



Department  
for Environment  
Food & Rural Affairs

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## **Defra bovine TB citizen dialogue**

### **Online engagement report**

**April 2014**

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## Executive summary

This report summarises views of recruited members of the public on Defra's draft Strategy for achieving Officially Bovine Tuberculosis-Free (OTF) status for England, captured through an online engagement process<sup>1</sup>. In July 2013, Defra published its draft Strategy for achieving OTF status for England. The stated aim of the Strategy is to eradicate bovine TB (bTB), achieving OTF status for England incrementally, whilst maintaining a sustainable livestock industry. The Strategy is intended to counter the rising trend of bTB incidence in certain areas of England using a comprehensive, staged and risk-based approach. Although the risks of bTB to public health today are low, the disease continues to have economic, environmental and social implications.

## About the dialogue

In June 2013, the OPM Group (Office for Public Management and Dialogue by Design) was commissioned by the Department for Environment, Food and Rural Affairs (Defra), with part-funding and support from Sciencewise, to conduct a citizen dialogue project on the future strategic direction of bovine TB. This dialogue aimed to engage a broad range of stakeholders and publics in the debate about bovine TB control measures and the future bovine TB eradication strategy, and consisted of three strands: stakeholder workshops, reconvened public workshops, and online public engagement.

The online engagement took place 28 November - 9 December 2013 with 65 recruited members of the public. It was designed to complement the reconvened public workshops, broadly mirroring the workshop process and using similar materials. The research was carried out using Vizzata, an online research tool which encourages participants to engage with content (text, images or video), ask questions and provide comments on what they are viewing, and receive answers and responses from experts. The purpose of the approach was to understand how participants responded to and challenged content and materials outside of a group discussion and to check and validate the findings from the public workshops through the use of a different engagement method with similar information and materials. A further objective was to trial Vizzata as an online deliberative tool.

This dialogue uses a qualitative approach aimed primarily at attaining an understanding of attitudes and opinions and why people hold them. It focuses on participants' insights, attitudes and concerns and how these change over the course of the process, in response to information and deliberation. Qualitative approaches are not about identifying the prevalence or distribution of a phenomenon, or making claims about the whole population from researching a sample.

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<sup>1</sup> Companion reports to this one include the Stakeholder Workshops Report which presents the findings from work on the same topics, but with stakeholder participants, the Public Workshops Report which presents the findings workshops with three different sets of public participants, and a higher level combined report, which draws out the findings from all three strands of the dialogue.

## Control measures

1. There was general acceptance that bTB should be tackled for environmental, financial or socioeconomic reasons, but mixed views arose on what the appropriate emphasis of the Strategy should be.
2. There was support for encouraging farmers to adopt on-farm biosecurity measures, although views varied on whether incentives or penalties should be used.
3. Increasing the frequency of cattle testing was seen as an obvious way to stem the spread of bTB by detecting infection as early as possible.
4. Where participants specified a measure they opposed, it was often in reference to badger culling, which some described as inhumane, while others questioned the evidence supporting its efficacy. A few disliked the notion of badger culling but said they understood the need for it or that it should only be carried out for a short period of time until bTB incidence had decreased sufficiently.
5. There was support for badger vaccination, often instead of culling, although several participants acknowledged the practical difficulties of deploying the vaccine.
6. Disappointment was expressed regarding the timescale required to develop and implement cattle vaccination, with some suggesting that more is invested in research and development of such a vaccine.

## Roles, responsibilities and costs

1. Participants' views on the role and responsibilities of farmers were mixed. Some noted the economic and emotional impact on farmers who experience bTB breakdowns and identified a need to support farmers practically and financially, while others favoured increased regulation and compulsory measures to motivate farmers to improve their biosecurity practices.
2. The government was generally considered to be suited to a leadership role, given the need for monitoring and compliance of the overall bTB control programme.
3. Whilst some felt that the government should provide greater support to farmers, others believed that the government was acting only in interest of the farming industry and not of the public, wildlife or other stakeholders. This was mentioned specifically in reference to the decision of government to go ahead with the pilot culls.
4. A few participants identified the need for a joined-up approach to dealing with bTB, and that without partnership working the Strategy would not be successful.

## Utility of the method

1. Because participants in the online engagement contributed in isolation and did not interact with each other, the online method provided valuable insight into public participants' views on bTB and its controls outside of a group setting.
2. Participants in the online engagement did not have the opportunity to build upon, or challenge, the views of others. The dataset produced was therefore not as rich or comprehensive as that arising from the public workshops discussions and participants tended to focus on aspects of the content that prompted a reaction from them individually.
3. The online method cannot be described as enabling dialogue, which necessitates the cross-fertilisation of ideas, opinions and attitudes amongst a group of people, but it did provide participants with the time and information needed to enable them to deliberate on the topics being addressed and to call for the additional information they need to allow them to deliberate more fully.

## Participant journey

1. Overall, participants gained an increased awareness of the complexity of the situation as they advanced further into the study, as well as a more in-depth appreciation of the context for specific control measures such as vaccination.
2. There were some shifts in perception occurring as participants progressed through the process, for example in relation to specific control measures, roles and responsibilities, and impacts (particularly on farmers), but the diversity and range of direction of these shifts makes it difficult to characterise these shifts in perception as a whole.

# Chapter 1 Introduction

## Background

### Bovine TB in England

Across Europe, many countries have been declared bovine TB (bTB) free. However, the UK continues to face significant challenges in eradicating the disease. The incidence of bTB in UK cattle has been growing since the 1980s, with outbreaks clustered in hot spots in the South-West and West of England and in Wales<sup>2</sup>.

Although the risks of bTB to public health today are low, the disease continues to have economic, environmental and social implications. In 2012, measures to control the disease resulted in the testing of 5.8 million cattle and the slaughter of 28,000 animals at a cost of £100 million to the UK taxpayer. BTB poses a risk to the beef, dairy and live export trade and the Government continues to face international pressure to comply with EU regulations and progress towards eradication.

