildlife reservoir must

28 Department for Environment, Food and Rural Affairs, *TB in cattle – reducing the risk, Pre-and Post-movement testing in Great Britain*, August 2007

29 [http://www.defra.gov.uk/esg/work\\_htm/publications/cs/farmstats\\_web/default.htm](http://www.defra.gov.uk/esg/work_htm/publications/cs/farmstats_web/default.htm)

30 *Regulatory Impact Assessment: pre-movement testing in England*, p 4

31 Department for Environment, Food and Rural Affairs, *Pre-Movement Testing In England: updated assessment of costs and benefits*, January 2007

32 Zuckerman, S. (1980), *Badgers and Tuberculosis*, HMSO, London; and Krebs, J.R., Anderson, R., Clutton-Brock, T., Morrison, I., Young, D., Donnelly, C., Frost, S. and Woodroffe, R (1997), *Bovine Tuberculosis in cattle and badgers*, MAFF Publications, PB 3423

33 HC Deb, 22 January 2008, col 1974W; HC Deb, 5 June 2006, col 147–8W; HC Deb, 27 February 2006, col 261–2W

34 *Final Report of the Independent Scientific Group on Cattle TB*, p 20

35 *Final Report of the Independent Scientific Group on Cattle TB*, p 173

36 *Final Report of the Independent Scientific Group on Cattle TB*, p 15

37 Q 539, Ev 167, 173. Note: Animal Health, previously the State Veterinary Service is the government's executive agency primarily responsible for ensuring that farmed animals in England, Scotland and Wales are healthy, disease-free and well looked after.

be tackled if it intended to prevent cattle TB spread or eradicate cattle TB from the national herd (respectively).<sup>38</sup>

29. There are over 300,000 badgers in Great Britain.<sup>39</sup> Badgers are a protected species under the Badgers Act 1973, Badgers Act 1991 and the Protection of Badgers (Further Protection) Act 1991 and the Protection of Badgers Act 1992, which prevents the killing, injuring or taking of badgers or the interference with their setts. The legislation was originally intended to afford badgers protection from badger-baiting.<sup>40</sup> Defra (and her equivalent departments in Scotland and Wales) are able to grant licences to kill and take badgers and interfere with their setts for the purpose, amongst others, of preventing the spread of disease.<sup>41</sup>

30. The Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats 1979) prohibits causing local disappearance or serious disturbance to badgers (Recommendation No. 69).<sup>42</sup> When Dr Chris Cheeseman (Central Science Laboratory) gave evidence to the Committee in February 2006, he thought it likely that the secretariat of the Bern Convention would demand a justification for introducing a culling policy that would achieve the local extinction of badger populations.<sup>43</sup> However, Sir David King told the Committee that, in his opinion, a reduction by 70 to 80% (as achieved by the RBCT) would be within the terms of the Bern Convention.<sup>44</sup> Lord Rooker told the Committee that: “under no circumstances would the Government countenance a policy to eradicate badgers”<sup>45</sup>

## Cost of the disease

31. Cattle TB continues to be a serious financial burden for the Government and the farming industry. Public expenditure on cattle TB has grown rapidly in recent years owing to the increase in testing, and the compensation paid for the increased number of reactor cattle found and slaughtered as a result. Spending is forecast to continue to grow unless the spread of TB is controlled. Currently, approximately £62m of the total expenditure on cattle TB is spent on testing and the payment of compensation to farmers (see Table 1 below).

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38 Q 539

39 Q 642

40 Q 635

41 Protection of Badgers Act 1992, section 10

42 The “Convention on the Conservation of European Wildlife and Natural Habitats”, agreed in Bern on 19 September 1979, lists the European badger (*Meles meles*) as a protected fauna species (Appendix III) and prohibits “the use of all indiscriminate means of capture and killing and the use of all means capable of causing local disappearance” of a species (Article 8); [http://www.coe.int/t/e/cultural\\_co-operation/environment/nature\\_and\\_biological\\_diversity/Nature\\_protection/](http://www.coe.int/t/e/cultural_co-operation/environment/nature_and_biological_diversity/Nature_protection/)

43 Environment, Food and Rural Affairs Committee, *Bovine TB: badger culling*, Q 49

44 Q 413

45 Q 642

**Table 1: Breakdown of Government's expenditure on tackling TB in cattle (£m)**

<b>Activity</b>	<b>1999/ 2000</b>	<b>2000/ 2001</b>	<b>2001/ 2002</b>	<b>2002/ 2003</b>	<b>2003/ 2004</b>	<b>2004/ 2005</b>	<b>2005/ 2006</b>	<b>2006/ 2007</b>
Cattle Testing	17.6	13.3	5.4	24.7	33.2	36.4	36.7	37.8
Compensation	5.3	6.6	9.2	31.9	34.4	35.0	40.4	24.5
Culling Trial	4.6	6.6	6.0	6.6	7.3	7.2	6.2	1.6
Other Research	3.8	5.3	6.1	6.5	7.0	5.7	7.5	6.4
Veterinary Laboratories Agency	2.4	3.5	3.7	4.1	5.3	4.9	6.5	7.8
HQ/Overheads	4.5	0.9	0.1	0.7	1.0	1.3	1.8	1.7
<b>TOTALS</b>	<b>38.2</b>	<b>36.2</b>	<b>30.5</b>	<b>74.5</b>	<b>88.2</b>	<b>90.5</b>	<b>99.1</b>	<b>79.8</b>

Source: <http://www.defra.gov.uk/animalh/tb/stats/expenditure.htm>

32. In its consultation document *Preparing for a New GB Strategy on Bovine TB*; the Government estimated that the total annual expenditure on TB could increase to over £300 million by 2012–13.<sup>46</sup> This would mean that the total expenditure on cattle TB between now and 2013 would be approximately £1 billion. The introduction of table valuations in 2006 (see paragraph 34 below) has reduced the amount paid out in compensation in 2006–07 and it is likely that this will have an effect on future levels of expenditure. However, Lord Rooker told the Committee: “[TB] is costing a fortune. It is the best part of £100m a year now. It takes up 40 per cent of the Animal Health Agency’s resources and it is growing. The disease is spreading. I would not argue about the figure that was projected quite a while ago”<sup>47</sup>

33. The average cost of one confirmed incident of cattle TB is estimated by Defra at about £27,000, divided roughly 70:30 between taxpayers and farmers respectively.<sup>48</sup> The total cost is made up of the value of cattle slaughtered, the resources used in herd testing, and the cost to the farmer of isolating animals and the effect of movement restrictions on the farm business.

34. Compensation for owners of cattle slaughtered after a TB breakdown is determined primarily through a table of valuations, based on average market prices for 47 pre-determined cattle categories. This system of table valuations was introduced after Defra concluded that there was “robust evidence” that the previous TB compensation arrangements had resulted in farmers being over-compensated for the value of their animals to the extent of some even making a net financial gain.<sup>49</sup> However, the National Farmers’ Union (NFU) claims that the new system is unfair on farmers of specialist herds of pedigree cattle who are not receiving the compensation for the true value of their stock.<sup>50</sup>

46 Defra, *Preparing for a new GB Strategy on bovine tuberculosis*, Consultation Document, February 2004, p 23

47 Q 537

48 Defra, *Cost benefit analysis of badger management as a component of bovine TB control in England*, 2005, p 1

49 Defra, *Controlling the spread of Bovine Tuberculosis in cattle in High Incidence Areas in England: Badger Culling, a consultation document*, 2005, p 21

50 “Table valuations don’t reflect the market says NFU”, NFU press notice, <http://www.nfonline.com/x2977.xml>

In Devon, the Committee heard from farmers of pedigree cattle who said that the new system had led to severe under-valuation of pedigree cattle of high genetic value, leaving farmers tens of thousands of pounds out of pocket for each pedigree animal slaughtered.<sup>51</sup>

35. The way Defra dealt with a TB outbreak in a herd of llamas shows that Defra has no clearly defined compensation policy for dealing with TB in species other than cattle.

36. In December 2007 Defra published its cost-sharing consultation paper *Responsibility and cost sharing for animal health and welfare: next steps—your views matter*.<sup>52</sup> The paper asked producers and keepers of livestock how the farming industry could be further involved in the decision-making process for animal health and welfare, such as during disease outbreaks, and whether this should be done through existing structures and organisations or new organisational structures. It also looked at the principles of how the funding for animal health and welfare can be shared between Government and the industry in the future. Lord Rooker made it very clear to the Committee that the Government was struggling under the financial burden of managing cattle TB: “The cost is unsustainable. We cannot tolerate the costs that we are spending, from the taxpayers’ point of view, on this. This is a warning to all that things have to change.”<sup>53</sup>

## The Independent Scientific Group on Cattle TB

37. The former Independent Scientific Group on Cattle TB (ISG) was a group of independent scientists who advised Ministers on how best to tackle the problem of cattle TB. The ISG was set up following the acceptance by Ministers of the recommendations contained in the Krebs Report (1997).<sup>54</sup> Krebs had concluded that there was compelling evidence that badgers were involved in transmitting infection to cattle, but that a large-scale field trial of the effects of badger culling on cattle TB incidence was necessary to quantify the effectiveness of culling as a control measure. The ISG has said of the Krebs Report:

From this it was clear that the problem of TB in cattle was extremely complex, still poorly understood and that previous policies to control the disease had been inadequate. It recognised that substantial further work was necessary if an informative framework was to be established that would be adequate to underpin an effective policy to control the disease in the future.

The role of the ISG is to provide the scientific base for such a policy. From the outset we have adopted a holistic approach, recognising that sustainable control policies could only be achieved through a better understanding of the epidemiology of TB in cattle and wildlife reservoirs. Implicit in our approach is the recognition that the widespread elimination of badgers from large tracts of the countryside would not be

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51 A “pedigree animal” means a bovine animal in respect of which a pedigree certificate has been issued by a recognised breed society and presented to the Secretary of State or an agent acting on his behalf by the day of the assessment of the category into which the animal falls.

52 <http://www.defra.gov.uk/corporate/consult/ahw-nextsteps/index.htm>

53 Q 542

54 Krebs, J.R., Anderson, R., Clutton-Brock, T., Morrison, I., Young, D., Donnelly, C., Frost, S. and Woodroffe, R (1997), *Bovine Tuberculosis in cattle and badgers*, (MAFF Publications, PB 3423)

politically or socially acceptable, hence we have sought to explore a much wider consideration of the problem and its possible solution(s).<sup>55</sup>

38. The ISG's terms of reference were:

To advise Ministers on implementation of the Krebs Report on bovine TB in cattle and badgers by:

- overseeing the design and analysis of the Randomised Badger Culling Trial (RBCT) to test the effectiveness of badger culling as a means of controlling bovine TB;
- regularly monitoring the progress of, and outputs from, the trial and assessing any important differences in results between treatments;
- monitoring data on the *Mycobacterium bovis* situation in areas and species outside the trial;
- reporting to Ministers on progress; and
- advising, as requested, on related issues.<sup>56</sup>

39. Ministers explicitly told the ISG that elimination of badgers over large tracts of countryside was not acceptable as future policy.<sup>57</sup> The trial's aim was "not total depopulation of an area; rather it was to achieve the maximum level of removal that was reasonably attainable in practice, and, importantly, defensible in environmental, welfare and political terms."<sup>58</sup> Therefore, badger welfare was considered essential to the integrity of the RBCT and taken into account during its design to ensure that badgers suffered as little as possible. It was considered important that any culling method should not be perceived to be cruel by the public as that could lead to public criticism of the trial and affect any future policy decision on culling.<sup>59</sup> Consequently, cage trapping and shooting were selected as the most humane form of culling, and a "closed season" was called during the times when cubs were usually born and weaned.

40. The trial aimed to compare, under scientific conditions in the field, the relative impact of two different approaches to culling as compared to not removing badgers at all. The two types of culling were:

- "proactive"—where the aim was to remove at the outset as large a proportion as possible of the badgers resident in the trial area and maintain this population suppression by subsequent culls, and
- "reactive"—where culling was undertaken only on the occurrence of a confirmed breakdown, with the aim of removing all badger social groups with access to the farm where the breakdown had occurred.

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55 Independent Scientific Group on Cattle TB, *Second Report of the Independent Scientific Group on Cattle TB: An Epidemiological Investigation into Bovine Tuberculosis*, December 1999, p 65, paragraphs 12.0.2–12.0.3

56 *Final Report of the Independent Scientific Group on Cattle TB*, p 201

57 *Final Report of the Independent Scientific Group on Cattle TB*, p 39

58 *Final Report of the Independent Scientific Group on Cattle TB*, p 39

59 *Final Report of the Independent Scientific Group on Cattle TB*, p 40

41. The third, survey only, area was used as an experimental control. The trial was designed to ensure that it provided epidemiological data on both cattle and badgers that could not be gained any other way.

42. The trial areas, each 100km<sup>2</sup> in size, were in groups of three, known as “triplets”. There were ten triplets in the trial which were selected from the areas showing the highest incidence of TB herd breakdowns. The selection process aimed for the three areas in each triplet to be as nearly identical as possible in terms of the number and size of cattle holdings, breakdown histories, surface areas, landscape characteristics and badger densities, but this was not always possible. Once the triplet areas had been selected, the precise boundaries were adjusted to take into account the boundaries of farms and associated badger social groups, and features such as roads and rivers.<sup>60</sup>

43. The first culls took place between December 1998 and December 2002. The level of trapping that took place in the proactive cull was on average 40 nights of trapping (where traps are set and revisited the next morning when the badgers caught would be dispatched by gunshot) per square kilometre per year for five years.<sup>61</sup> There were 62 reactive culling operations, with an average of 42.6 traps being deployed per night on each operation.

44. As examined further in Part Three, the ISG found that reactive culling was associated with an estimated 27% increase in the incidence of confirmed cattle herd breakdowns. The ISG recommended that the culling operation be allowed to continue until the start of the next closed season to allow a further analysis of the data. However, Ministers took the decision to suspend reactive culling from November 2003.<sup>62</sup> Subsequently, the decision to suspend the cull has been questioned. The Independent Scientific Review of the RBCT and Associated Epidemiological Research, chaired by Professor Charles Godfray, said that “[f]rom a narrow scientific point of view that ignores the political and possibly legal implications of the experiment appearing to cause increased herd breakdowns, the reactive treatment was abandoned too soon, before the policy option of reactive culling could be properly evaluated.”<sup>63</sup> The NFU also expressed its “surprise” at the decision to end the reactive cull.<sup>64</sup>

45. The proactive badger culling programme ended in 2005 and since then, in preparing its Final Report, the ISG completed its final trial surveys and refined its survey analysis. The ISG prioritised the publication of its findings in leading peer reviewed scientific journals and concurrently released relevant data to ensure that a full assessment of its work could be made by the scientific community. The ISG’s work was also subject to an independent audit.<sup>65</sup>

46. The Final Report was published on 18 June 2007 and the ISG was disbanded on 30 June 2007. The conclusions of the Final Report are considered in greater detail in Part Three.

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60 *Final Report of the Independent Scientific Group on Cattle TB*, p 38

61 Q 25, and *Final Report of the Independent Scientific Group on Cattle TB*, p 50

62 *Final Report of the Independent Scientific Group on Cattle TB*, p 107

63 *Independent Scientific Review of the Randomised Badger Culling Trial and Associated Epidemiological Research*, 4 March 2004, p 30.