### Defra's draft Strategy for eradicating bovine TB in England

In July 2013, Defra published its draft Strategy for achieving 'Officially Bovine Tuberculosis-Free' (OTF) status for England. The stated aim of the Strategy is "to eradicate bTB, achieving OTF Status for England incrementally, whilst maintaining a sustainable livestock industry". The Strategy sets out how the aim will be achieved through greater partnership working, increasingly industry-led implementation and fair sharing of the associated costs.

An online public [consultation](#) was run from 4 July to 26 September 2013 to seek views on Defra's draft Strategy document.

### The pilot badger culls

In December 2011, Defra announced that badger culling would be carried out as part of a policy of badger control. Pilot badger culls began in Gloucestershire and Somerset in August/September 2013. Licences issued by Natural England allowed trained operators, employed by farmer-led companies, to carry out controlled shooting of free-ranging badgers, with the costs being borne by farmers and landowners. The decision on a wider roll out of controlled shooting as a culling method will follow a report delivered by the Independent Expert Panel on its effectiveness, humaneness and safety.

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<sup>2</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69443/pb13601-bovinetb-eradication-programme-110719.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69443/pb13601-bovinetb-eradication-programme-110719.pdf)



Badger cull policy was covered extensively in the mainstream media and political debate with vocal opposition from sections of the scientific community, campaign groups and a public e-petition gathering over 300,000 signatures<sup>3</sup>. Both the proponents of the badger cull policy and its opponents claim scientific foundations for their argument and both sides have interpreted the results of the Randomised Badger Culling Trial (RBCT) in their favour. The debate around the badger cull was therefore a focus for participants and was raised in every phase of the dialogue. However, the focus of this project was on the raft of measures outlined in the draft Strategy for the eradication of bTB, in which badger control measures – including culling – are only one element.

## About the wide dialogue project

The online engagement, which is the subject of this report, was part of a wider citizen dialogue project on the future strategic direction of bTB. The dialogue, commissioned by Defra and part-funded by Sciencewise-ERC<sup>4</sup>, aimed to engage a broad range of publics<sup>5</sup> in the debate about bTB control measures and the future bTB eradication strategy. Those involved included people directly affected by bTB, such as farmers, vets and members of environmental and wildlife groups, to people whose stake lies in their role as citizens and taxpayers.

The dialogue consisted of three strands:

1. Ten stakeholder workshops
2. Three sets of reconvened public dialogue workshops
3. Online public engagement.

This dialogue project built upon the ‘Call for views on strengthening our TB eradication programme and new ways of working’, carried out in Autumn 2012 on behalf of the Animal Health and Welfare Board for England.

The overall objectives for the citizen dialogue project were:

- To engage the general public and stakeholders in understanding, deliberating on and contributing to the future strategic development of England’s bTB policy and strategy.

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<sup>3</sup> <http://epetitions.direct.gov.uk/petitions/38257>

<sup>4</sup> The Sciencewise Expert Resource Centre (Sciencewise-ERC) is funded by the Department for Business, Innovation and Skills (BIS). Sciencewise-ERC aims to improve policy making involving science and technology across Government by increasing the effectiveness with which public dialogue is used, and encouraging its wider use where appropriate to ensure public views are considered as part of the evidence base. It provides a wide range of information, advice, guidance and support services aimed at policy makers and all the different stakeholders involved in science and technology policy making, including the public. The Sciencewise-ERC also provides co-funding to Government departments and agencies to develop and commission public dialogue activities. [www.sciencewise-erc.org.uk](http://www.sciencewise-erc.org.uk)

<sup>5</sup> The term ‘publics’ is used to emphasise the diversity of those participating in dialogue and to avoid the suggestion that there is a unified ‘Public’. A useful starting point for exploring the distinction between ‘publics’ and ‘Public’ further can be found at the National Coordinating Centre for Public Engagement, <http://www.publicengagement.ac.uk/what/who-are-the-public>

- To inform Defra's development of a comprehensive bTB eradication strategy.
- To develop and appraise opportunities to build a trust relationship between the general public, stakeholders, and government in developing policy options for animal disease control.

## About the online engagement

The online engagement strand of the citizen dialogue work took place from 28 November - 9 December 2013. This strand was conducted to complement the reconvened workshops process, using materials similar to those used in the workshops and broadly mirroring the workshops process.

The specific objectives for the online engagement were:

- To enable members of the public to deliberate in detail on the measures needed to achieve OTF status for England, including current and potential future measures.
- To understand public views and perspectives on bovine TB, the measures proposed in the draft Strategy, and the social impacts of the proposed measures.
- To enable participants to give input on how the strategy should evolve.
- To enable policy-makers to increase their understanding of public attitudes towards the measures proposed to eradicate bovine TB, and on animal disease control more generally.
- To triangulate the results from the public dialogue workshops
- To trial an online questionnaire tool with deliberative elements

## Recruitment

Members of the public were purposively recruited against a quota to ensure a spread of gender, ethnicity, age, socioeconomic grouping, and employment. Alongside these demographic variables we screened participants for a spread of appropriate attitudinal characteristics and from a range of postcodes (see [Appendix 2](#)), to achieve a diversity of initial views and perspectives. The recruitment specification mirrored that used for the public workshops strand, with the exception that participants were recruited from across England rather than from three discrete local areas.

Eighty members of the public were recruited and 65 of these participated in both rounds of the engagement.

## Methodology

The online engagement was delivered using Vizzata, an online research tool which allows participants to engage with content, ask questions and comment on this content, and receive responses to their questions and comments before participating in a second round of engagement. An online tour of the Vizzata tool can be found here:

<http://www.vizzata.com/tour.html>

The approach was piloted before going live and amendments were made to the questions and content in response to comments and suggestions made by participants in the pilot.

A summary of the process is described below. Please see [Appendix 1](#) for the online engagement content.

In the first stage, participants engaged with the content of the project. This content was presented in the form of text, tables, images and the two films used in the public dialogue workshops. Participants were asked specific questions in relation to this content.