64 [http://www.bbc.co.uk/devon/farming/2003/11/badger\\_cull.shtml](http://www.bbc.co.uk/devon/farming/2003/11/badger_cull.shtml)

65 *Final Report of the Independent Scientific Group on Cattle TB*, p 13

## Vaccines

47. Tuberculosis is a complex disease and therefore developing an effective vaccine for humans or animals has proved to be “at the very edge of our scientific understanding”.<sup>66</sup> In 1997, the Krebs Report had concluded that: “The best prospect for control of TB in the British herd is to develop a cattle vaccine”.<sup>67</sup> Defra adopted this recommendation and established a vaccination programme which is overseen by the TB Vaccine Programme Advisory Group (VPAG), made up of scientific experts, policy makers and representatives of the animal health industry. It is chaired by Professor Douglas Young an internationally recognised expert in human TB vaccines from Imperial College. In 2001, the ISG set up a Vaccine Scoping Study Sub-Committee which reported to Ministers in 2003 its advice on future research requirements. Most of the recommendations from the Study have been taken forward by the Department and are overseen by VPAG.

48. In addition, Defra’s Chief Veterinary Officer chairs a Vaccine Steering Group (VSG) which is identifying the administrative and legal processes that need to be followed to enable a vaccine to be fully tested, evaluated and then used with minimum delay.

49. Research is underway to vaccinate cattle experimentally with Bacille Calmette Guerin (BCG) and other vaccine candidates. Professor Young said that research was aiming to use the existing BCG vaccine and build onto it to make a more effective cattle vaccine.<sup>68</sup> Research has found that BCG works better as a neonatal vaccine.<sup>69</sup> However, a vaccine based on BCG will make cattle react to the test as if they were infected and therefore it is incompatible with the standard test and slaughter policy for disease control and contravenes EU legislation.<sup>70</sup> Consequently, alongside the research into a cattle vaccine, a diagnostic test is also being developed to differentiate vaccinated from infected animals.

50. Professor Young and Professor Glyn Hewinson (member of VPAG and head of the TB Research Group at the VLA) provided the Committee with a timeline of vaccination research. They told us that real progress has been made in the last three years in the development of the diagnostic test to differentiate between vaccinated and infected animals.<sup>71</sup> It was likely that a suitable test would be available in 2015. They also estimated that a licensed neonatal BCG vaccine could be available in 2012 and a licensed cattle vaccine that improves on BCG could be available from 2015.

51. The VLA told the Committee that it is now reasonably certain that a licensed injectable vaccine for badgers would be available for use in 2010, provided it was approved by the EU Veterinary Medicines Directorate. It would also require a Home Office Project Licence and a Natural England Licence before use. A licensed oral formulation of the vaccine for badgers would take longer, but could be available from 2012.

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66 Environment, Food and Rural Affairs Committee, *Bovine TB*, Q 7

67 Krebs, J.R., Anderson, R., Clutton-Brock, T., Morrison, I., Young, D., Donnelly, C., Frost, S. and Woodroffe, R (1997), *Bovine Tuberculosis in cattle and badgers* (MAFF Publications, PB 3423)

68 Q 254

69 Q 254

70 Ev 63

71 Qq 259–60

52. The Committee were told that the delay in producing a badger vaccine was in part due to the complex and technical nature of the science employed, but also due in part to the legislative and bureaucratic requirements of producing a vaccine. Professor Hewinson said “We are spending millions of pounds showing that BCG is safe in badgers and it is being used by more people than any other vaccine.”<sup>72</sup>

53. Other countries are also researching into cattle and wildlife TB vaccines: New Zealand is seeking a vaccine for possums; the Republic of Ireland for cattle and badgers; and the USA for deer.<sup>73</sup> Research into vaccines in the UK is underpinned by strong collaborative projects with the Republic of Ireland and New Zealand. The UK is also participating in a cattle vaccine research project in Ethiopia.<sup>74</sup>

54. Defra has said that it sees the development of a TB vaccine for badgers and cattle as a long-term goal and a substantial part of the Defra research programme focuses on this. Over the past seven years Defra has invested more than £10.5 million in vaccine development and associated research.<sup>75</sup> By April 2008, total investment in vaccine development will have reached more than £17.8 million since 1998, with over £5.5 million invested in cattle and badger vaccine research this financial year. Of the £5.5 million, approximately £3.5 million is spent on cattle vaccine research and £2.5 million on badger vaccine research.<sup>76</sup>

55. Professor Douglas Young warned the Committee that a vaccine should not be considered a “magic bullet” that would solve the problem of cattle TB in the UK. He said that research could produce a range of tools such as injectable BCG or an improved cattle vaccine, but that the Government would need to think carefully how it would use these tools as policy options. For example, would a vaccine be used if it only gave 80% protection? Professor Young told the Committee that Defra had only recently taken on board the idea that those undertaking vaccine research would find it extremely useful if they had some knowledge of the direction to be taken by Defra’s policy on vaccines.<sup>77</sup> Defra says that consideration is now being given to policy options for how a vaccine might be used for cattle and badgers, along with other control measures, with the aim of reducing the incidence of TB in cattle. A TB Vaccines Programme has been set up within Defra to bring together the research and policy development. The policy options will be developed and informed by veterinary advice, economic analysis and external stakeholder input which will be sought throughout the policy development process.<sup>78</sup>

56. The ISG Final Report endorsed the need for continued research, but thought that an effective vaccine should be seen as a long-term goal owing to the practical obstacles in its

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72 Q 302

73 Q 299

74 Ev 62, 64

75 HC Deb, 19 April 2007, col 434

76 Q 309

77 Q 317

78 <http://www.defra.gov.uk/animalh/tb/vaccination/index.htm>

development.<sup>79</sup> It also advised that it was critical that Defra should identify a policy framework in which a cattle vaccine could be used.<sup>80</sup>

57. Despite Lord Rooker warning that Government expenditure on cattle TB could not continue at its current levels, he told the Committee that the funding currently in place for research on cattle and badger vaccines would continue.<sup>81</sup> However, the question of who would pay for the delivery of a licensed vaccine was a different matter: “if we found a vaccine for the wildlife who would pay for it?”<sup>82</sup>

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79 *Final Report of the Independent Scientific Group on Cattle TB*, p 181

80 *Final Report of the Independent Scientific Group on Cattle TB*, p 152

81 Q 660

82 Q 616

## 3 Conclusions of the ISG

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58. The ISG's Sixth and Final Report was published on Monday 18 June 2007. On badger culling, it stated that :

On the basis of our careful review of all currently available evidence, we conclude that badger culling is unlikely to contribute positively to the control of cattle TB in Britain.<sup>83</sup>

59. The Chairman's overview was even more conclusive in its dismissal of the option of badger culling. Professor Bourne, on behalf of the ISG, concluded:

After careful consideration of all the RBCT and other data presented in this report, including an economic assessment, we conclude that badger culling cannot meaningfully contribute to the future control of cattle TB in Britain.<sup>84</sup>

### Results of the RBCT

#### *Reactive culling*

60. As we said in paragraph 44, the RBCT found that “reactive” culling, targeting specific badger social groups which could have caused TB breakdowns in cattle, appeared to increase the incidence of confirmed cattle breakdowns by 27%. The ISG hypothesis for this increase was that culling badgers disrupted their social organisations, causing the increase of the prevalence of the disease in the remaining badgers who then would range more widely and spread the disease, an effect known as “perturbation”.<sup>85</sup> The most recent research published supports this.<sup>86</sup> In addition, the removal of badgers within an area led to an increase in badgers from outside the area immigrating. This was particularly true when the removal area had no “hard boundaries” such as coastline, major rivers and motorways to prevent the immigration or perturbation of badgers.<sup>87</sup>

#### *Proactive culling*

61. Proactive, or widespread, culling was associated with a reduction in the number of TB breakdowns by 23% inside the culling areas. This equated to the prevention of 116 breakdowns over five years. However, the trial also found that proactive culling was associated with an increase in the number of TB breakdowns on land neighbouring the trial area which equated to an additional 102 confirmed breakdowns.<sup>88</sup> Like reactive culling, this “edge effect” was caused by perturbation of badgers as a result of the cull.

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83 *Final Report of the Independent Scientific Group on Cattle TB*, p 172

84 *Final Report of the Independent Scientific Group on Cattle TB*, p 14

85 *Final Report of the Independent Scientific Group on Cattle TB*, p 19

86 H E Jenkins et al, “Effects of culling on spatial associations of *Mycobacterium bovis* infections in badgers and cattle”, *Journal of Applied Ecology*, vol 44 (2007), pp 897–908

87 *Final Report of the Independent Scientific Group on Cattle TB*, p 78

88 *Final Report of the Independent Scientific Group on Cattle TB*, p 104

Proactive culling removed approximately 70% of badgers in an area, but the ISG did not believe that the beneficial effects would have been greater if more badgers had been removed.<sup>89</sup>

62. Over time, and successive culls, the beneficial effects of a proactive cull increased and the negative effects decreased. However, the ISG calculated that the economic costs of a proactive cull over five years, together with the negative effect of breakdowns that it caused, greatly outweighed the modest beneficial effects it produced in the number of breakdowns it prevented.

63. The ISG calculated that in order for five years of annual proactive culling to achieve a 95% confidence interval for a beneficial effect across the whole area (culling area and the neighbouring area) a culling area of 265km<sup>2</sup> was necessary.<sup>90</sup> In order to exclude detrimental effects across the whole area, it would be necessary to have a culling area that was larger than that 455km<sup>2</sup>. However, the ISG found that culling on this scale still would be unlikely to generate net benefits in economic terms.

### **Culling under licence**

64. The ISG considered whether culling performed under licence (e.g. farmers or landowners individually or in groups would apply for a licence to cull badgers under the Protection of Badgers Act 1992) would provide an economically viable method of TB control. This is on the basis that a farmer-managed cull would have significantly fewer costs than a cull organised by Defra. The ISG discounted small areas of localised culling as likely to make matters worse, but noted that, in principle, a licensed cull conducted over a large area (100km<sup>2</sup>, the same size area as the RBCT) could achieve an overall beneficial result. However, the ISG concluded that it would be highly unlikely that farmers would be able to conduct a co-ordinated, simultaneous cull over a large area, to be sustained over several years. Furthermore, the logistical considerations, the level of expertise necessary and consequential badger welfare concerns led the ISG to believe that a licensed cull would entail a substantial risk of making the situation worse.<sup>91</sup>

### **Cattle-based measures**

65. The ISG estimated that badgers were responsible for only 30–40% of cattle TB breakdowns.<sup>92</sup> Therefore, the ISG concluded that it was weaknesses in the cattle testing regimes that mainly contributed to the steady increase in the spread of the disease, and the ISG were confident that “rigorous application” of cattle-based measures alone could contain the spread of the disease and reverse the incidence rates.<sup>93</sup> Cattle-based measures recommended by the ISG included: the parallel use of the tuberculin skin test and the gamma interferon test; annual testing for all herds in high risk areas; more rapid follow-up

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89 *Final Report of the Independent Scientific Group on Cattle TB*, p 164

90 A 95% confidence interval for a particular figure is the range of values within which one can be 95% confident that the “true” figure lies.

91 *Final Report of the Independent Scientific Group on Cattle TB*, p 170

92 Q 11

93 *Final Report of the Independent Scientific Group on Cattle TB*, p 23

testing upon the identification of a herd breakdown; the use of post-movement testing in some situations; and the possible introduction of movement controls between high and low risk farms or regions.

66. The ISG advised that the Government should concentrate on avoiding further geographical spread of the disease, as elimination of cattle TB in hot spot areas should only be considered as a very long term goal.<sup>94</sup> Efforts in hot spot areas should concentrate on prompt detection of infected animals and rigorous movement testing. The ISG referred to evidence that the suspension of cattle controls during the Foot and Mouth outbreak in 2001 had led to increased rates of infection in badgers which suggested that increased cattle controls might also lead to reduction of TB in the wildlife reservoir.

### **Operational structures within Defra**

67. The report also provided advice on the control strategies needed for cattle TB and on the need for Defra to adopt more effective operational structures. The ISG noted that there was some considerable reluctance within Defra and its agencies to accept and embrace scientific findings. It suggested this was due in part to Defra's organisational structures which enforced a separation of policy development from the scientific evidence on which the policy should be based.<sup>95</sup>

68. The ISG also said that "it is unfortunate that agricultural and veterinary leaders continue to believe, in spite of overwhelming scientific evidence to the contrary that the main approach to cattle TB control must involve some form of badger population control."<sup>96</sup>

69. Defra issued a Written Ministerial Statement on the "Publication of the Report of the Independent Scientific Group on Cattle TB". The then Secretary of State for Environment, Food and Rural Affairs, said at the end of the statement that:

I have always made it clear that we will base our approach to tackling bovine TB on all the available evidence. The publication of this report makes an important contribution to the now extensive evidence base on this disease. We will be considering the issues it raises very carefully and will continue to work with the industry, government advisers and scientific experts in reaching a final policy decision on this serious issue.<sup>97</sup>

### **Communication between the ISG and Ministers**

70. The ISG sent Ministers a "near-to-final" draft of the Final Report on 23 May 2007. The report was based on scientific publications, most of which were already in the public

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94 *Final Report of the Independent Scientific Group on Cattle TB*, p 14

95 *Final Report of the Independent Scientific Group on Cattle TB*, p 180

96 *Final Report of the Independent Scientific Group on Cattle TB*, p 15

97 HC Deb, 18 June 2007, col 75–76WS

domain and had been sent to Ministers at the time of submission to scientific journals. The Chairman's Overview was not seen by Ministers until 15 June.<sup>98</sup>

71. The Sunday Times of 3 June 2007, in an article headed "Miliband will allow badger culling again", reported that the Secretary of State had sent Cabinet colleagues a letter the previous week telling them that the ISG's results showed "that co-ordinated, efficient culling over areas larger (than 100 km<sup>2</sup>) could be beneficial if sustained for a number of years".<sup>99</sup> The Daily Telegraph and the Western Morning News ran similar stories the next day.<sup>100</sup>

72. The National Farmers' Union (NFU) told the Committee of their confusion over the conclusions of the Final Report, which were unexpected to them. The Deputy President of the NFU said "I have been involved in discussions with officials, with Ministers, and I do not need to say that there were articles in *The Sunday Times*, and, I believe, in *The Daily Telegraph*, leading up to the release of the report, we were extremely surprised when the report was made public."<sup>101</sup> The NFU Bovine TB Spokesman told the Committee "Yes, we did at various levels in Defra firmly get the impression for a period of time that the report was going to conclude that there were circumstances in which a cull could be beneficial."<sup>102</sup> The NFU then suggested to the Committee that the final conclusions had been "slanted" at the last moment before publication to favour cattle-based measures,<sup>103</sup> a claim vehemently refuted by the ISG.<sup>104</sup>

73. In order to explain why Defra had, in the run-up to report's publication, been signalling that an announcement on badger culling could follow soon after, Lord Rooker told the *Farmers Guardian*:

I have to say we only saw the report virtually when everybody else did. I don't deny there was a draft, but it was not a full copy. John Bourne's letter accompanying the report, his introduction and his interview on Farming Today last week were much stronger than we had been led to believe. The nature of the interview and the vehemence of the letter took a lot of people by surprise.<sup>105</sup>