Throughout the first part of the study participants could also submit comments and questions at any point. These comments were analysed and responded to, with responses sent out individually by email, through the online Vizzata tool.

The process for doing this was as follows:

1. All comments and questions received from participants were grouped into themes
2. A response to each theme was drafted using official online sources and input from Defra
3. Two external experts (Prof James Wood, Dr Gareth Enticott) peer reviewed the draft responses and added additional detail or interpretation of the evidence
4. The final response document was used as the resource for responding to individual questions and comments via the online tool.

Participants only received answers to their own questions, not those of others. However, a summary of responses was shown to all participants as part of the second stage of the online engagement. This summary responded to the questions posed by participants at the end of the first stage, when they were prompted to state what else they would need to know to give recommendations for the Strategy. Please see [Appendix 3](#) for a summary of responses provided.

In the second round of engagement participants were asked for their views on the responses they had received, their recommendations for the Strategy and to complete some evaluation questions.

## About this report

This report describes the findings from the two rounds of the online engagement strand. Comments have been synthesised, analysed and reported on by theme. Where possible, any strong reactions or changes in perspectives to particular materials viewed by participants throughout the process have also been captured. We should note that comments from participants are in some cases open to interpretation. Where this is the case, we have indicated that no further clarification of a comment was provided, rather than attempting to second guess the precise intent behind a comment.

This report follows an analysis of participant comments to the 17 questions (one closed question, 16 open questions) asked across the two stages of the online engagement process.

Given the number of open questions asked during the two stages of engagement, and the recurrence of issues, questions and concerns raised by participants as they learnt more and developed their own opinions, we have structured this report by theme rather than by question. Although this allows us to draw together comments on each main aspect of the Strategy from across the questions, it limits our ability to specify exactly how many participants put forward any particular viewpoint.

Quotes have been used throughout the report to illustrate particular viewpoints. The participant's ID number – assigned to each user as they registered for the study - has been included alongside each quote<sup>6</sup>.

This strand of the project uses a qualitative approach and, as such, is not about identifying the prevalence or distribution of a phenomenon, or making claims about the whole population from researching this particular sample (as in quantitative research). Qualitative research is primarily about attaining a better understanding of attitudes and opinions and why people hold them. To give the reader some broad sense of the extent to which views were or were not shared we have used the terms 'some', 'few' and 'many'. However, these terms do not express clearly defined quantities or proportions.

This report sits alongside reports on both the public dialogue and stakeholder workshop strands of this project: we recommend that the three are read in conjunction. An overall report on the combined findings from the project as a whole will also be available.

The remainder of the report is structured as follows:

- [Chapter 2](#) provides a brief overview of views on the rationale for Defra's draft Strategy.
- [Chapter 3](#) describes views on the bTB control measures, including testing, vaccination, culling and on-farm biosecurity.

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<sup>6</sup> Although only 65 participants completed the two stages of the study, ID numbers range from 25 to 101 as ID numbers were also assigned to test users, pilot stage participants and those recruited members of the public who logged in but did not complete the study.

- [Chapter 4](#) draws together participant comments on the roles and responsibilities for bovine TB, as well as the costs associated with bTB and its controls.
- [Chapter 5](#) reflects on the utility of the online engagement method as a way of engaging members of the public with policy issues.
- [Chapter 6](#) describes the participant journey through the process and relates the main findings from this report to the objectives for the dialogue.

## Chapter 2 Rationale for the bTB Strategy

There was general agreement that bTB needs to be reduced. Support for the Strategy's overall aim was driven by a range of factors, including the impact on the country's economy, the need to protect the farming industry, the risk to human health, and the risk to other animals including wildlife.

Some participants were concerned about the potential risk of bTB to humans. One worry was that individuals might contract the disease directly from infected animals. Another was that products from infected animals might enter the food chain and present a risk to public health.

*"It really got me thinking about the risks associated with the potential of the disease spreading from cattle to humans. It also got me thinking that if the routine tests on the cattle fail to identify bovine tuberculosis it might pose a risk to consumers." (ID 55)*

A few respondents said that the 'perspectives' film<sup>7</sup> had shown the problem to be more complex than they had first thought, or that the film had shown the human and economic costs to farmers more clearly.

*"We need to protect livestock before it gets out of hand." (ID 81)*

Others said they had not been aware bTB could affect animals other than cattle, and asked about the level of risk to other animals.

*"I was unaware of the affects bovine TB has to animals other than cattle." (ID 35)*

Participants expressed surprise at how much money was spent each year on managing bTB and queried the financial impact of not addressing bTB. Some supported investment in bTB control in order to maintain foreign trade and gross domestic product, and there was a question about the financial impact of not exporting cattle products to the EU and other countries.

Early in the process, a few participants questioned whether the overall rationale for Defra's Strategy was justified, and what the problem would be if the current situation continued.

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<sup>7</sup> Following the animation, and a series of information and questions regarding proposed control measures, participants watched a film featuring views from four different people (farmer, vet, Wildlife Trust, RSPCA). Each person featured on the film gave their views on the main issues and impacts of bTB, what should be done to control it and who should be responsible for controlling it. Participants were then asked for their immediate responses, and whether the film had any impact on their previous views about bTB policy and control.

# Chapter 3 Bovine TB control measures

## Introduction

In stage one of the online engagement process, following the opening animation, participants were shown two pages of information summarising the current and proposed control measures for bTB in England.<sup>8</sup>

Participants were asked for their response to the range of proposed measures to control bTB, as well as any aspects that they particularly liked or disliked. The findings are set out below under the following headings:

1. On-farm biosecurity measures
2. Incentives and compensation
3. Cattle testing and movement
4. Badger culling
5. Badger vaccination and testing
6. Alternative badger population controls

## Overview

Overall, participants' responses suggest that they see the control measures as sensible and comprehensive. Measures that they felt would be particularly effective included the use of incentives and compensation; regular testing of cattle; reducing compensation for farmers implementing adequate on-farm biosecurity measures, and the use of measures to limit badgers' access to farms; vaccinating cattle and vaccinating badgers.

Some participants said that they disliked all, or did not like any, of the proposed control measures, or commented that they were not sufficient or would not work. Specific comments were focused on objections to badger culling, with these objections being based on a range of arguments. Some participants felt that there was insufficient evidence of badgers' role in spreading bTB. Others said that culling was inhumane or not justified due to a perceived lack of evidence, or that they specifically disliked the cage-trapping and shooting method – one of the two methods used during the pilot cull.

Participants asked for an overall comparison of different measures, in terms of cost, likely success and relative contribution to the overall Strategy. A few suggested that the cheaper

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<sup>8</sup> See Appendix 1 for this information.

options were receiving priority. Others wanted the Strategy to be less reactive, suggesting that the focus should be on finding a cure rather than on control and prevention.

*“I feel that those measures deemed cheap are given priority over those that cost more to administer.” (Participant ID 64)*

*“I don't like that it comes across as just waiting around for a cow to get infected and then slaughtering it.” (Participant ID 40)*

## **On-farm biosecurity measures**

Participants expressed general support for on-farm biosecurity measures aimed at limiting badgers' access to farms, with a small number of participants adding these measures should be compulsory.

Participants suggested using fencing to segregate grazing areas from badger setts. However, the difficulty and cost of putting up fences was acknowledged, and participants felt that some farmers would need to be convinced about the role of badgers in spreading bTB before they would be motivated to put up fences.

*“Keeping badgers away from cattle rather than killing them.” (Participant ID 70)*

*“I was concerned that the government was not making it compulsory for farmers to do more to control badgers and other animals entering the cattle farm.” (Participant ID 35)*

*“No explanation of how farmers are expected to keep badgers away from their herds. I can't even keep them out of my garden.” (Participant ID 37)*

## **Incentives and compensation**

Participants' views on compensation for farmers were mixed: some were not aware that compensation was paid at all; some felt compensation was fair or could be used as a way of encouraging good biosecurity practice; others felt that compensation payouts contributed to a lack of motivation amongst farmers to improve biosecurity behaviour.

Participants more favourable towards compensation tended to caveat their support, suggesting that payment should be contingent upon farmers taking all necessary measures to reduce their risk of bTB. Some said that the level of compensation is broadly fair, whilst others felt that it is not sufficient, in particular for high value cattle (taking breeding potential into account), or for dairy cattle. These comments were often accompanied by concern at the idea of compensation levels being reduced.

*“If the farmer is doing all they can to control the spread of bTB then surely they should be fairly and more richly compensated for any financial losses.” (Participant ID 42)*



*“Surprise at the compensation, which is probably adequate in many cases but not enough for prize specimens.” (Participant ID 52)*

Other participants were less supportive of compensation. Reasons for this included the argument that it provided an “*eternal safety net*” for farmers, which some were concerned would reduce their inclination to improve biosecurity behaviour. Some asked why insurance schemes are not used instead of paying compensation.

*“Why does the government pay compensation? In any other industry, the person concerned would take out insurance to protect against risks. Why can't farmers do the same?” (Participant ID 72)*

*“Why is compensation paid rather than an insurance based scheme being in place?” (Participant ID 30)*

Some participants commented specifically on incentive payments to farmers implementing good biosecurity measures. Most supported using incentives in this way, suggesting that the level of compensation, incentive or sanction through a fine should be relative to the biosecurity measures put in place by the farmer, with stronger recognition of good or poor practice.

*“I like the idea of rewarding farmers who actively try to reduce chances of infection by badger proofing as much as possible their farms.” (Participant ID 93)*

*“I think it is a good idea to reduce compensation if farmers aren't doing enough to keep TB out of farms.” (Participant ID 101)*

## **Cattle testing and movement**

Participants saw the necessity of an effective cattle surveillance programme and called for increased frequency and greater accuracy of the current cattle testing measures. This emphasis on early detection was mainly driven by a concern about infected meat entering the food chain.

Respondents supported an increased frequency of routine tests through, for example, increased pre-movement testing, testing young calves, and reducing the amount of time between regular tests. Respondents queried current testing periods, suggesting the introduction of shorter testing periods, such as every two years, or every four months for high risk and one year for low risk areas.

*“I like the idea of testing cattle before moving them.” (Participant ID 57)*

*“Annually & 4 yearly appears to be a long period for testing.” (Participant ID 30)*

*“They do not go far enough - why are tests not carried out more often to stem the spread of the disease? Also, surely every cow should be tested regardless of age?” (Participant ID 98)*

Some raised concerns about the accuracy of current tests and the extent to which it allowed infected cattle to remain undetected. These concerns arose from surprise about the number of cases identified through slaughterhouse surveillance which were not picked up during herd testing. Some raised concerns that bTB could enter the food chain if inspectors did not detect it. Respondents wondered whether current surveillance measures relied too much on human judgement and experience - either of the vets carrying out skin tests or of the slaughterhouse inspectors - although there were others who felt reassured by the fact that vets carry out the tests.

There was some surprise about the number of cattle slaughtered due to bTB. Some participants expressed explicit support for the slaughter of infected animals. Others said they were worried about the misdiagnosis and slaughter of healthy animals, or that they disliked the slaughter of animals more generally.

*"I was shocked to discover that perfectly healthy animals are sometimes slaughtered if they test positive for BV (sic) when they are actually not." (Participant ID 89)*

Very few participants commented on the movement of cattle. Aside from queries over the contribution of cattle movements to the spread of bTB, those who did remark on this issue suggested a quarantine area or separate pen for recently moved cattle, and raised concerns about the lack of movement in cattle as a result of bTB control measures.

## Badger culling

There were a range of views on badger culling. Some participants expressed outright opposition, others questioned the evidence or felt that greater emphasis should be placed on alternative measures, whilst others expressed qualified acceptance.