74. Professor Bourne told the Committee that at meetings held with ministers and Defra officials between 24 April 2006 and 1 February 2007, the ISG told Defra that: cattle-based measures were likely to achieve more in terms of TB control; reactive culling made things worse; and proactive culling over areas as large as 300km<sup>2</sup> would only have modest positive gains. In a letter to the then Minister of State for Local Environment, Marine and Animal Welfare on 23 May, Professor Bourne stated what would become the overall conclusion of the final report: "On the basis of a careful review of all the available evidence, we conclude

98 Ev 43

99 "Miliband will allow badger culling again", *The Sunday Times*, 3 June 2007

100 "Prospect of mass badger cull to stop bovine TB", *Daily Telegraph*, 4 June 2007; "Badger cull decision likely", *Western Morning News*, 4 June 2007

101 Q 183

102 Q 234

103 Q 202

104 Q 210, Ev 43–45

105 "Rooker 'open-minded' on badger cull despite report", *Farmers Guardian*, 29 June 2007, p 1

that badger culling is unlikely to meaningfully contribute to the future control of cattle TB in Britain [...] we therefore recommend that future control strategies focus on cattle measures.”<sup>106</sup> The ISG remain insistent that, since the final data of the RBCT have been available, it has not changed its opinion or the tone of its advice to Ministers concerning the impact of culling on incidence of cattle TB and the role that culling could play in cattle TB control.<sup>107</sup>

## Commissioning of the King Report

75. Shortly after Professor Bourne wrote to the then Minister of State for Local Environment, Marine and Animal Welfare on 23 May 2007, the then Secretary of State for Environment, Food and Rural Affairs contacted Professor Sir David King, the then Government Chief Scientific Adviser and Head of the Government Office for Science, and told him that: “it would be important to have an assessment from [Sir David King] of any scientific issues relating to the role that badger culling could play in controlling and reducing levels of cattle TB in England.”<sup>108</sup> Sir David agreed to carry out a short assessment of the key scientific issues in this area. Sir David King collaborated with a group of five independent experts in the field of cattle TB and badger ecology. He did not consult ISG members to discuss their work or even inform them that the work was being done. The ISG were unaware of the Report’s existence until the morning of its publication in October.<sup>109</sup> **We consider it unfortunate and unsatisfactory that Sir David King and his group of experts did not meet the ISG to discuss their work as we believe that if they had done so, a more constructive dialogue between the two groups of experts might have been established. We welcome the fact that Professor Bourne and Sir David King have now met to discuss their conclusions, and we would encourage this dialogue to continue between the former members of the ISG and the new Government Chief Scientific Adviser.**

76. The conclusions of Sir David King’s review are set out in paragraphs 85 to 108 below.

77. In the weeks after the publication of the ISG Report, the Minister for Sustainable Food, Farming and Animal Health appeared to criticise the ISG for offering opinion beyond its scope and for not providing more information on the route of transmission of TB between badgers and cattle. He was reported by the *Farmers Guardian* as saying:

I have gone back and looked at what we were told the trials would deliver 10 years ago—that we would find out the extent of TB in the badger population, how badgers transmit TB to cattle, that we might have a vaccine, and that we would have all the answers. Well, frankly we haven’t, have we? The fact that they can’t tell us how TB is spread from badgers to cattle, other than it’s respiratory, is not a lot of bloody help to us.<sup>110</sup>

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106 Ev 79

107 Ev 44

108 Ev 93

109 Q 345

110 “Rooker ‘open-minded’ on badger cull despite report”, *Farmers Guardian*, 29 June 2007, p 1

The *Farmers Guardian* also reported that Lord Rooker had criticised the ISG for going beyond its remit and “deviating off into practical and financial issues, which was not really what they were asked to deal with”.<sup>111</sup>

78. Subsequently, in the House of Lords on 26 July, Lord Rooker repeated his concerns:

I have reread some of the original statements made in 1998 and 1999 as advice to Ministers. We were told that if we set up the Krebs trials, within five years we would know about the transmission route between badgers and cattle, if it exists, the cost benefits involved and what needed to be done in terms of policy. The fact is that we do not.<sup>112</sup>

79. Professor Bourne has written to the Committee in rebuttal of Lord Rooker’s comments saying: “Understanding the route of transmission of disease was not a specific objective of the trial, though it was recognized that it would be helpful [...] and was covered within our wide recommendations to Defra on associated research”.<sup>113</sup>

80. On issues of practicality, Professor Bourne added:

The complex relationship between badger abundance and cattle TB risks, as revealed by our work, means that the practical issues—which determine how, where, when and on what scale badger culling might be conducted—are absolutely critical in determining whether culling would reduce or increase the incidence of cattle TB. We consider it was not only a clear part of our remit, but our responsibility, to comment and advise on a number of culling approaches that might be considered to cull badgers.<sup>114</sup>

81. Professor Bourne stated that the issue of the cost-effectiveness of badger control strategies was discussed by the ISG with MAFF before the RBCT was launched. As a result of those discussions, Lord Rooker (then Mr Rooker) appointed an agricultural economist to the ISG with a responsibility for economic matters. Professor Bourne considers that the ISG had a clear remit from Ministers to “take into account an economic assessment of ‘possible sustainable TB control policies’”.<sup>115</sup>

82. On the comment to the *Farmers Guardian* that the ISG had not provided information on the extent of TB in the badger population, Professor Bourne pointed out that evidence on TB in badgers in the trial areas and in the counties adjacent to trial areas was considered “in detail” in several papers, made available to Defra and was summarised in the final report.<sup>116</sup>

83. Following the publication of the ISG report on 18 June, Ministers did not meet the former members of the ISG to discuss the report’s conclusions until 24 October when

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111 “Rooker ‘open-minded’ on badger cull despite report”, *Farmers Guardian*, 29 June 2007, p 1

112 HL Deb, 25 July 2007, col 906

113 Ev 79

114 Ev 80

115 Ev 80

116 *Ibid.*

Professor Bourne briefly met Lord Rooker.<sup>117</sup> The new Secretary of State told the Committee on 24 October 2007 that he intended to meet Professor Bourne and organisations with an interest in the matter and to consider the conclusions of this Report, before making a decision on what policy Defra would take on cattle TB. The outbreaks of Bluetongue and Foot and Mouth, and the flooding during the summer, had meant that he had not had the opportunity to do so before.<sup>118</sup> We have learned that since then, the Secretary of State met Professor Bourne on 19 December.

**84. The Secretary of State’s undertakings to meet Professor Bourne and others, and to consider the conclusions of our report, are welcome as an indication that he will take personal responsibility for the final decision on how to control cattle TB. However Defra ministers’ apparent reluctance to meet Professor Bourne to discuss the final results of the work he and the ISG have been doing for Defra and its predecessor for 10 years is both very disappointing and discourteous.**

## Conclusions of the King Report

85. Sir David King was asked by David Miliband, the then Secretary of State for Environment, Food and Rural Affairs, to carry out a “short objective assessment of the key scientific issues in relation to the role that badger removal could play in controlling and reducing the levels of cattle TB in England.”<sup>119</sup> The Report was submitted to the Secretary of State on 30 July 2007, but was only published on 22 October 2007. The delay was due in part to the changeover of ministers following the cabinet reshuffle and the events over the summer which preoccupied Defra: the serious flooding, and the outbreaks of Bluetongue and Foot and Mouth disease. However, Lord Rooker admitted that it was regrettable that the report was not made public until that late date: “A new team of ministers had arrived and it was simply parked. There was no ulterior motive.”<sup>120</sup>

86. As part of his inquiry, Sir David King considered the ISG Report and “other scientific evidence” with a group of five experts. The group met for just over a day to discuss the ISG report which they had had for some weeks.<sup>121</sup> When asked why he did not consult with members of the ISG, Sir David told the Committee: “In this instance, it was my judgment that this was not necessary because we had before us the publications and a very detailed report [...] we were not challenging the scientific basis of those reports. We have provided a commentary but we are not challenging those reports.”<sup>122</sup>

87. The group focussed on whether badger culling in hot spot areas would prevent or reduce the incidence of TB in cattle. The group did not consider the efficacy of cattle-based measures, vaccination of cattle and/or badgers; contraception of badgers; or whether

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117 Q 338

118 Oral evidence taken before the Environment, Food and Rural Affairs Committee on 23 October 2007, HC (2006–07) 1100-i, Qq 60, 69, 70

119 Q 351, Ev 93

120 Q 552

121 Q 351

122 Q 378

measures would be cost-effective, but some regard was given to the practicality of the measures.<sup>123</sup>

## Comparison of the ISG and King reports

### *Areas of disagreement*

88. The main conclusion of the King report differs from the ISG's conclusion that badger culling could not contribute to the control of cattle TB in Britain. The King group concluded that:

In our view a programme for the removal of badgers could make a significant contribution to the control of cattle TB in those areas of England where there is a high and persistent incidence of TB in cattle, provided removal takes place alongside an effective programme of cattle controls.<sup>124</sup>

89. Despite the main conclusion being very different to the ISG's, Sir David told the Committee "I am not disagreeing with the science".<sup>125</sup> Professor Mark Woolhouse, an epidemiologist and member of Sir David's group of experts, denied that there was an attempt by the group to undermine the statistical analysis of the data: "in no sense is Sir David's report intended to rubbish the work of the extremely competent group that the ISG represents", but said that "the conclusions are equivocal."<sup>126</sup>

90. Both the ISG and the King Report agree that proactive culling led to a reduction in herd breakdowns in the removal area. The ISG found that there was a 23% reduction in the incidence of herd breakdowns in the removal area (equivalent to the prevention of 116 breakdowns in the ten 100km<sup>2</sup> proactive removal areas over 5 years). This calculation used data from all years of the trial. However, King stated that data from the first year of culling should be disregarded, because of the "time lag between removal of badgers and detection of changes in infection in cattle". The ISG had also performed this calculation, which gave a 27% reduction in the incidence of herd breakdowns, but had disregarded it as the ISG considered it valid to include the first year's results.

91. The ISG reported a 25% increase in the incidence of breakdowns in areas up to 2km outside the removal zone. This effect is almost, but not quite, statistically significant.<sup>127</sup> The ISG estimated that this is equivalent to 102 induced breakdowns in ten 100km<sup>2</sup> areas over five years. In Sir David King's analysis he again discounted data from the first year, giving a smaller increase of 20%. Nevertheless, he acknowledged that there is "some evidence for an increase in cattle TB outside the removal area". Whether or not the first year is included does not alter the statistical significance of the results.

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123 Q 351, and Sir David King, *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007, para 5

124 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, para 51

125 Q 386

126 Qq 373, 380

127 A finding that is "statistically significant" is one that is robust, i.e. it reflects a genuine effect, rather than just chance variation. Usually, findings are judged to be statistically significant if there is less than a 5% probability that they arose by chance alone.

92. The ISG report combines the estimated five-year benefits within the removal area with these figures for the surrounding area. The overall effect is a net prevention of 14 breakdowns after proactive culling in ten 100km<sup>2</sup> areas for five years. These figures are based on calculations that include the first year's results from the proactive trials. It is possible that excluding the results from the first year, as recommended by Sir David King, would yield slightly better results for the overall effect.

93. The ISG report considers the likely effects of an increase in the cull area. As the cull area is increased (assuming it is circular), it also increases in size relative to the 2km-wide surrounding area, so the overall effects of the cull become increasingly dominated by the effects in the removal area, rather than the surrounding area. With the most conservative estimate, culling will become beneficial when the removal area is at least 80km<sup>2</sup>. However, to be 95% certain that culling will be beneficial; an area of at least 455km<sup>2</sup> is needed.

94. A less conservative estimate assumes that the benefits of culling are greater in the centre of the removal area, further from the boundary. The ISG reports some evidence for this (also highlighted by David King), although this is not statistically significant. In a larger cull area, more of the area is further from the boundary, so the beneficial effects might be predicted to be greater overall. Based on these assumptions, culling will become beneficial on average when the removal area is at least 70km<sup>2</sup>, and to be 95% certain of a benefit, an area of at least 265km<sup>2</sup> is needed.

95. Based on these two different estimates, the ISG includes graphs in its report (figure 5.4) which show the theoretical outcomes of cull areas of up to 300km<sup>2</sup>. As stated in oral evidence to us, Sir David concludes that at 300km<sup>2</sup>, culling “would have a significant effect on reducing TB in cattle”.<sup>128</sup> Professor Bourne of the ISG expresses disagreement with this, and refers instead to a “modest difference”.<sup>129</sup>

96. The impact of a more prolonged period of culling is uncertain. The ISG reports a trend towards an increase in the beneficial effect inside the removal area with repeated culling, and a decline in the detrimental effect in the surrounding area with repeated culling. Neither of these effects is statistically significant. Sir David King also drew attention to these trends, and acknowledged that they are not statistically significant.

97. The ISG found that culling increased the ranging behaviour of badgers, and used this to account for the apparent rise in TB in cattle on neighbouring un-culled land. Sir David claimed not to be fully persuaded by this “perturbation theory”, but acknowledged that it could be “a plausible explanation” and did not offer an alternative hypothesis.

98. The ISG reported that “culling might be more effective in areas bounded by coastline, major rivers, motorways and large conurbations”, i.e. “hard boundaries” which are relatively impermeable to badgers. Sir David proposed that these boundaries, together with badger-proof fencing, be used to reduce the detrimental effects of culling resulting from badger movement. However, the ISG claimed that there are few such natural or man-made barriers in TB-affected areas.<sup>130</sup> The group highlighted the cost of badger-proof fencing, but

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128 Q 389

129 Q 430

130 *Final Report of the Independent Scientific Group on Cattle TB*, p 166

mentioned that it might be appropriate for some farms. The ISG concluded that culling within artificially-constructed boundaries is likely to contribute to TB control only on a very local scale.<sup>131</sup>

99. The ISG observed that the detrimental effect of culling could also be eliminated if “neighbouring areas had either no badgers, or no cattle”.<sup>132</sup> This adjoining land would form a “soft boundary”. Sir David proposed the use of soft boundaries, i.e. strips of land with no cattle which are at least 1km wide as a means of minimising the edge effect.<sup>133</sup> In the evidence session he claimed that this would act as an effective boundary, because the movement of badgers would have no effect if there were no cattle in the area. The origin of the figure of 1km is unclear. The ISG report questioned the practicability of creating cattle-free strips of land in hot-spot areas.<sup>134</sup>

### **Reactive culling**

100. As seen in paragraph 44, from data produced by the reactive culling trials, where badgers were culled on and around farms following TB outbreaks but not elsewhere, the ISG had concluded that reactive culling was associated with a 27% increase of incidence in TB breakdowns. Nevertheless, Sir David stated that because of the early suspension of trials by Ministers in 2003, it was not possible to draw firm conclusions about whether or not reactive culling can contribute to the control of TB.

101. It is therefore clear that Sir David King does make a number of criticisms of the ISG report: the way in which data were analysed (e.g. the ISG’s use in its calculations of data from the first year following culling); the way these data were interpreted in order to draw conclusions (e.g. the ISG’s conclusion that the reduction in TB incidence in the removal area was largely offset by the increase outside the area, the ISG’s interpretation of the figures when assessing the detrimental effects outside the removal area, the ISG’s failure to consider that the detrimental effects outside the removal area might be transient, and the ISG’s interpretation of the results of the reactive culling trials); and the final conclusion that is drawn from the research, the statement that “badger culling can not meaningfully contribute to badger culling in Britain” was described by Sir David as “unqualified”.<sup>135</sup>

102. The main conclusions of the two reports appear to differ mainly because the ISG concluded that it was not practically or economically feasible to carry out culling on the scale necessary to gain beneficial effects. Sir David King’s group of experts, on the other hand, did not include the practicalities or costs of culling in their considerations. On this point Sir David told the Committee that he had not considered questions such as whether it was logistically possible to cull over areas as large as 300km<sup>2</sup> or whether areas of that size with sufficient boundaries to reduce the detrimental edge effect existed : “These are issues that can be addressed by officials”. Sir David noted also that even if a cull were not possible to implement practically and it were proved that a cull would not be economically viable,

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131 *Final Report of the Independent Scientific Group on Cattle TB*, p 166

132 *Ibid.*

133 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007, para 7

134 *Final Report of the Independent Scientific Group on Cattle TB*, p 166

135 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007, para 41

the scientific findings that a proactive cull could reduce the incidence of TB breakdowns would remain the same.<sup>136</sup> However, the King Report was criticised as “unbalanced and inexpert” by Professor Denis Mollison, the Independent Statistical Auditor for the RBCT.<sup>137</sup>

103. In reaction to the King report, Professor Bourne said that it underplayed the effects of perturbation, and overestimated the impact that geographical boundaries could have on the success of a culling strategy.<sup>138</sup> He also reiterated the ISG’s conclusion that farmers would not be able to successfully carry out licensed culling: “our advice is that it was totally inappropriate to expect farmers to do this. It could only be done using expert fieldsmen who would require an immense organisation and logistical activity to do it.”<sup>139</sup>

### ***Areas of agreement between King and the ISG***

104. As already noted, both the ISG Report and King Report agree that the scientific data supports the conclusion that there might be an overall beneficial effect on the incidence of TB in cattle in hot spot areas but only if the culling of badgers:

- is done competently and efficiently;
- is co-ordinated;
- covers a large area (265km<sup>2</sup> or more);
- is sustained for at least four years, and
- the culled area is surrounded by hard or soft boundaries where possible.

105. The ISG drew attention to the practical difficulties and unlikely economic benefit of such a cull and considered that there were few viable hard or soft boundaries in hot spot areas.<sup>140</sup>

106. The King report stated that whilst the group was not fully persuaded by the theory of perturbation it was seen as a “plausible explanation”. However, subsequent to his meeting with the former members of the ISG in December, Sir David told the Committee that he agreed with the ISG that badger culling prompted the following ecological effects:

- immigration of badgers into culled areas;
- the disruption of badger territories;
- the expanding ranging of badgers;
- reduced clustering of infection in cattle outside the culled areas and the clustering of infection in badgers, and

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136 Q 389

137 Ev 81

138 Q 430

139 Q 430

140 *Final Report of the Independent Scientific Group on Cattle TB*, p 166

- and elevated prevalence of cattle TB within the decreased population of badgers.<sup>141</sup>

107. Other recommendations of the King Report that were not inconsistent with the conclusions of the ISG report were that the incidence of TB in cattle in removal areas should be monitored annually, with monitoring taking place outside the removal area to detect any adverse effect. The population of badgers should be monitored also, and, in addition, after four years, the badger removal programme should be reviewed (which might entail some assessment of the prevalence of TB in badgers).<sup>142</sup>

108. The King report also recommended that should vaccination become available in the long term, it should be used as an alternative, or additional, means of controlling TB to badger removal.<sup>143</sup>

## What is still unknown about badgers and Cattle TB

### *How the disease is transmitted*

109. One of the most important questions posed by the increasing spread of the disease, the exact nature of the mechanism for transmission of infection between cattle and badgers, remains unanswered. The ISG conclude, and Sir David King agreed, that inhalation of infected droplets from the lungs of other infected animals, or oral ingestion of mycobacteria from farm environments, are the most likely means of transmission.<sup>144</sup>

### *Farm-based risk factors*

110. The ISG report states that it is still not clearly understood why some herds are predisposed to breakdowns, and what constitute on-farm risk factors for cattle TB and what effect they have on the incidence of TB.<sup>145</sup> This is because it is not known whether transmission requires direct contact between badgers and cattle or whether infection can occur through contamination of the cattle's environment. It is unclear to what extent badger faeces, urine, saliva or pus are the principal sources of infection. The extent to which the contamination of cattle pastures and feedstuffs inside buildings, and the longevity of *M. Bovis* in different environmental conditions in Great Britain, contribute towards the spread of the disease is also unknown.

111. Various cattle husbandry and environmental practices have been suggested anecdotally as predisposing farms to TB breakdowns. An effort by Defra to collect in-depth data on all herds experiencing breakdowns, via the TB99 questionnaire used by Animal Health, was disrupted between 2001 and 2003 owing to the outbreak of Foot and Mouth Disease (FMD). The questionnaire collects information such as cattle herd composition and health, cattle movements, the type of farm enterprise (including land type/use, soil type, presence of other domestic species, and the presence of potential wildlife sources of

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141 Ev 120

142 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King, October 2007, para 7*

143 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King, October 2007, para 7*

144 *Final Report of the Independent Scientific Group on Cattle TB, p 121*

145 *Final Report of the Independent Scientific Group on Cattle TB, p 121*

TB infection) and also husbandry factors (such as grazing practices, fertiliser use, effluent management, water sources, housing/bedding arrangements, supplementary feeding practices, steps taken to avoid contact between cattle and wildlife). The previous EFRA Committee attached great importance to the collection of the TB99 data as a contribution towards the identifying of on-farm risk factors, with the goal of improving the efficiency of on-farm biosecurity.<sup>146</sup> As a result of the FMD disruption to the completion of the TB99 form, Defra introduced an additional shorter, simpler questionnaire with the same objective of investigating on-farm risk factors for TB, but designed as a one-year study for four hot spot areas. It was called the Case Control Study 2005 Farm Management Questionnaire (CCS2005).<sup>147</sup>

112. The ISG concluded that an analysis of the TB99 and CCS2005 studies showed that no farm level risk factors had been found to be consistently correlated with the risk of a herd breakdown over time and across geographical regions.<sup>148</sup> However, the results suggested the possibility that cattle movements, herd contacts, use of fertilizer, housing and feeding practices could all have an impact on the risk of a herd experiencing a breakdown. The ISG advocate caution in that the analysis identified associations rather than causes, but thought that there was sufficient evidence to support the conclusion that if farmers employed biosecurity measures it would be possible to reduce the risk of cattle becoming infected by other animals.<sup>149</sup> We return to on-farm biosecurity measures in Part Four.

### ***Perturbation and the “edge effect”***

113. Sir David King suggested several areas of the ISG results warranted further consideration. He recommended that further mathematical modelling should be applied to the data on the beneficial effect on cattle TB of culling, specifically on whether continued removal beyond four removal operations would increase benefits further, and on whether the beneficial effect would increase as the size of the area increased. Sir David also recommended that the detrimental effects seen up to 2km outside the removal areas should be monitored to assess whether the detrimental effects were transient.<sup>150</sup>

### ***Levels of infection***

114. The King report noted that not all badgers responded in the same way to TB infection and that an important gap in the knowledge was the extent to which infected animals were infectious.<sup>151</sup>

115. In addition, the relative proportion of herd breakdowns attributable to cattle or badgers is the subject of debate. Based on the effects of culling in the middle of the

146 Environment, Food and Rural Affairs Committee, *Bovine TB*, p 13–14

147 *Final Report of the Independent Scientific Group on Cattle TB*, p 123

148 *Final Report of the Independent Scientific Group on Cattle TB*, p 20

149 *Final Report of the Independent Scientific Group on Cattle TB*, p 138

150 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007, paras 24, 25, 31

151 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King*, October 2007, para 20

proactive areas, the ISG found that badgers are responsible for 30–40% of breakdowns,<sup>152</sup> but vets and Animal Health believe that it is closer to 70% in hot spot areas.<sup>153</sup> However, in low-risk areas where the disease is unknown in badgers, it would seem clear that cattle-to-cattle transmission is the dominant factor.

### **Cattle-based measures**

116. The ISG did not undertake a cost-benefit analysis of its cattle-based recommendations. However, the implementation of the wider use of the gamma interferon test and the introduction of post-movement testing is significantly likely to increase the current costs to the taxpayer and to the farming industry respectively. Defra have yet to undertake a cost-benefit analysis on the cattle-based measures recommended in the ISG’s Final Report.<sup>154</sup> Lord Rooker told the Committee: “We know from officials it will cost tens of millions. We have not set a team up to go to work on this at the present time.”<sup>155</sup> As we have been told by Lord Rooker that cost is a significant issue for the Government when deciding upon cattle TB policy, particularly in the light of the publication of the Government’s responsibility and cost sharing consultation,<sup>156</sup> **we are surprised and concerned that, in the six months since the publication of the ISG’s Final Report, Defra has not yet initiated a cost-benefit analysis of the options based on cattle controls recommended by the ISG in order to inform its decision on future policy on cattle TB. It should do so.**

117. **It is important that research continues to fill the gaps in the scientific knowledge on cattle TB identified by the ISG and others, and Defra must ensure that funding for this research is found. In particular, we recommend that the Government decides in the next six months whether further research on establishing the exact means of transmission is necessary.**

### **Lack of a clear strategy to tackle Cattle TB**

118. It is clear that despite the implementation of the current ten-year strategic framework and the existing policy of surveillance, testing, compulsory slaughter and compensation, cattle TB in Britain is not under control. Instead, in the words of Lord Rooker, Defra has “learned to live with it”.<sup>157</sup> But it is steadily getting worse. In his report to the Secretary of State, Sir David King said “Strong action needs to be taken now to reverse the upward trend of this important disease.”<sup>158</sup>

119. A specific commitment of the Government’s strategic framework was to “establish a new national bTB stakeholder body to advise on the development of bTB policies,

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152 Q 430

153 Q 539, Ev 167

154 Q 563

155 Q 565

156 Q 543

157 Q 545

158 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King, October 2007, para 4*

including how best to ensure regional focus”.<sup>159</sup> The Defra TB Advisory Group was established in November 2006 and recruited a small number of members with different backgrounds and interests to ensure a balance of experience across farming, veterinary, conservation and welfare issues. The Chairman of the Group wrote to Lord Rooker in October 2007 that the Group was “not convinced that there is sufficient clarity about the objective of the Government’s TB policy —particularly about whether we are aiming for control or eradication”.<sup>160</sup> The Group also advised that a decision on whether or not to deal with the reservoir in wildlife was critical if further progress was to be made on further cattle control measures.

120. In his evidence to the Committee, Lord Rooker seemed unsure whether the Government should first decide on whether to tackle the problem of the wildlife reservoir of TB; whether the Government should first decide who would pay for the policy objectives; or whether to decide first if eradication of cattle TB, rather than controlling and reducing the disease, was the Government’s primary objective.<sup>161</sup>

121. Advice from the ISG and others suggests that eradication of the disease at present appears to be an unachievable goal, whereas stricter cattle control measures and possibly the use of badger culling has the potential to reverse the trend of increasing disease incidence and spread.

**122. In the light of the increasing incidence of cattle TB, and the cost to both the taxpayer and farming industry, Government must now make a decision on what its strategic objectives in relation to this disease are. The impact of the disease has reached a stage where further procrastination is unacceptable. Defra’s first strategic goal should be to ensure that the impact of the disease diminishes every year. It must make clear that, even if it is feasible, total eradication of the disease is still a very distant goal.**

123. Lord Rooker told us that no more money is available for vaccines, culling, compensation or testing and that the current cost of cattle TB to the taxpayer must be reduced. As already noted, Lord Rooker did not suggest cutting the funding for vaccine research, but of the cattle-based measures recommended by the ISG he said “it is tens of millions of pounds we do not have.”<sup>162</sup> Of the money already spent on the Government’s TB strategy he said: “you could argue we have spent a billion quid to no good effect in the last decade.”<sup>163</sup>

124. Lord Rooker also made clear that if the Government agreed to licensed culling it would “not pay for anything”. Specifically, “the Government will not be paying for any action to operate licences other than the supervision, setting up and monitoring.”<sup>164</sup>

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<sup>159</sup> Department for Environment, Food and Rural Affairs, *Government Strategic Framework for the sustainable control of bovine tuberculosis (bTB) in Great Britain*, 2005

<sup>160</sup> <http://www.defra.gov.uk/animalh/tb/pdf/rooker-161007.pdf>

<sup>161</sup> Qq 559, 561, 567, 612

<sup>162</sup> Q 541

<sup>163</sup> Q 611

<sup>164</sup> Q 542

125. We are well aware of the financial pressures on Defra, pressures that are in part a result of its own mistakes. The indications are that the Government will be driven by financial considerations when making its decision on future policies to control cattle TB, including whether or not to include badger culling in its strategy. **Cattle TB is the most serious disease facing livestock in this country. A reduction in funding at the risk of the disease spiralling out of control and eventually affecting England's export market is not justified. The rapid increase in the scale of this zoonotic disease continues to warrant Government involvement and financial support with the aim of reducing its incidence. The Government forecasts expenditure on cattle TB to increase to an annual cost of £300 million to the taxpayer if no further action is taken to control the disease. The policy options recommended by this Report will involve increased expenditure for the Government, but the Government must spend now to save greater expenditure in the future.**

### **Advice to Defra**

126. There is some concern about the absence of independent scientific advice available to Ministers now that the ISG has been dissolved. In an interview with *Farming Today*, Professor John Bourne (former Chairman of the ISG) was asked about how the scientific evidence had been handled by Defra. He said:

You ask how the scientific information has been handled by the media and by Defra and I'm bound to say I don't think it's been handled terribly well. You're aware that in the consultation exercise I was obliged to write to Ministers complaining that the scientific information presented in the exercise was inaccurate and also stating that two of their proposed culling proposals would in fact make the situation worse. [...] I'm sad to say, yes, I don't think they [Defra] have done a very good job of it and one of our comments in the final report is that Defra do seem to be unable to handle scientific data and translate that in to policy and that, that's something that we've recommended that Defra attend to.<sup>165</sup>

127. On 18 June, Professor Bourne told the Committee that:

[...] there should be a clear strategy of what [Defra] want to achieve, what is achievable, what resources are necessary to do that, and this should be driven by a focus group involving scientific informed individuals [...] certainly with farmer input [...] it would be really helpful if Defra embraced the science and stimulated discussions with the NFU based on the science to develop science-based policies".<sup>166</sup>

128. The ISG Final Report "strongly" recommended that "a group of external scientists with appropriate expertise is put in place to advise Defra on data collection and analysis, and to consider the systematic use of such data for local, regional and national monitoring of the disease and for assessing the impact of changes of Government policy."<sup>167</sup>

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<sup>165</sup> *Farming Today*, BBC Radio 4, 18 June 2007

<sup>166</sup> Qq 36, 40

<sup>167</sup> *Final Report of the Independent Scientific Group on Cattle TB*, p 180

129. The ISG also recommended that a small, focused and dedicated team of scientific and other experts, veterinarians with field expertise and Government policy makers communicated with stakeholder groups and establish a clearly defined disease control strategy, with a sufficiently long time frame, to be reviewed at regular intervals.<sup>168</sup>

130. The Badger Trust has also expressed concern over the issue of scientific advice. In May 2007, a press release from the Badger Trust stated:

Animal Welfare Minister Ben Bradshaw has suggested that a decision on badger culling is to be made in June, after the Independent Scientific Group has been dissolved. The Minister will be in a science vacuum, at the mercy of state vets, many of whom have devoted their careers to, and staked their reputations on, blaming badgers. Mr Bradshaw failed to consult with his independent scientific advisers when he launched his 2005 consultation in a bid to start a badger cull. We are extremely concerned that he is about to make the same, critical mistake again.<sup>169</sup>

131. In 2005, Defra accepted its own Science Advisory Council recommendation that there was a substantive need for independent science advice, both natural and social, to inform policy decisions on cattle TB issues. Defra had already outlined its intent to set up a new, independent body to advise on cattle TB science in its *Strategic Framework for the sustainable control of bovine tuberculosis (bTB)*. At that time, Defra envisaged that the group would begin its work during 2006.