Some participants expressed opposition, discomfort or dislike of badger culling, particularly after reading the 'Vaccination and wildlife controls' content tester (please see [Appendix 1](#) for the information text). Some of these respondents expressed a general dislike of the practice, without providing any specific reason. Others said that culling was inhumane or not justified. For some participants, these views were reinforced by information received throughout the study.

*"Don't like the idea of a general cull of badgers, even if it worked." (Participant ID 49)*

*"I disagree completely with the badger cull, in particular the methods that are currently being used." (Participant ID 89)*

*"I am actually more convinced than ever that culling badgers is not the solution." (Participant ID 39)*

*"Too much effort being given to the badger aspect and not enough to monitoring and treating cattle herds." (Participant ID 43)*

Some held the view that there was insufficient evidence that culling would be effective. Respondents referred to the pilot culls, questioning their effectiveness, or commenting that evidence of the effectiveness of culling would need to be provided before culling was extended beyond the pilots. Others saw badgers as a small part of the problem and challenged the strength of evidence behind the role of badgers in bTB transmission.

*“I heard that the badger cull has not gone well, and less badgers were killed than needed to be, this is also very cruel and badgers can be left injured or cubs can be left to starve to death.” (Participant ID 57)*

*“There are a number of issues relating to the spread of the disease, not just badgers, although this is the cause most publicised in press etc - I feel this has been used to justify the badger cull.” (Participant ID 64)*

*“Very vague in why it’s necessary to cull badgers when they do not know how they pass it on to cattle.” (Participant ID 46)*

Some participants, although expressing dislike for badger culling, stated caveated acceptance of badger culling. A few respondents said that they understood why it was necessary. Others said they would accept it if it worked, or that it should be carried out until bTB rates dropped. A few others expressed acceptance of badger culling if it was in conjunction with other measures such as developing a badger vaccine or continued testing. One respondent said culling would be acceptable as long as there were no “side effects in the rural make up”. A few respondents said that information provided throughout the study had led them to realise that badger culling was necessary.

*“Not keen on the badger cull but understand it needs to be done.” (Participant ID 80)*

*“I like the fact that vaccinations have been tried but I also have nothing against culling as long as it works.” (Participant ID 73)*

*“It is evident that the badgers do represent a significant part in transmitting the disease. Regrettably therefore they must be culled. It is so important that the immediate cost is not important.” (Participant ID 84)*

Some also expressed surprise at the predicted cost reductions to the bTB programme following the roll-out of culling.

*“I was very surprised at the amount of reduction in compensation and testing costs for Government through culling.” (Participant ID 73)*

## **Badger vaccination and testing**

Badger vaccination received support from those who mentioned it, often explicitly in preference to culling. Some noted the potential difficulties of employing a badger vaccine, for example catching enough badgers or tracking vaccinated animals – a couple of these

respondents suggested preferable alternatives such as vaccinating cattle or preventing access of badgers to farms.

*“Vaccinating badgers is the only humane way forward.” (Participant ID 70)*

*“It seems like the sensible option would be to vaccinate the cows as they are in controlled fields and have historical paperwork rather than the badgers who are wild and hard to track.” (Participant ID 42)*

Two specific suggestions included microchipping badgers to identify those that have been vaccinated and estimate populations, and a programme of badger vaccination carried out in cooperation with charities such as the Wildlife Trusts.

*“Put more time into developing and deploying a vaccination programme for both badgers and cattle. In addition to this there should be a more organised way of identifying animals that have already been vaccinated to prevent confusion at a later date.” (Participant ID 96)*

*“It seems the only way to do this without culling is to start vaccinating the badgers.” (Participant ID 99)*

Very few participants commented on the testing of badgers for bTB. Those that did liked the idea of testing badgers, in one case specifically alongside vaccination of badgers.

## **Alternative badger population controls**

Very few participants commented on the measures involving badger breeding or contraception. Those that did tended to express support for contraception, in some cases alongside vaccination, or ask for more information about how contraception methods would be implemented. One respondent commented that controlling the badger population was important for promoting wider biodiversity as well as the control of bTB, but that this should be done using contraception not culling. Another queried whether there were populations of badgers with increased immunity that could be interbred.

*“Contraception is given as a possible tool/method for managing badger populations, but no detail on how such a plan could be implemented?” (Participant ID 97)*

## **Cattle vaccination**

A lot of participants mentioned cattle vaccination, with many expressing a preference for cattle vaccination as part of their final recommendations for the Strategy.

Participants expressed disappointment or surprise that a suitable vaccine was not ready for use, in some cases referencing the current EU legislation on this issue. One respondent referred to the vaccination of hens for salmonella, querying why the same approach could not be applied to bTB.

Participants noted the difficulty in differentiating between vaccinated and infected cattle, suggested tagging vaccinated cattle in order to identify them. Some expressed support for the development of a reliable test or similar mechanism for differentiating between vaccinated and infected cattle.

*“Develop an effective vaccine for cattle and a way of distinguishing vaccinated cattle from infected cattle.” (Participant ID 56)*

Others said that they would like to see more effort put into the deployment of an effective cattle vaccine as soon as possible, in a couple of cases suggesting that the UK should lead the way in the development of a vaccine within the EU.

*“It sounds a little hopeless, cattle can’t be vaccinated because there is no way to tell vaccinated cows apart from infected cows.” (Participant ID 91)*

*“More research is needed into finding an effective vaccination for cattle.” (Participant ID 30)*

*“However the EU would need to support the plan in terms of vaccination of cattle.” (Participant ID 35)*

*“The overall economic cost of bTB and the potential cost of control measures suggest that government might well invest in vaccine research. A better vaccine for cows, with rights owned by government, would help the UK and have a big potential market elsewhere.” (Participant ID 56)*

A few participants remarked that cattle vaccination alone would not be sufficient to eradicate bTB.