132. In a written answer to David Drew MP in March 2007, Ben Bradshaw (the then Minister of State, Department for Environment, Food and Rural Affairs) wrote:

Defra has broadly accepted the recommendations put forward by the Science Advisory Council (SAC) and has had lengthy discussions with SAC members to receive advice on reporting channels, body composition and terms of reference for its proposed bTB SAB. Agreement has been reached to establish an overarching bTB SAB with an independent external chair and membership drawn from existing, strengthened, independent expert advisory subgroups covering all aspects of the bTB science programme.<sup>170</sup>

133. On 15 January 2008, Defra announced that it had finally established the Bovine TB Science Advisory Body (bTB SAB) and that its first meeting would take place on 28 January. The remit of the Body was to “provide expert oversight of Defra-funded bovine TB research, identify gaps in the current evidence base and provide independent advice on the strategic direction of, and priorities for, all Defra-funded bovine TB-related research.”<sup>171</sup> The Body will be chaired by Professor Quintin McKellar, Principal and Dean of the Royal Veterinary College. Other Members are: Professor Douglas Young, Centre for Molecular Microbiology and Infection, Imperial College London; Professor Dirk Pfeiffer,

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<sup>168</sup> *Final Report of the Independent Scientific Group on Cattle TB*, p 180

<sup>169</sup> Badger Trust Press release, 31 May 2007, [http://www.nfbg.org.uk/\\_Attachments/Resources/53\\_S4.pdf](http://www.nfbg.org.uk/_Attachments/Resources/53_S4.pdf)

<sup>170</sup> HC Deb, 29 March 2007, col 1662W

<sup>171</sup> “Bovine TB Advisory Body established”, Department for Environment, Food and Rural Affairs press release 10/08, 15 January 2008

Epidemiology Division, The Royal Veterinary College; Professor Cecil McMurray CBE, Sci-Tech Consultancy; and Dr Andrew Moxey, Pareto Consulting.

**134. We welcome the establishment of the new bovine TB Science Advisory Body which should help inform and monitor the effects of the policy decisions that Defra must make very soon. It should be given clearly defined roles in how it should provide advice to the Government.**

**135. In addition, Ministers must ensure that full use is made of the wealth of knowledge, based on ten years of dedicated work, represented by the ISG as well as the continuing work of some of their members in this field.**

## 4 What the Government's Cattle TB strategy must include

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136. Much of the debate over how to control cattle TB has concentrated on whether or not culling badgers would make a beneficial contribution to a TB strategy. However, culling is just one of several strands of disease control that have been investigated over the years. **We believe that the best chance of significantly reducing the incidence of cattle TB is with a multi-faceted approach, targeting the disease in both wildlife and cattle, using all available methods that are backed by the findings of well-founded scientific research. Budgeting for such a policy should reflect a spend to save approach.**

### Cattle-based control measures

137. Scientific evidence shows that cattle-to-cattle transmission is a serious cause of disease spread. A study published in 2005 concluded that cattle movement substantially and consistently outweighed all other variables in predictive power.<sup>172</sup> Studies have shown that a number of undiagnosed TB-infected cattle remain following tuberculin testing, leading to the re-infection within herds and the spread of disease to neighbouring herds and outwards to the rest of the country.<sup>173</sup> The ISG believes that the presence of undiagnosed infected cattle in the national herd is the major factor influencing the spread of the disease.<sup>174</sup> The Badger Trust, among others, has argued strongly in favour of this hypothesis: “killing badgers is not yet known to be of any value whereas the vastly greater problem of infected cattle travelling throughout the country is well recognised”.<sup>175</sup>

138. The ISG recommended that the Government persevere with cattle-based controls and concentrate its resources in that area as the only viable way of tackling cattle TB and reversing the trend of increased incidence of the disease. The ISG believed that the Government's primary objective had to be to prevent the spread of the disease into low risk areas by means of cattle-based measures, including the following:

- High and low risk zones could be created and the movement of cattle from high to low risk areas should be prohibited. The ISG acknowledged that this would protect low risk areas but could exacerbate the incidence of the disease in high risk areas.
- As a variation on the above, individual farms could be categorised as high or low risk (e.g. disease-free for three or four years and at low risk of a cattle breakdown) and movement controlled between the two categories. Thus, disease-free farms within high risk areas (i.e. TB hotspots) would not be prevented from trading with farms in low risk areas.

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172 Gilbert et al., “Cattle movements and bovine tuberculosis in Great Britain”, *Nature*, vol 435, 491–496; 2005. 26 May 2005

173 *Final Report of the Independent Scientific Group on Cattle TB*, p 14

174 *Final Report of the Independent Scientific Group on Cattle TB*, p 175

175 Letter to Ben Bradshaw MP from the Badger Trust, October 2005

- Pre-movement testing in high risk areas, or areas with a recent history of cattle TB, should involve the combined use of tuberculin skin testing and the gamma interferon test.
- Post-movement testing should be introduced in some situations, using both the tuberculin test and the gamma interferon test.
- Additional measures such as the introduction of whole herd slaughter should be considered for multiple reactor herds in low risk areas.
- Surveillance testing in low risk areas should be more frequent than it is now, with testing intervals at a maximum of three years, or even annually should no additional movement controls be introduced.
- Annual testing could be applied to all cattle herds in high risk areas.
- In high risk areas, gamma interferon testing should be used in herds with one or two reactors and no previous history of breakdowns, in order to identify all infected cattle.

139. Professor Christl Donnelly of the ISG told the Committee that in order to ensure that the reproduction rate of the disease was reduced to the extent that it would bring about a downward trend in the incidence of the disease, the Government must either improve the sensitivity of the test or test animals more frequently, or even better, both.<sup>176</sup> The ISG based their recommendations on cattle pathogenesis findings from work being carried out by the VLA and the Institute of Animal Health, and also from extrapolation from a mathematical model created by Sir David Cox, one of the members of the ISG. The model suggested that improving the test's diagnostic sensitivity would speed up the reduction in incidence of the disease.<sup>177</sup> Therefore, the ISG recommended that Defra review the time intervals between repeat testing and also explore methods of achieving more rapid confirmation of infection in reactor cattle. The ISG also recommended that research continued into the development and field testing of improved versions of the gamma interferon test, together with the collection of reliable data on the use of the gamma interferon test. Research has shown that there are different strains of the disease in different parts of the country. The ISG recommends that Defra use this research in conjunction with the tracing of cattle movements in order to gain valuable information about how disease is spread.<sup>178</sup>

140. The Badger Trust agreed with the ISG that annual testing should be introduced across England. Given that this was likely to have huge resource implications for Defra, the Trust suggested that lay personnel should be trained to implement testing as well as vets as a more efficient use of resources.<sup>179</sup> The trained lay personnel, it is suggested, could also take over tasks currently arranged by vets such as organising the removal of reactor cattle from farms, arranging the valuation of cattle to be slaughtered, and undertaking work on the tracing of cattle movements. The Trust also recommended that whole herds be slaughtered

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176 Q 105

177 Q 105

178 *Final Report of the Independent Scientific Group on Cattle TB*, pp 175–179

179 Ev 49

where the herd suffered from persistent breakdowns. The Trust believed that the Government should review the use of gamma interferon testing: it considered that the current laboratory infrastructure was unable to cope with the number of gamma interferon tests currently taken and needed upgrading.<sup>180</sup>

141. As mentioned in the previous section, the King Report did not consider the efficacy of cattle-based measures. The ISG did not assess the likely cost of its cattle-based recommendations and we understand that Defra has only prepared a rough estimate of the costs which is likely to be “tens of millions”.<sup>181</sup> However, Professor John McInerney, the agricultural economist member of the ISG, told the Committee that:

The evidence that came out of all the ISG’s work is that you get more bang for your buck by pursuing the prospects of better control via cattle measures.<sup>182</sup>

142. A more rigorous testing regime is likely to find greater incidence of cattle TB and therefore increase the number of slaughtered cattle and claims for compensation. The NFU warned that the increase in the use of gamma interferon testing was likely to place a huge strain on the farming industry, particularly in high risk areas already suffering under the current testing regime: “the big worry is that it may destroy the industry before it destroys the disease.”<sup>183</sup> In addition, as we have already noted, Lord Rooker told the Committee that the computerised National Cattle Tracing System, which identifies the animals that need testing, was out of date and overburdened.<sup>184</sup>

**143. It is important that current cattle-based measures are strengthened if we are to stop the spread of cattle TB into current low-risk areas. We recommend that Defra discuss with the farming industry, veterinary experts and Animal Health the introduction of post-movement testing in respect of cattle moved from high risk areas to low risk areas. These discussions must include an assessment of the performance and functionality of the current National Cattle Tracing System. We support the recommendations of the ISG on the more strategically directed use of the gamma interferon test in both routine and pre-movement testing. Defra must continue to support the majority of the funding of the surveillance, testing, slaughter and compensation of the national herd. The wider use of gamma interferon testing is likely to increase the number of cattle slaughtered as previously undetected infected cattle are identified. We acknowledge that this will be challenging for the farming industry and for Defra.**

## Tackling risks from the wildlife reservoir

144. Scientific research has confirmed that the badger is a high secretor of cattle TB and a source of infection for cattle. What is not known is how the badger spreads the disease to cattle. However, it seems clear that, if money is to be spent on more intensive testing of

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180 Ev 57

181 Q 565

182 Q 531

183 Q 227

184 See paragraph 24.

cattle across England, other measures must be taken to break the cycle of re-infection between cattle and badgers.

### **Animal husbandry and biosecurity**

145. We have already examined the lack of scientific knowledge on the exact method of transmission of disease from badgers to cattle. A consequence of this uncertainty is the debate on the effectiveness of biosecurity (i.e. measures taken to control the exposure of susceptible animals to sources of infection) that farmers can employ on their farms to prevent infection of their cattle by badgers, including whether the investment in biosecurity measures is cost-effective. Defra has stated that “any policy on badger culling requires a clear commitment that the cattle farming industry will adhere to good biosecurity practice and will take reasonable steps to reduce the risks of introducing bovine TB into their herd”.<sup>185</sup>

### **Farmers’ attitudes towards biosecurity**

146. In a recent online poll run by Farmers’ Weekly, 800 farmers rated the biosecurity on their own farms. 18% said that their biosecurity was “squeaky clean”, 48% “could be better”, but 34% said it was “non-existent”.<sup>186</sup> The President of the British Veterinary Association has commented that: “[c]ulturally, there hasn’t been a need to pay strict attention to biosecurity in the cattle and sheep sectors—strict measures interfere with, and add cost to, the business.”<sup>187</sup>

147. A draft paper prepared by one of our witnesses to this inquiry, Dr Gareth Enticott, entitled *Biosecurity, ‘Sound Science’, and the prevention paradox: Farmers’ understandings of animal health* draws together information gained from interviews with 60 farmers in England and Wales during 2006 and 2007 to investigate the range of reasons why farmers do and do not implement biosecurity. It looked at “lay epidemiology” and farmers’ “fatalism” towards outbreaks. The study investigated whether, when attempting to promote biosecurity measures, Defra had considered the cultural understanding by farmers and vets of the disease.

148. Dr Enticott’s study found that anecdotes of likely “candidates” for breakdowns of TB circulate farming communities, creating and perpetuating beliefs about cattle TB, leading farmers to assess their own risk of having a disease breakdown and to attribute many breakdowns to “luck”. Many farmers had little motivation for implementing biosecurity measures and felt there was no escape from infection. Dr Enticott told us that “[farmers] are very fatalistic about going down with TB. They do not think there is much they can do about it.”<sup>188</sup> There were also different cultural understandings of biosecurity terms—e.g., what constituted a “closed herd”. Some farmers might take this to be a herd which had never bought in animals; others would include herds which had bought in the odd calf.<sup>189</sup>

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<sup>185</sup> Defra, *Consultation document on controlling the spread of bovine Tuberculosis in cattle in high incidence areas in England: Badger culling*, December 2005, para 30

<sup>186</sup> “Biosecurity short of the mark on 82% of farms”, *Farmers’ Weekly*, 24 August 2007, p 8

<sup>187</sup> *Ibid.*

<sup>188</sup> Q 464

<sup>189</sup> Q 479

This difference in interpretation had important implications for the communication of biosecurity advice to farmers.

149. Dr Enticott's research found that previously "biosecurity" had consisted of farmers relying upon the skin test, the slaughtering of reactor cattle and pre-movement testing. Government sponsored biosecurity advice has been communicated to farmers through various media, including a series of leaflets produced by Defra's Bovine TB Husbandry Working Group (HWG) aimed at farmers. The HWG was set up to identify appropriate and practical advice from evidence and experience. HWG's members include the NFU, Animal health, CSL, the Welsh Assembly Government, Defra, Wildlife Trusts, the Soil Association and the British Cattle Veterinary Association.<sup>190</sup> The Group has drawn up a list of measures, based on their usefulness, practicality and cost effectiveness, which are aimed at reducing the risk of transmission of TB in tandem with surveillance of herds and pre-movement testing. The list of measures was published on the website in February 2007.<sup>191</sup>

150. Dr Enticott considered that some of the HWG's advice, including the adoption of new styles of farming, might prove difficult for some farmers to take on board. It was also difficult for the Government to prove that biosecurity worked. The study noted that it was vets, trading standards officers, social networks and the farming press and even the CSL that were the preferred sources of information for farmers.<sup>192</sup> The challenge was to work with the cultural understandings of the disease to help biosecurity achieve cultural currency in the farming community. Dr Enticott told us why he considered Defra's communication strategy did not appear to be working:

You talk to farmers and firstly you ask them what they do with any communication from Defra and they say, "Well, I throw it in the bin." The approach is leaflets and websites; that is not the way to develop trust in terms of encouraging people to change their behaviour, which is one the most important things we have to do.<sup>193</sup>

151. Dr Enticott questioned whether the lack of an effective Defra communication strategy on biosecurity arose from Defra's lack of belief in biosecurity measures as effective protection against the spread of infection:

Eight years after the start of Krebs all that has happened is that there is something on the web, two leaflets that might be developed in some ways but that is not very much [...] it might be that Defra do not actually want to do this or they do not actually see much value in doing it in terms of its contribution to disease control.<sup>194</sup>

152. Dr Chris Cheeseman, a badger ecologist of some 35 years' experience and a former employee of the Central Science Laboratory (CSL), told us:

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190 <http://www.defra.gov.uk/animalh/tb/abouttb/protect.htm>

191 Department for Environment, Food and Rural Affairs, *Bovine TB: Do you know how to reduce your risk? Husbandry best practice advice to help reduce the risk of bovine TB transmission*, May 2007

192 Dr Gareth Enticott, *Biosecurity, 'Sound Science', and the prevention paradox: Farmers' understandings of animal health*, Cardiff University, p 11

193 Q 473

194 Q 482

[...] we cannot give farmers specific advice that if you follow this particular regime you will reduce the risks of transmission on your farm by 50% or whatever [...] we cannot give them a prescription for reducing risk because we do not fully understand at the moment just what the risk factors are and how they rank.<sup>195</sup>

153. Dr Cheeseman told the Committee that the CSL had attempted to identify the risk factors on farms.<sup>196</sup> The CSL had produced an “*Investigation of potential badger/cattle interactions and how cattle husbandry methods may limit these*”. The study aimed to investigate the extent of badger visits to farm buildings in TB hotspots in SW England and identify why badgers visited farms. It surveyed 36 farms between July 2003 and June 2005; and found low standards of biosecurity with the majority of cattle housing and feed stores accessible to badgers and other wildlife. Signs of badger activity were detected on 39% of farms surveyed, 29% of which was infected with *M. Bovis*.<sup>197</sup>

154. A more detailed study of badger activity was carried out at 6 farms. Video and camera surveillance showed that:

- Badgers visited more frequently during the late spring/summer and during warmer weather
- Badger visits were associated with feeding activities. They fed on all stored feeds available and at all times of year, but foraged on cattle cake in particular.
- Although feed stores were the most frequently visited buildings on the farmyard, badgers entered every building they could.
- Physical contact between badger and cattle was observed in buildings, but on pasture a minimum distance of 4m was observed at all times between cattle and badgers.
- Electric fencing was successful at keeping badgers out of facilities and buildings. Badgers then tended to forage more widely on fields. If fencing was removed, badgers returned to the buildings.
- At the time of the study, few farmers appeared to invest in measures to prevent badgers from accessing stored feeds.