# Chapter 4 Roles, responsibilities and costs

## Introduction

Participants were not asked directly about roles and responsibilities or about the cost of implementing the bTB Strategy. However, many provided relevant comments and questions throughout the online engagement process. These included responses relating to the roles and responsibilities of farmers, government and regulators, as well as views about introducing greater partnership working and adopting a more joined-up approach to controlling bTB. Participants also commented on the costs of bovine TB overall, as well as to particular stakeholders such as farmers or the farming industry.

The findings in this chapter are set out under the following five headings:

1. Current bTB situation in England
2. Roles and responsibilities of government and regulators
3. Roles and responsibilities of farmers
4. Partnerships and a joined-up approach
5. Cost of bovine TB

## Overview

Participants questioned how the current bTB situation in England had come about and why England was in a worse situation than many other countries. There was also some concern that the Strategy was not moving fast enough.

Joint working across all parties was supported, although most participants agreed that government should take the lead on the management of bTB. There were mixed views on farmers' responsibility for the current bTB situation and the extent to which they should be supported to deal with bTB risks on their own farms.

Participants expressed surprise at the overall cost of the Strategy and had differing views over who should pay for it.

## Current bTB situation in England

Participants' commented on the current bTB situation in England and the management of the bTB control programme to date. There was some general dissatisfaction expressed, particularly in the first stage of the study, with the current bTB situation in England. Respondents asked why measures had taken so long to put in place, or commented that the Strategy was going in the right direction but not fast enough. A small number

commented specifically on the timeframe of the Strategy, asking why it would take 25 years or commenting that this seemed like a long time.

*“25 years seems like a long time.” (Participant ID 70)*

A few commented that the government and livestock industry showed ‘*entrenched thinking*’ (Participant ID 90) with regards to bTB control and that more innovative ideas were needed to tackle the disease. Others commented that there seemed to be no clear unified plan for how to proceed.

A number of participants asked about or pointed to the experience of bTB elsewhere in the world and suggested that this experience could prove useful for England’s aim of achieving bTB free status. Locations mentioned included Scotland, the EU and ‘overseas’ more generally. Some participants said they were surprised that countries such as Scotland were free of bTB or that England was the worst in Europe for bTB.

*“If it needs to be controlled is there something that we can learn from Scotland if they are bTB free” (Participant ID 77)*

*“Learn from other countries’ experiences.” (Participant ID 30)*

A few respondents queried whether England has a worse problem than other countries because of its history of dealing with bTB. Others asked more generally why bTB is a bigger problem in England now than it has been in the past or questioned why previous efforts to bring the disease under control in England have not prevented the spread.

*“Very surprised to find out we are the worst in Europe for bTB, and this makes me wonder if it is down to cost cutting and bad regulation in England.” (Participant ID 87)*

*“What was wrong with strategies in earlier years re spread of disease & why did they fail, when in other countries they presumably worked?” (Participant ID 27)*

## **Roles and responsibilities of government and regulators**

Respondents were supportive of government taking a lead or oversight role in the management of bTB, although there were a few concerns about whether government was prioritising the interests of the farming industry over those of the public and other stakeholders, as well as some concern about the government’s commitment to tackling bTB. There were some objections about the extent of the EU’s involvement in England’s bTB policies.

Participants suggested that government should take the lead or have overall responsibility, and that government should provide more support to farmers. Specific suggestions for what the government could do included working more closely with EU to find a suitable cattle vaccine, ensuring sufficient funding, imposing shorter testing periods and being more forceful with farmers not looking after their herds properly.

*“Overall it seems like there is a certain amount of passing the buck going on, I think the government really needs to take control of the situation, gather its troops (the Wildlife Trust and other animal welfare orgs) and aid the farmers in protecting their herd.” (Participant ID 42)*

The political context of badger culling was raised in some comments, with participants saying that the government is subservient to the farming industry and that political justification of the cull is not acceptable. Some disagreed with the badger cull policy as a *“half-hearted attempt to pacify farmers” (Participant ID 98)*.

*“It’s agriculture minister’s attempts to justify the current culling are a disgraceful display of ignorance and lies.” (Participant ID 90)*

A couple of respondents said that they were surprised or sceptical about the lack of political urgency surrounding bTB. Others queried the political appetite for investing resources in this area. There was also a perception of *“considerable foot dragging” (Participant ID 27)* on the issue of bTB in the UK and EU government.

*“Still sceptical about the strength of the political will to invest more in terms of time, investment and expertise in the problem.” (Participant ID 27)*

Some expressed surprise about the level of EU legislation relating to the control of bTB. Although some understood the need to work with the EU, others suggested that England might go it alone or should lead the way, particularly in the development of an effective cattle vaccine.

*“I would have expected the UK to lead the way in managing the spread of bovine tuberculosis in the EU.” (Participant ID 55)*

The need for the government to conduct ongoing monitoring of compliance with control measures at the farm was stressed by a small number of respondents.

## **Roles and responsibilities of farmers**

Most comments on the roles and responsibilities of farmers arose in discussions about compensation, incentives and on-farm biosecurity measures. Some respondents were sympathetic towards farmers and felt they should receive more support in order to deal with bTB, whilst others believed that farmers should take greater responsibility for reducing bTB risk on their farms, and that good biosecurity practice should be enforced through stricter regulation.

A few respondents noted the human impacts or financial difficulties faced by farmers dealing with bTB, especially after watching the ‘perspectives’ film. Some participants commented that farmers needed to be supported financially and practically in order to deal with this problem.



*“I relate much more to the farmer now. This video gave me a more human perspective on all of this.” (Participant ID 40)*

*“Have gained a little extra sympathy for the farmer whose role is undermined by current legislation and whose options for addressing the threat and finding ways to continue normal business activity seem greatly curtailed.” (Participant ID 97)*

*“It’s actually really interesting to get the farmers reaction. I had never thought about how difficult it must be for them to watch their herd, their livelihood get slaughtered before their eyes.” (Participant ID 42)*

*“Extremely worrying for farmers.” (Participant ID 84)*

However, others suggested that farmers put profit above animal welfare, or would only be motivated to put control measures in place if it meant they would be less profitable or would receive reduced compensation.

*“The farmers who appear on the media in tears when their diseased animals are sent for slaughter have no compassion when those same animals are killed for profit.” (Participant ID 90)*

Some participants thought farmers should have greater accountability. A number of participants said that they would like to see less emphasis on voluntary or reactive measures, and more emphasis on regulation, minimum requirements or proactive measures. Some of these respondents wanted to see compensation, fines or incentives linked to performance.

*“I am concerned about the standpoint where farmers can choose to reduce risk, it should be mandatory.” (Participant ID 91)*

## **Partnerships and a joined-up approach**

Participants’ specific suggestions on roles and responsibilities were focused primarily on the need for joint working or bringing all parties together to decide the way forward.

A small number of participants commented on the apparent lack of a clear and unified approach, with some stressing the need for a joint approach from all stakeholders, including government, farmers and wildlife organisations. Other comments included an observation that there had been some effort from farmers and government to control the spread of bTB, and that government cannot sort out bTB without farmers doing their bit.

*“That a measured but evolving approach needs to be taken with the full cooperation of Govt, the farming community and those with an interest in protecting wildlife such as badgers.” (Participant ID 79)*

*“Everyone involved got to pull together to eradicate this disease. Sentiments have to be put aside.” (Participant ID 41)*

Following the 'perspectives' film, a few participants observed that, although individual perspectives might differ, there appeared to be agreement on the need for action and a joined up approach.

*"All parties appear to agree that some sort of action needs to be taken." (Participant ID 30)*

*"Somewhat frustrating to gather such a range of conflicting perspectives though each party agreed on a joined up, strategic approach, which covers biosecurity, management of landscape/wildlife, movement of animals, updating Industry protocols, etc." (Participant ID 97)*

## Cost of bovine TB

Some participants expressed surprise at how much money was spent each year on managing bTB, or at the overall cost of the Strategy. There were concerns about the costs to specific groups such as farmers and taxpayers and differing views on how costs should be shared.

Participants commented on who should pay for new measures, with contrasting suggestions that government or industry should play a greater or the central role in funding. Some acknowledged that the cost to farmers is high or that farmers are already struggling financially, and therefore emphasised that farmers should not lose out as a result of any new requirements.

*"The one issue which the whole project is depending on is money. Money for research, money for an answer, money to implement and money to monitor the outcomes. This means the onus is on Government to commit to securing the money required to tackle this issue." (Participant ID 36)*

*"There is a lot of problem as usual to who to blame and who to foot the bill." (Participant ID 58)*

*"It is sad how the farmers are affected and all the cost." (Participant ID 45)*

A small number of respondents made comments about the cost of bTB controls to the taxpayer. Comments mainly related to concerns about costs to the taxpayer, although one participant commented that this is a taxpayer problem because we all eat meat and rely on agriculture to create wealth to fund other national priorities.

*"Cost to the taxpayer with rewards for farmers who choose to take some measures." (Participant ID 64)*

*"This is a taxpayer problem as we (nearly) all eat meat and rely on agriculture to create wealth which pays for NHS/education/police/defence etc." (Participant ID 27)*

Other issues relating to cost included the suggestion that immediate cost is not important given the urgency of the issue.

## Chapter 5 Reflections on utility of the method

One objective of the online engagement strand of this dialogue was to trial Vizzata - an online questionnaire tool with deliberative elements - as a way of engaging members of the public with policy issues.

Respondents viewed the content of the online engagement and questioned and commented on it as individuals. This provided us with some insight into people's attitudes towards and responses to the project materials and topics outside of a group context.

The questions and comments posed by participants during the first stage of the study were responded to individually: participants only received answers to their own questions, and not those of others. Although all participants viewed the same online content, this variance in the information received from the panel of experts meant that each participant went on their own unique journey, and that responses to questions in the second stage of the study were based on slightly different information bases.

As participants in this strand were contributing in isolation and not interacting with each other, there was no opportunity for them to build upon, or challenge, the views of others. This has two main implications: firstly, the lack of prompting from other participants means that not everyone comments on all aspects of the Strategy. Rather, they focus only those aspects of the content that prompt a reaction from them individually. Secondly, a lower level of consensus arises as participants are not able to build on or learn from each other's arguments. Whilst this means that fewer common themes emerge across the responses, it does provide valuable insight into what each participant finds surprising, what they like and dislike, and why.

In our view, the individuals participating in the online strand of the work were deliberating. The Oxford English Dictionary includes the following amongst its definitions of the verb 'deliberate': 'to weigh in the mind; to think carefully; to take time for consideration'. However, we do not think that this approach can be described as dialogic, as characterised by the Sciencewise Guiding Principles. Dialogue, we think, necessitates the cross-fertilisation of ideas, opinions and attitudes amongst a group of people and – for Sciencewise at least – requires some face-to-face interaction between participants and others involved – for example, experts. The Vizzata approach is perhaps best described as an online qualitative research method that provides participants with the time and information needed to enable them to deliberate on the topics being addressed and to call for the additional information they need to allow them to deliberate more fully.

As happens in a workshop setting, the quantity and quality of contributions differs amongst the online participants: some provided more detailed and longer comments than others. On the whole though, almost all of the 65 participants responded to the majority of questions with short responses (1-2 lines) per question, and this report therefore reflects the views of many rather than the detailed comments of a few. Please see [Appendix 4](#) for a graphical representation of the number of questions answered per participant.

The absence of a facilitator to prompt discussion on particular aspects of the Strategy or to encourage participants to elaborate or clarify stated views means that ambiguity is more common in the online engagement phase.

# Chapter 6 Discussion and conclusions

## Introduction

This final chapter summarises some of the changes in participants' views over the course of the online engagement. We then relate the findings in this report to the objectives for the dialogue.

## Participant journey

Broadly speaking, participants began the study with limited knowledge of bTB and developed a greater awareness of the complexity of the situation, and the need for a range of measures, as the study progressed.