155. Dr Robbie McDonald, Head of Wildlife Disease Ecology at CSL, told the Committee that it was “entirely reasonable” for farmers not to suspect the level of badger activity that could be taking place on their farms until they were shown documentary evidence.<sup>198</sup> Video and camera surveillance of 40 farms had shown that badgers visited 50% of those farms, and in 10% of farms the badger activity recorded was high.<sup>199</sup> CSL is now assessing the cost-effectiveness of different farm husbandry measures to reduce risks associated with contact

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195 Q 485

196 Q 485

197 [http://www.defra.gov.uk/science/project\\_data/DocumentLibrary/SE3029/SE3029\\_4086\\_FRP.doc](http://www.defra.gov.uk/science/project_data/DocumentLibrary/SE3029/SE3029_4086_FRP.doc)

198 Q 491

199 Qq 491, 494, 495

between badgers and cattle. The project, to be completed in 2009, aims to answer three questions:

- What husbandry measures are effective at reducing or preventing badger visits to farm buildings?
- What would those measures cost?
- Are the measures cost-effective?<sup>200</sup>

156. It was important for farmers to secure buildings, as CSL had found that infected badgers in particular made more use of feed stores and indoor housing to forage for food than healthy badgers, and also infected badgers tended to range more widely than healthy badgers in their night-time wanderings. Farmers the Committee met in Devon believed that it was often sick badgers that visited farm buildings and some had been seen asleep during the daytime in food stores. CSL hoped to be able to demonstrate that certain measures would reduce the number of badger visitations to farms and also that those measures would be practical for farmers to work with on a daily basis.<sup>201</sup>

157. Dr Cheeseman noted that some farmers were very diligent and were prepared to take considerable measures to protect their farms. He gave one example of the difficulties farmers faced in securing their farms where the farmer had raised mineral licks off the ground and installed roller shutter doors on his feed stores but his farm complex could not be completely secured as he had eight points of access for milk tankers and other vehicles that could not be closed off.<sup>202</sup> The farmer considered it futile to invest in the possible solution of electrified grids (at a cost of tens of thousands of pounds) as he was unable to protect his cattle from contact with badgers when they were in his fields anyway. Although there were farmers who wanted to try to maintain good standards of biosecurity, Dr Cheeseman thought that the majority of farmers did not give it a lot of thought.<sup>203</sup>

158. Dr Enticott suggested that a more personal approach was needed to communicate the importance of biosecurity to farmers, similar to the system adopted in Wales. The Welsh Assembly Government has established three “Intensive Treatment Areas” (ITA) within hotspot areas in Wales in order to evaluate the implementation and effectiveness of increased use of the gamma interferon test, improved biosecurity and wildlife measures. The Biosecurity Intensive Treatment Area in South Wales runs a voluntary scheme which pays for local veterinary surgeons to visit participating cattle keepers to provide specific advice on realistic and achievable actions for them to help reduce the risks of TB transmission. Farmers within the boundary of the ITA have been invited to participate in this voluntary scheme and the response to the scheme, and the first visit by local vets, has been very positive. Arrangements are in place to evaluate fully the Biosecurity ITA with a view, if appropriate, to extending it across Wales.

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200 [http://www2.defra.gov.uk/research/project\\_data/More.asp?l=SE3119](http://www2.defra.gov.uk/research/project_data/More.asp?l=SE3119)

201 Q 496

202 Q 486

203 Q 487

159. Dr Enticott’s study found that following the handling of issues such as the Single Farm Payment, BSE and FMD, farmers appeared to have lower levels of trust in Defra. In particular, farmers held a widespread belief that the countryside was under attack from those people sitting in distant offices who knew little about the reality of country living. There was mistrust over the way the culling in the RBCT was handled and farmers often referred to how many badgers they thought were left behind by the cull as evidence of the trial’s flaws. The study also found that biosecurity was associated with the idea of highly-intensive factory farming, and farmers were reluctant to “Colditz” their land as they were keen to preserve the traditional styles of farming. One farmer said “it’s a farm, it’s open — that’s what farming is”.<sup>204</sup> Dr Enticott told the Committee that it was advice to fence off areas of land that farmers objected to most, particularly if farmers felt it was an unwarranted cost.<sup>205</sup>

### *Recommendations of the ISG on biosecurity*

160. As already noted in the previous section, in its final report the ISG had acknowledged that the circumstances that predisposed herds to breakdowns had never been clearly understood. Therefore, as part of its work, the ISG developed, with Defra, several case studies to identify risk factors associated with TB herd breakdowns. The ISG found that risk factors were different in each region and it was not possible to identify overarching risk factors present in all regions. Amongst the factors identified as increasing the risk of a breakdown were the following:

- The use of covered yard housing
- Having cattle brought on from farm and market sales
- The use of two or more premises
- Feeding silage and growing hay
- Having sandy soils or mixed deciduous woodland
- Farmer being unaware of badger setts on the farm
- Not moving-on yearling stock
- Not using manure or fertilisers
- Not having pasture<sup>206</sup>

161. In addition, the ISG noted that case studies on cattle herds in different countries had led to widely different recommendations on the practices expected to reduce TB.<sup>207</sup> In another case study of UK farms, transient breakdowns appeared to be more influenced by

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204 *Biosecurity, ‘Sound Science’, and the prevention paradox: Farmers’ understandings of animal health*, p 18

205 Q 478

206 *Final Report of the Independent Scientific Group on Cattle TB*, p 129–132

207 *Final Report of the Independent Scientific Group on Cattle TB*, p 133

purchase of cattle, whereas persistent breakdowns were mostly affected by management factors relating to herd enterprise, silage storage and density of badgers.<sup>208</sup>

162. The ISG, like others, noted that lack of information about the methods of transmission of TB between cattle and badger made it difficult to recommend effective approaches towards the management of cattle and badger contact:

Separating cattle and badgers by badger-proof fencing might occasionally be appropriate for some farms. More generally, common sense measures could be applied in some circumstances to keep badgers out of buildings and feed stored. We recommend that research effort into ways of keeping badgers and cattle apart be continued.<sup>209</sup>

163. The ISG concluded, and we agree, that there is sufficient evidence from the findings that by applying the broad principles of biosecurity (taking into account cattle movements, minimising cattle to badger contact, taking greater care with feeding and housing practices) it could be possible to reduce the risk of cattle becoming infected by other animals.<sup>210</sup>

164. However, in its conclusions in chapter ten of the Final Report, the ISG noted that there is a lack of information about the “precise mechanism of transmission of infection between badgers and cattle (and vice versa) which makes it difficult to make confident predictions about effective approaches to biosecurity”.<sup>211</sup> The ISG thought that it should be possible to design badger-proof containers for feed and feeding troughs, despite the fact that badgers are strong and agile and able to gain access to a large variety of containers and troughs. The ISG also noted that fencing capable of keeping badgers out of buildings or pasture was necessarily substantial in scale and therefore costly to install and maintain. It was not always possible to fence off setts or latrines as badgers were able to dig and climb. The ISG concluded that it was not currently possible to make informed recommendations on the best measures to minimise contact between cattle and badgers. It recommended that research continue into this area to develop more specific advice.<sup>212</sup>

165. The previous Agriculture Committee acknowledged the importance of husbandry in the search for practical solutions to the spread of cattle TB,<sup>213</sup> as did the our predecessor EFRA Committee which recommended in 2004 that that:

Farmers should be aware that the Minister takes the view that good animal husbandry has a significant role to play in controlling bovine TB, and that he is considering using a number of powerful levers to ensure that best practice is followed. Notwithstanding their reservations about focussing on husbandry, rather than badger culling, we recommend that farmers demonstrate that they take their own responsibilities seriously by following best practice guidelines in relation to

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208 *Final Report of the Independent Scientific Group on Cattle TB*, p 133

209 *Final Report of the Independent Scientific Group on Cattle TB*, p 174

210 *Final Report of the Independent Scientific Group on Cattle TB*, p 138

211 *Final Report of the Independent Scientific Group on Cattle TB*, p 173

212 *Final Report of the Independent Scientific Group on Cattle TB*, p 174

213 Agriculture Committee, *Badgers and Bovine TB*, para 8

husbandry. Given that badger culling is unlikely to begin imminently, and that in any event it is likely to form only part of the response to the disease, it is vital that no stone is left unturned in dealing with bovine TB.<sup>214</sup>

166. Whilst hard evidence does not exist as to which animal husbandry measures are most effective in reducing the risk of infection from badgers, it would seem common sense that all farmers should employ a high degree of biosecurity on their farms and in cattle TB hot spot regions biosecurity should start in the areas on their farm which they have control over—the farm buildings. **Whilst Defra must continue to support research into evaluating the effects of employing different animal husbandry measures on farms, it is right that Defra should expect a commitment from farmers to improve standards of animal husbandry and biosecurity on farms by securing farm buildings such as feed stores to which badgers are known to seek access. However, it also seems that husbandry advice delivered through leaflets and the Defra website is not getting the message across effectively. Defra must recognise that there is evidence that farmers have little confidence in centralised biosecurity advice that fails to provide evidence of the effectiveness of biosecurity methods. A more pro-active approach using vets based in the local communities, creating biosecurity “partnerships” between farmers and vets, may be more effective. Defra should examine the Welsh Intensive Treatment Area measures with a view to introducing such farm visits by vets in high risk areas in England.**

## Culling

167. The ISG found that there were “modest” benefits from the proactive culling carried out in the RBCT, but concluded that the benefit was outweighed by the economic cost of implementing the cull:

Although our findings suggest that, in principle, modest reductions in the overall incidence of cattle TB would result from simultaneous, co-ordinated and repeated culls of badgers over extremely large areas of the countryside, using skilled staff and ideally within geographical barriers to badger movement, trying and failing to achieve this is likely to make matters worse, increasing the incidence of disease in cattle and spreading infection to new areas.<sup>215</sup>

168. The ISG was clear that it advised Government against the inclusion of badger culling in its TB control strategy. Furthermore, Professor Bourne told the Committee that he did not believe that farmers, independent of Government, would be able to organise a licensed cull on the scale necessary to achieve even modest benefits.<sup>216</sup> The Final Report had listed the practical and economic issues surrounding the organising of a cull which it concluded would be insurmountable for those attempting a licensed cull:

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214 Environment, Food and Rural Affairs Committee, *Bovine TB*, para 35

215 Ev 103

216 Q 430

- The benefits achieved by culling would be modest in comparison to the cost of conducting culls;<sup>217</sup>
- A large number of expert, skilled staff would be necessary to conduct the cull, and
- Simultaneous culls over 300km<sup>2</sup>, repeated over at least four years, would require co-ordination and a significant level of organisational and administrative management.<sup>218</sup>

169. The King Report recommended that badger removal should take place alongside applications of controls on cattle, but only in areas with a high and persistent incidence of TB in cattle. It concluded that the minimum overall area within which badger removal should take place was 100km<sup>2</sup>—and stated that increasing the overall area would increase the overall benefit. The Report recommended that removal should be carried out humanely by competent operators and removal should be sustained beyond four years.<sup>219</sup>

170. Dr Chris Cheeseman, who had worked on the RBCT, raised the issue of landowner compliance and direct action against trapping. The trial had experienced interference with the traps (although the ISG concluded that it had not been on a scale that had affected the results). Dr Cheeseman thought that it was likely that a licensed cull would receive more opposition than a scientific experimental cull.<sup>220</sup>

171. Dr Cheeseman was also certain that the National Trust, the Wildlife Trusts and the Woodland Trust would not allow culling on their land.<sup>221</sup> The National Trust have since told the Committee that they accepted the findings of the ISG: “We firmly believe that any significant decrease in BtB in cattle could only be achieved through such large scale and draconian measures to reduce badger numbers as to make the option impractical, unaffordable and publicly unacceptable [...] It seems that the greater part of the problem relates to cattle to cattle transmission of the disease and there are signs that good control of cattle movements and pre-movement testing can make a much greater difference than culling of badgers.” However, the Trust made clear that it is “not against the culling of badgers *per se*, but the purpose needs to be clear and the measure effective [...] Our response towards any officially-licensed badger cull would therefore be consistent with the above position.”<sup>222</sup>

172. Farmers we spoke to in Devon had raised the issue of animal rights activism, and the fear of reprisals from animal rights groups and the local community, as a disincentive to participate in a cull. Farmers wished for the licensing process to provide some anonymity for applicants. It was important to farmers that Defra should provide guidance to farmers and firm leadership in the face of opposition.

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217 *Final Report of the Independent Scientific Group on Cattle TB*, p 157

218 *Final Report of the Independent Scientific Group on Cattle TB*, pp 169–170

219 *Tuberculosis in Cattle and Badgers: A Report by the Chief Scientific Adviser, Sir David King, October 2007*, para 7

220 Q 511

221 Q 508

222 Ev 177

173. The NFU believed that the findings of the ISG supported an application for a licence to cull badgers, provided the application for a cull was of the size and duration of the cull extrapolated by the ISG to have a beneficial effect. The NFU told us that they believed that it would be possible to organise a cull in partnership with Defra (who would need to assist with facilitation, mapping, monitoring, carcass disposal and support) via the creation of “TB Control Strategy Groups”. These groups would include farmers, vets, Animal Health and other stakeholders. Culling would involve shooting and cage traps in the short-term with gassing and snaring if those methods were allowed in the longer term. The NFU suggested that culling should take place in disease hotspot areas, within a framework of larger control areas of at least 300km<sup>2</sup>, ideally bounded by hard boundaries.<sup>223</sup> Phil Allen, Holsworthy NFU Chairman, told the Committee in Devon that in the Devon hotspot area, designated by the NFU as “VLA 9”, there had been 1,200 signatories to the proposed scheme which represented 75–80% of ownership of the possible land mass.

174. However, it is unlikely that an alternative method of culling to trapping or shooting would be permitted under licence as Lord Rooker told the Committee that of the culling methods considered by the ISG, only “lamping” (the shooting of free-running badgers) and the trapping and shooting of badgers were acceptable and thought to be humane for the purposes of the RBCT and the possibility of licensed culling. Both snaring and gassing had been ruled out.<sup>224</sup> However, Lord Rooker did not rule out the possibility that licensed culling would be allowed, and confirmed that Natural England would be the agency responsible for issuing licences and Defra would be responsible for setting the framework conditions for licensing.<sup>225</sup> But on no account would Defra allow the licensing of culling to be a “free for all” for farmers.<sup>226</sup>

175. During the RBCT a moratorium was placed on the issuing of licences for the culling of badgers. That moratorium is now at an end and Lord Rooker told the Committee that there were already applications in the system pending the Government’s decision on culling.<sup>227</sup> Defra recognised that legal challenges were likely whether the Government decided that licences should be withheld or whether they were granted. However, Lord Rooker said that he wanted the Government to decide on this issue, not a judge.<sup>228</sup> He wanted a Government policy on this matter which had parliamentary, industry and wildlife-group backing.

176. Professor Mark Woolhouse, a member of Sir David King’s group of experts, told the Committee that if a cull were to be implemented, monitoring of the badger population would be necessary: “you need to be very clear about what you have actually achieved on the ground for two reasons. One is to understand why you have succeeded, but the second,

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223 NFU: “7 point action plan”. See “Industry unite over a seven point culling plan”, *Farmers Guardian*, 1 September 2006

224 Q 583

225 Q 595

226 Q 574

227 Q 630

228 Q 634

if things do go wrong, is to understand why you failed, and that is a very important part of trying to assess the performance of any kind of large-scale intervention.”<sup>229</sup>

177. The former members of the ISG told the Committee that they felt that the King Report severely underplayed the effects of perturbation and warned that the Government had to recognise that if it allowed culling: “there will be winners, there will be losers and there will be disease spread.”<sup>230</sup>

178. The Badger Trust and RSPCA had both welcomed the ISG’s Final Report and conclusions that culling had no meaningful part to play in cattle TB control. However, the Badger Trust were concerned that licensed culling might be offered to farmers as a *quid pro quo* by the Government for the implementation of stronger cattle-based measures.<sup>231</sup> The RSPCA also voiced a concern that, if licensed culling were allowed, the operators were not likely to be the skilled, trained people who had worked on the RBCT.<sup>232</sup> Whilst Lord Rooker thought it possible that individual licence holders could buy in trained field staff to conduct humane culling, he made it very clear to the Committee that Defra would not be providing logistical support to a licensed cull if it were agreed to.<sup>233</sup> It is unfortunate that the Government has stood down and then dispensed with those field operatives based at Aston Down and Polwhele, which obviously limits the opportunity to get a cull organised.

179. The Defra Science Advisory Council (SAC) wrote to Defra’s Chief Scientific Adviser on 19 December and said that it considered that the scientific evidence was clear that any policy aimed at reducing the incidence of cattle TB must address cattle movements, biosecurity, farm management and cattle husbandry, and improved testing regimes. However, based on the areas of agreement between the ISG and King reports, “some carefully planned and executed culling of badgers may contributed to an effective control strategy in some heavily infected and geographically distinct and isolated areas of sufficient size, but only when coupled with other control measures.”<sup>234</sup>

180. As discussed in paragraph 104, the ISG and King reports agree that culling might have a beneficial effect on the incidence of cattle TB, but only if it were carried out in a sufficiently large area with suitable boundaries, in a competent and co-ordinated manner and sustained for at least four years. **The culling of badgers could only ever be considered in areas of the country where there is a high risk of cattle TB and which have “hard” enough boundaries to reduce the edge effect, and therefore culling could not be applied nationwide.**

181. **The ISG’s work is the only robust evidential basis on which a badger cull could take place. The Committee recognises that the South West Region of the NFU had responded positively and practically to that position by putting forward a proposal for a cull which would replicate the terms of the RBCT but which would be carried out by**

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229 Q 422

230 Q 460

231 Ev 49

232 Q 179

233 Q 580

234 [http://www.defra.gov.uk/science/documents/papers/2007/SAC-TB\(07\)01.pdf](http://www.defra.gov.uk/science/documents/papers/2007/SAC-TB(07)01.pdf)

farmers or their representatives. The Committee recognises the attractiveness that the NFU's proposals would have to farmers in hot spot areas who have seen no reduction in the incidence of the disease through use of policy instruments other than culling. However, as there is a significant risk that any patchy, disorganised or short-term culling could make matters worse, the Committee could only recommend the licensed culling of badgers under section 10 of the Protection of Badgers Act 1992 if the applicants can demonstrate that culling will be carried out in accordance with the conditions agreed between the ISG and Sir David King, which indicated that there might be an overall beneficial effect. These were that culling should: be done competently and efficiently; be coordinated; cover as large an area as possible (265km<sup>2</sup> or more is the minimum needed to be 95% confident of an overall beneficial effect); be sustained for at least four years; and be in areas which have "hard" or "soft" boundaries where possible. We recommend that no application for a licence should be approved by Natural England, which already has statutory responsibility for the granting of culling licences, without scrutiny to ensure that it complies with the conditions set by the ISG and Sir David King. It is important that were such a cull approved, other control measures should also be applied.

182. Across the ten areas of the RBCT, 70% of land inside the proactive treatment areas was directly accessible for culling. As part of the licensing process, Natural England should also give consideration to the likely percentage of land area that will be accessible to each applicant for a culling licence.

183. As several applications for licences are already pending, it is likely that there will be a significant number of applications for Natural England to process as part of its existing statutory duty. Therefore, the Government must make sure that Natural England has the necessary resources properly to evaluate applications for licences despite any likely substantial Natural England budget cuts in coming years.

184. The farming industry must accept that it is unlikely to receive any logistical support from the Government and that if it wishes to press ahead with its application for a badger culling licence, it must be able to prove that it is logistically able to co-ordinate a cull and sustain it.

185. For people to be confident that a cull would be carried out in a humane way, any licensed cull must be supervised, regulated and monitored by Defra, or by Defra-approved regulators. Public opinion and the concerns of badger welfare groups should be considered by Defra when drawing up a framework for the licensing of badger culling. However, it is also important that holders of badger licences who are fully compliant with the licence conditions should not be subject to harassment or intimidation from those who oppose badger culling. Advice on security matters must form part of Defra's responsibility to supervise and monitor licensed culls.

186. Were such a cull to take place, efforts should be made to ensure maximum capture of data for further research into the disease and to monitor whether the overall effects are beneficial. We recommend that the effects of any cull on both cattle and badger populations are properly monitored by Defra for this purpose and that in due course the results should be published.

## Vaccines

187. Historically there has been some scepticism, voiced to us by the NFU, the ISG and Lord Rooker, over the likelihood that TB vaccines represented a viable policy option: the message had always been that a licensed cattle vaccine was “ten years away”.<sup>235</sup> However, as we have already said (see paragraphs 47 to 57), there has been recent progress in developing a diagnostic test which is able to distinguish between a vaccinated cow and an infected cow, and scientists are reasonably confident that a licensed injectable vaccine for badgers could be available from 2009 and a licensed oral vaccine for badgers from 2012. It is still uncertain whether the timescale of 2015 for a licensed cattle vaccine will be achievable, and it also remains unclear whether Defra had a strategy for how a vaccine might be used for badger or cattle. Professor Bourne told the Committee: “I am not persuaded that Defra have given this any thought at all.”<sup>236</sup> In their paper to the Committee, Professors Young and Hewinson said that: “[t]he availability of vaccines does not necessarily equate to use: the balance of the costs and benefits will remain a question for the policy makers.”<sup>237</sup>

188. The professors told us that additional funding would not bring the current vaccine timetable forward, but it might make the estimates of the timescales involved more robust. They identified areas that would benefit from an increase in funding as: the shortage of testing facilities (as it would allow several strands of work to be carried out in parallel); and research into gaining a better understanding of what constitutes protective immunity to TB.<sup>238</sup> Lord Rooker confirmed that despite his concern over the current budget for cattle TB, funding would not be cut from vaccine research.<sup>239</sup>

**189. We are still of the opinion that research into viable vaccines for use on badgers and on cattle remains an important weapon in the battle to control the disease, and the best hope for a widely applicable, long-term solution to the problem of cattle TB. We have been provided with a timeline that shows us that an injectable BCG vaccine for badgers could be available by 2009, but there is no evidence that the Government has a plan for how it is going to use either badger or cattle vaccines once they are available. The Government must make the development of its vaccine strategy a priority in order to guide the scientists involved in the development of both vaccines. We note the Minister’s confirmation that research into vaccines for cattle TB will continue to be funded for the foreseeable future, but we believe that there is a case for further funding for vaccine research on an invest to save basis.**

## Compensation paid for slaughtered animals

190. Previously systems of compensation had allowed farmers to arrange on-farm valuations of their cattle. As already noted, Defra had concluded that there was “robust evidence” that under the previous system animals were being overvalued. However we

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235 Qq 242, 659

236 Q 100

237 Ev 63

238 Qq 314, 315

239 Q 660

have heard from the NFU, and from individual farmers in Devon, that the current system using “table valuations” introduced in 2006 seriously undervalues pedigree cattle. In one example we heard that a twenty year breeding programme had produced pedigree cows worth £84,000 for which the farmer had received only £20,000 when slaughtered. Neighbouring farmers added that in the past year they had seen losses of £40,000 as a result of the compensation system which did not recognise the true value of their pedigree cattle. For many farmers, the acute distress of slaughtering apparently outwardly healthy animals which have reacted to the skin test is exacerbated by the unrealistic value placed on the cattle by the table valuation system. The fear for the NFU was that many farms would simply disappear as farmers decided they could not cope with the year on year loss caused by the undervaluing of their stock by the compensation system on top of the increasing testing costs.<sup>240</sup>

**191. Defra must review the current table valuation system for compensation of cattle, and other farmed animals, slaughtered owing to cattle TB. It is unfair to farmers of pedigree animals. Compulsory slaughter is a measure to protect the wider industry and society as a whole and it is inequitable for those unfortunate enough to be hit by the disease effectively to subsidise others by receiving artificially low values for their animals. If Defra wishes to explore sharing the costs of animal disease with the farming industry it should be prepared to pay a fair price for cattle which are compulsorily slaughtered. The likely increase in the costs of compensation following this necessary adjustment, together with the rise in costs that are likely to occur if a more rigorous testing regime is adopted, must be factored into Defra’s future funding for cattle TB.**

## 5 Conclusion

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192. The Government must show its commitment to finding a way to ease the grip that cattle TB has upon the country. To do this, its policy must be to reverse in the short term the rising level of incidence of the disease with a long term goal of eradication through the use of vaccines.

193. The Government must continue to fund research into vaccines and the efficacy of biosecurity measures. It must also continue not only to fund the routine testing of cattle, but must examine carefully the benefits of increasing the frequency of testing and the introduction of the parallel use of gamma interferon testing alongside the tuberculin skin test.

194. More frequent and thorough testing will lead in the short term to an increase in the number of cattle reactors that are found and slaughtered.

195. The Government must re-consider the levels of compensation currently paid to farmers and must ensure that it does not shirk its responsibility to pay farmers a fair price for their cattle.

196. The Government cannot countenance the reduction of its spending on the disease at this stage given the advice from the ISG that current cattle controls are not stringent enough. Defra must ensure that a cost benefit analysis (including farmers' costs and benefits) is prepared of the cattle-based measures recommended by the ISG and its agencies to ensure that it is able to plan for the proper levels of expenditure needed to fulfil its cattle TB policy.

197. To match the Government's commitment to fight the disease, it is right that farmers may be asked to increase their own spending on pre- and post-movement testing and on-farm biosecurity measures. We acknowledge that this could mean an additional financial burden for farmers, as well as an unwelcome increase in the time and effort already spent by farmers and vets on the administrative burden demanded by the testing regime. The farming industry is already suffering from the financial and emotional consequences of the steady increase in the number of cattle TB breakdowns, but it must work together with the Government, veterinarians and scientists to monitor the outcome of measures taken to tackle the disease if we are to plug the fundamental gaps in our understanding of how cattle TB is transmitted.

198. We have recommended that the culling of badgers in high risk areas should in principle be licensed under the Protection of Badgers Act to counter the spread of cattle TB provided that the licensee is able to fulfil conditions based on the findings of the ISG Report. The Government must provide a practical framework of guidelines for Natural England as the licensing authority. The farming industry must accept that the Government is unlikely to fund the culling of badgers as a method of tackling the wildlife reservoir. Whilst the farming industry is likely to have to bear the costs of any cull if it chooses to go down that road, farmers must also accept that culling, in accordance with the conditions agreed between the ISG and Sir David King, cannot become the cornerstone of a Government TB policy as it would not be suitable as a control method in all areas. Other cattle-based measures, including vaccines, must be

**employed and that is where the focus of the Government's spending should be in future.**

# Conclusions and recommendations

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## Commissioning of the King Report

1. We consider it unfortunate and unsatisfactory that Sir David King and his group of experts did not meet the ISG to discuss their work as we believe that if they had done so, a more constructive dialogue between the two groups of experts might have been established. We welcome the fact that Professor Bourne and Sir David King have now met to discuss their conclusions, and we would encourage this dialogue to continue between the former members of the ISG and the new Government Chief Scientific Adviser. (Paragraph 75)
2. The Secretary of State's undertakings to meet Professor Bourne and others, and to consider the conclusions of our report, are welcome as an indication that he will take personal responsibility for the final decision on how to control cattle TB. However Defra ministers' apparent reluctance to meet Professor Bourne to discuss the final results of the work he and the ISG have been doing for Defra and its predecessor for 10 years is both very disappointing and discourteous. (Paragraph 84)

## Cattle-based measures

3. We are surprised and concerned that, in the six months since the publication of the ISG's Final Report, Defra has not yet initiated a cost-benefit analysis of the options based on cattle controls recommended by the ISG in order to inform its decision on future policy on cattle TB. It should do so. (Paragraph 116)
4. It is important that research continues to fill the gaps in the scientific knowledge on cattle TB identified by the ISG and others, and Defra must ensure that funding for this research is found. In particular, we recommend that the Government decides in the next six months whether further research on establishing the exact means of transmission is necessary. (Paragraph 117)

## Lack of a clear strategy to tackle Cattle TB

5. In the light of the increasing incidence of cattle TB, and the cost to both the taxpayer and farming industry, Government must now make a decision on what its strategic objectives in relation to this disease are. The impact of the disease has reached a stage where further procrastination is unacceptable. Defra's first strategic goal should be to ensure that the impact of the disease diminishes every year. It must make clear that, even if it is feasible, total eradication of the disease is still a very distant goal. (Paragraph 122)
6. Cattle TB is the most serious disease facing livestock in this country. A reduction in funding at the risk of the disease spiralling out of control and eventually affecting England's export market is not justified. The rapid increase in the scale of this zoonotic disease continues to warrant Government involvement and financial support with the aim of reducing its incidence. The Government forecasts expenditure on cattle TB to increase to an annual cost of £300 million to the taxpayer

if no further action is taken to control the disease. The policy options recommended by this Report will involve increased expenditure for the Government, but the Government must spend now to save greater expenditure in the future. (Paragraph 125)

### Advice to Defra

7. We welcome the establishment of the new bovine TB Science Advisory Body which should help inform and monitor the effects of the policy decisions that Defra must make very soon. It should be given clearly defined roles in how it should provide advice to the Government. (Paragraph 134)
8. In addition, Ministers must ensure that full use is made of the wealth of knowledge, based on ten years of dedicated work, represented by the ISG as well as the continuing work of some of their members in this field. (Paragraph 135)

### What the Government's Cattle TB strategy must include

9. We believe that the best chance of significantly reducing the incidence of cattle TB is with a multi-faceted approach, targeting the disease in both wildlife and cattle, using all available methods that are backed by the findings of well-founded scientific research. Budgeting for such a policy should reflect a spend to save approach. (Paragraph 136)

### Cattle-based control measures

10. It is important that current cattle-based measures are strengthened if we are to stop the spread of cattle TB into current low-risk areas. We recommend that Defra discuss with the farming industry, veterinary experts and Animal Health the introduction of post-movement testing in respect of cattle moved from high risk areas to low risk areas. These discussions must include an assessment of the performance and functionality of the current National Cattle Tracing System. We support the recommendations of the ISG on the more strategically directed use of the gamma interferon test in both routine and pre-movement testing. Defra must continue to support the majority of the funding of the surveillance, testing, slaughter and compensation of the national herd. The wider use of gamma interferon testing is likely to increase the number of cattle slaughtered as previously undetected infected cattle are identified. We acknowledge that this will be challenging for the farming industry and for Defra. (Paragraph 143)

### Recommendations of the ISG on biosecurity

11. Whilst Defra must continue to support research into evaluating the effects of employing different animal husbandry measures on farms, it is right that Defra should expect a commitment from farmers to improve standards of animal husbandry and biosecurity on farms by securing farm buildings such as feed stores to which badgers are known to seek access. However, it also seems that husbandry advice delivered through leaflets and the Defra website is not getting the message

across effectively. Defra must recognise that there is evidence that farmers have little confidence in centralised biosecurity advice that fails to provide evidence of the effectiveness of biosecurity methods. A more pro-active approach using vets based in the local communities, creating biosecurity “partnerships” between farmers and vets, may be more effective. Defra should examine the Welsh Intensive Treatment Area measures with a view to introducing such farm visits by vets in high risk areas in England. (Paragraph 166)

## Culling

12. The culling of badgers could only ever be considered in areas of the country where there is a high risk of cattle TB and which have “hard” enough boundaries to reduce the edge effect, and therefore culling could not be applied nationwide. (Paragraph 180)
13. The ISG’s work is the only robust evidential basis on which a badger cull could take place. The Committee recognises that the South West Region of the NFU had responded positively and practically to that position by putting forward a proposal for a cull which would replicate the terms of the RBCT but which would be carried out by farmers or their representatives. The Committee recognises the attractiveness that the NFU’s proposals would have to farmers in hot spot areas who have seen no reduction in the incidence of the disease through use of policy instruments other than culling. However, as there is a significant risk that any patchy, disorganised or short-term culling could make matters worse, the Committee could only recommend the licensed culling of badgers under section 10 of the Protection of Badgers Act 1992 if the applicants can demonstrate that culling will be carried out in accordance with the conditions agreed between the ISG and Sir David King, which indicated that there might be an overall beneficial effect. These were that culling should: be done competently and efficiently; be coordinated; cover as large an area as possible (265km<sup>2</sup> or more is the minimum needed to be 95% confident of an overall beneficial effect); be sustained for at least four years; and be in areas which have “hard” or “soft” boundaries where possible. We recommend that no application for a licence should be approved by Natural England, which already has statutory responsibility for the granting of culling licences, without scrutiny to ensure that it complies with the conditions set by the ISG and Sir David King. It is important that were such a cull approved, other control measures should also be applied. (Paragraph 181)
14. As part of the licensing process, Natural England should also give consideration to the likely percentage of land area that will be accessible to each applicant for a culling licence. (Paragraph 182)
15. As several applications for licences are already pending, it is likely that there will be a significant number of applications for Natural England to process as part of its existing statutory duty. Therefore, the Government must make sure that Natural England has the necessary resources properly to evaluate applications for licences despite any likely substantial Natural England budget cuts in coming years. (Paragraph 183)

16. The farming industry must accept that it is unlikely to receive any logistical support from the Government and that if it wishes to press ahead with its application for a badger culling licence, it must be able to prove that it is logistically able to co-ordinate a cull and sustain it. (Paragraph 184)
17. For people to be confident that a cull would be carried out in a humane way, any licensed cull must be supervised, regulated and monitored by Defra, or by Defra-approved regulators. Public opinion and the concerns of badger welfare groups should be considered by Defra when drawing up a framework for the licensing of badger culling. However, it is also important that holders of badger licences who are fully compliant with the licence conditions should not be subject to harassment or intimidation from those who oppose badger culling. Advice on security matters must form part of Defra's responsibility to supervise and monitor licensed culls. (Paragraph 185)
18. Were such a cull to take place, efforts should be made to ensure maximum capture of data for further research into the disease and to monitor whether the overall effects are beneficial. We recommend that the effects of any cull on both cattle and badger populations are properly monitored by Defra for this purpose and that in due course the results should be published. (Paragraph 186)

## Vaccines

19. We are still of the opinion that research into viable vaccines for use on badgers and on cattle remains an important weapon in the battle to control the disease, and the best hope for a widely applicable, long-term solution to the problem of cattle TB. We have been provided with a timeline that shows us that an injectable BCG vaccine for badgers could be available by 2009, but there is no evidence that the Government has a plan for how it is going to use either badger or cattle vaccines once they are available. The Government must make the development of its vaccine strategy a priority in order to guide the scientists involved in the development of both vaccines. We note the Minister's confirmation that research into vaccines for cattle TB will continue to be funded for the foreseeable future, but we believe that there is a case for further funding for vaccine research on an invest to save basis. (Paragraph 189)

## Compensation paid for slaughtered animals

20. Defra must review the current table valuation system for compensation of cattle, and other farmed animals, slaughtered owing to cattle TB. It is unfair to farmers of pedigree animals. Compulsory slaughter is a measure to protect the wider industry and society as a whole and it is inequitable for those unfortunate enough to be hit by the disease effectively to subsidise others by receiving artificially low values for their animals. If Defra wishes to explore sharing the costs of animal disease with the farming industry it should be prepared to pay a fair price for cattle which are compulsorily slaughtered. The likely increase in the costs of compensation following this necessary adjustment, together with the rise in costs that are likely to occur if a more rigorous testing regime is adopted, must be factored into Defra's future funding for cattle TB. (Paragraph 191)

## Conclusion

21. The Government must show its commitment to finding a way to ease the grip that cattle TB has upon the country. To do this, its policy must be to reverse in the short term the rising level of incidence of the disease with a long term goal of eradication through the use of vaccines. (Paragraph 192)
22. The Government must continue to fund research into vaccines and the efficacy of biosecurity measures. It must also continue not only to fund the routine testing of cattle, but must examine carefully the benefits of increasing the frequency of testing and the introduction of the parallel use of gamma interferon testing alongside the tuberculin skin test. (Paragraph 193)
23. More frequent and thorough testing will lead in the short term to an increase in the number of cattle reactors that are found and slaughtered. (Paragraph 194)
24. The Government must re-consider the levels of compensation currently paid to farmers and must ensure that it does not shirk its responsibility to pay farmers a fair price for their cattle. (Paragraph 195)
25. The Government cannot countenance the reduction of its spending on the disease at this stage given the advice from the ISG that current cattle controls are not stringent enough. Defra must ensure that a cost benefit analysis (including farmers' costs and benefits) is prepared of the cattle-based measures recommended by the ISG and its agencies to ensure that it is able to plan for the proper levels of expenditure needed to fulfil its cattle TB policy. (Paragraph 196)
26. To match the Government's commitment to fight the disease, it is right that farmers may be asked to increase their own spending on pre- and post-movement testing and on-farm biosecurity measures. We acknowledge that this could mean an additional financial burden for farmers, as well as an unwelcome increase in the time and effort already spent by farmers and vets on the administrative burden demanded by the testing regime. The farming industry is already suffering from the financial and emotional consequences of the steady increase in the number of cattle TB breakdowns, but it must work together with the Government, veterinarians and scientists to monitor the outcome of measures taken to tackle the disease if we are to plug the fundamental gaps in our understanding of how cattle TB is transmitted. (Paragraph 197)
27. We have recommended that the culling of badgers in high risk areas should in principle be licensed under the Protection of Badgers Act to counter the spread of cattle TB provided that the licensee is able to fulfil conditions based on the findings of the ISG Report. The Government must provide a practical framework of guidelines for Natural England as the licensing authority. The farming industry must accept that the Government is unlikely to fund the culling of badgers as a method of tackling the wildlife reservoir. Whilst the farming industry is likely to have to bear the costs of any cull if it chooses to go down that road, farmers must also accept that culling, in accordance with the conditions agreed between the ISG and Sir David King, cannot become the cornerstone of a Government TB policy as it would not be suitable as a control method in all areas. Other cattle-based measures, including

vaccines, must be employed and that is where the focus of the Government's spending should be in future. (Paragraph 198)

## Annex – Cattle TB in Northern Ireland and the Republic of Ireland

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Cattle TB is a significant problem in the island of Ireland, where there are extremely few disease-free areas. However the incidence of TB in Northern Ireland has shown a steady decrease in recent years. In 2002 the annual TB herd incidence was 9.93% and in 2006 the annual TB herd incidence was 6.23%.<sup>241</sup>

The Northern Ireland TB Control Programme includes the annual testing of all animals (with restrictions imposed on herds of farmers that do not comply) and the removal of reactors within 15 days. The cornerstone of the TB strategy is the Animal Public Health Information Service (APHIS) which provides a real-time computerised cattle tracing system for Northern Ireland and is accessible by vets, farmers and government officials. Every animal is registered on the system with a unique number. The results of TB herd tests, post mortems and all cattle movements are recorded on the system, and can be viewed online. Farmers are able to use APHIS to give advance notice of the movement of animals to market or abattoir.

The Programme does not address the issue of the wildlife reservoir, but the Badger Stakeholder Group, led by the Department of Agriculture and Rural Development, with membership from the farming community, environmentalists, veterinarians, and academia, has recently commissioned a badger population survey to establish data on badger numbers and their local distribution. The survey will report in May 2008.<sup>242</sup>

The Republic of Ireland also has a system of annual testing of the national herd, with primary responsibility for arranging testing, negotiating terms and paying for certain tests assigned to farmers. Great emphasis is placed on the importance of research into the development of a vaccine.<sup>243</sup>

The Republic of Ireland has also implemented a badger removal programme to tackle TB in wildlife, based on the results of two research projects (the east-Offaly project and the four-area study) which had indicated a link between tuberculous badgers and the incidence of TB in cattle and which had suggested that badger removal resulted in a decline in the incidence of cattle TB in herds in the removal areas. Badgers are captured under licence, provided that the Veterinary Inspectorate (of the Department of Environment, Heritage and Local Government) has found that badgers were the likely source of infection in a serious outbreak in a cattle herd.

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241 Department of Agriculture and Rural Development Quarterly Disease Report, *Bovine brucellosis (BR)*, *bovine tuberculosis (TB)* and *bovine spongiform encephalopathy (BSE)*, Quarterly Update: April–June 2007

242 <http://www.northernireland.gov.uk/news/news-dard/news-dard-151007-badger-population-survey.htm>

243 [http://www.agriculture.gov.ie/publicat/publications2007/ARO/ARO\\_English.pdf](http://www.agriculture.gov.ie/publicat/publications2007/ARO/ARO_English.pdf)

## Formal Minutes

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**Wednesday 6 February 2008**

Members present:

Mr Michael Jack, in the Chair

Mr Geoffrey Cox	Mr Dan Rogerson
Mr David Drew	Sir Peter Soulsby
Mr James Gray	Dr Gavin Strang
Patrick Hall	David Taylor
Lynne Jones	Paddy Tipping
David Lepper	Mr Roger Williams
Miss Anne McIntosh	

Draft Report (*Badgers and cattle TB: the final report of the Independent Scientific Group on Cattle TB*), proposed by the Chairman, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 198 read and agreed to.

Annex agreed to.

*Resolved*, That the Report be the Fourth Report of the Committee to the House.

*Ordered*, That the Chairman make the Report to the House.

*Ordered*, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No.134.

Written evidence was ordered to be reported to the House for printing with the Report.

Several papers were ordered to be reported to the House for placing in the Library and Parliamentary Archives.

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[Adjourned till Monday 18 February at 4.15 p.m.]

## Witnesses

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<b>Monday 18 June 2007</b>	
<b>Professor John Bourne CBE</b> , Chairman, <b>Professor Christl Donnelly</b> , Deputy Chairman, <b>Professor John McInerney OBE</b> , Member and <b>Professor Rosie Woodroffe</b> , Member, Independent Scientific Group on Cattle TB	Ev 1
<b>Wednesday 20 June 2007</b>	
<b>Dr Richard Yarnell</b> , Chief Executive and <b>Mr Trevor Lawson</b> , Media Adviser, Badger Trust and <b>Mr Colin Booty</b> , Senior Scientific Officer (Wildlife) and <b>Ms Claire Robinson</b> , Government Relations Manager, Royal Society for the Prevention of Cruelty to Animals (RSPCA)	Ev 18
<b>Mr Meurig Raymond</b> , Deputy President, <b>Mr Jan Rowe</b> , Bovine TB Spokesman, <b>Mr Martin Haworth</b> , Director of Policy and <b>Ms Catherine McLaughlin</b> , Animal Health and Welfare Adviser, National Farmers' Union and <b>Professor Rosie Woodroffe</b> , Member, Independent Scientific Group on Cattle TB	Ev 29
<b>Monday 15 October 2007</b>	
<b>Professor Douglas Young</b> , Imperial College, London, Chair of the TB Vaccine Programme Advisory Group and <b>Professor Glyn Hewinson</b> , Head of the TB Research Group, Veterinary Laboratories Agency, Weybridge	Ev 64
<b>Wednesday 24 October 2007</b>	
<b>Professor John Bourne CBE</b> , former Chairman, <b>Professor Christl Donnelly</b> , former Deputy Chairman and <b>Professor Rosie Woodroffe</b> , former member, Independent Scientific Group on Cattle TB	Ev 75
<b>Sir David King</b> , ScD, FRS, Government Chief Scientific Adviser and Head of the Government Office for Science and <b>Professor Mark Woolhouse</b> , Epidemiologist, Centre for Tropical Veterinary Medicine, University of Edinburgh, Member of the Group of Experts	Ev 81
<b>Professor John Bourne CBE</b> , former Chairman, <b>Professor Christl Donnelly</b> , former Deputy Chairman and <b>Professor Rosie Woodroffe</b> , former member, Independent Scientific Group on Cattle TB	Ev 93
<b>Monday 26 November 2007</b>	
<b>Dr Gareth Enticott</b> , School of City and Regional Planning, Cardiff University, <b>Dr Chris Cheeseman</b> , Badger Ecologist and <b>Dr Robbie McDonald</b> , Head of Wildlife Disease Ecology, Centre Science Laboratory	Ev 122
<b>Professor John McInerney OBE</b> , former member of the Independent Scientific Group on Cattle TB, and <b>Dr Chris Cheeseman</b> , Badger Ecologist	Ev 132
<b>Monday 10 December 2007</b>	
<b>Rt Hon Lord Rooker</b> , Minister for Sustainable Food, Farming and Animal Health, Department for Environment, Food and Rural Affairs	Ev 138

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Department of Environment, Food and Rural Affairs	Ev 168
Former Independent Scientific Group on Cattle TB	Evs 101, 117
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