Each participant took their own journey through this online process: each will have brought different levels of pre-existing knowledge and different attitudes and opinions. So whilst we cannot point to a single participant journey, it is clear that participants did learn about bTB and the draft Strategy. Some participants had their perceptions challenged or changed and others had them reinforced.

Participants indicated that their overall awareness of bTB prior to taking part in the study ranged from very low to moderate; very few stated they already knew a lot about the subject. The process participants went through during this online study was characterised by exposure to sections of information (either through animation, text or film), followed by the opportunity to respond to this information.

In the early stage of the process participants tended to focus their comments and questions on the nature of bTB as a disease, its incidence, transmission routes, and experience in other countries. As the process progressed, the focus moved onto specific control measures, roles and responsibilities. This shift in focus follows the order in which information was provided to participants, which mapped out a journey from learning about and commenting on the disease to learning about and commenting on what could be done about it, and by whom.

In terms of the overall level of questioning and learning, the first section of the online study – the animation – elicited the highest number of questions. The two subsequent sections on control measures and perspectives led to roughly similar numbers of questions. Throughout the process, however, participants often mentioned new things they had picked up or learned from the information as the study progressed.

There were undoubtedly some shifts in perception occurring as participants progressed through the process, for example in relation to specific control measures, roles and responsibilities, and impacts (particularly on farmers).

*“I am concerned about the standpoint where farmers can choose to reduce risk, it should be mandatory.” (Participant ID 91)*

*“It definitely made me rethink my earlier assumptions, especially about the farmers not doing enough. I also can see that compensation is not really a reward. I still think that all farmers should do as much as is possible to reduce the effect of wildlife upon their cattle, but can now see that this is by no means the only solution.” (Participant ID 91)*

It is very difficult to characterise these shifts in perception as a whole, given the diversity and range of direction of these shifts. However, it does appear that, overall, participants gained an increased awareness of the complexity of the situation, and perhaps of the need for a range of measures, as they advanced further into the study, as well as a more in-depth appreciation of the context for specific control measures such as vaccination.

## Conclusions

This section relates some of the main messages in this report to the objectives for the overall dialogue and the online engagement specifically. The main messages are summarised under the following three headings:

1. Informing the development of the Strategy
2. Building a trust relationship
3. Utility of the online methodology

### Informing the development of the Strategy

Participants’ support for the Strategy, and for measures such as increased cattle surveillance and testing, were driven by concerns about the possible impact of bTB on human health.

Participants expressed general support for on-farm biosecurity measures aimed at limiting badgers’ access to farms, although there were questions about the cost and effectiveness of putting up fences to prevent badgers from accessing farms.

Participants’ views on compensation for farmers were mixed: some felt compensation was fair or could be used as a way of encouraging good biosecurity practice; others felt that compensation payouts contributed to a lack of motivation amongst farmers to improve biosecurity behaviour.

Badger vaccination received support from those who mentioned it, often explicitly in preference to culling, though the potential practical difficulties were noted.

Views on badger culling ranged from total opposition to qualified acceptance. Most comments on badger culling came from participants expressing opposition, with some challenging the strength of evidence for the role of badgers in bTB transmission.

Participants supported cattle vaccination and many were surprised or disappointed that this was not already available. They would like more effort to go towards deploying an effective cattle vaccine, as soon as possible.

Some participants supported a joint approach to tackling bTB, including government, farmers and wildlife organisations. Many suggested that government should take the lead or have overall responsibility.

## **Building a trust relationship**

Online participants were supportive of government taking overall responsibility for the bTB programme. However, it was clear that there was scope for improving the trust relationship between the public and government.

There were questions raised about the government's ability to effectively manage the bTB control programme. Participants asked why measures had taken so long to be put in place and why England was in a worse position than many other countries.

There was also some scepticism about the government's commitment to tackling bTB, in part due to concern that the 25-year timescale for the Strategy is too slow a pace for implementation.

Some participants suspected that proposals to roll-out badger culling (subject to results of the pilot cull) were politically motivated or done to appease farmers.

## **Utility of the online method**

The online engagement provided valuable insight into public participants' views on bTB and its controls outside of a group setting, due to participants contributing in isolation and not interacting with each other.

The online engagement produced a shallower and less comprehensive dataset than that arising from the public workshops. This is because participants focussed only on those aspects which prompted a reaction from them individually, and were not able to build on or learn from each other's arguments and perspectives.

There was greater variance in the information provided to online participants than that provided to public workshop participants, due to online participants receiving different information in response to their individual questions.

Although the quantity and quality of contributions differed amongst the online participants, the findings reflect the views of many rather than the detailed comments of a few.

As an online qualitative research method, Vizzata provided participants with the time and information needed to enable them to deliberate on the topics being addressed and to call for the additional information they need to allow them to deliberate more fully.

# Appendix 1 Online engagement content

## Round 1 content

### ***Page 1: Intro to the study***

Welcome to this study about the future bovine tuberculosis (bTB) policy in England. Bovine TB is an important issue for government due to its impact on the cattle farming industry and the cost of controlling the disease.

In this first part of the study, we are going to provide some information about bTB and how it is controlled in England. We are looking forward to hearing your comments and questions on what you are about to see.

This study is in two parts. At the end of the Part 2, we will ask you the following question:

**If you were constructing a Strategy for becoming officially ‘free’ of bovine TB in England in 25 years, what would be your recommendations to the minister?**

At any time during this session, please ask us anything that might help you answer this question.

### ***Page 2: Awareness of bovine TB***

Before we start, we'd like to ask you how much you know about bovine TB. Please answer the following question:

**On a scale of 1 - 10, with 1 being ‘Nothing at all’ and 10 being ‘I am an expert’, how much do you know about bovine tuberculosis?**

(Scale question 1 - 10)

### ***Page 3: Intro to bovine TB information pages***

On the next few pages you will find some information to help you understand bovine TB as well as the ways in which it is currently controlled.

For each section we would like you to record your questions and comments. What are your initial reactions to the information we have provided? What, if anything, surprises you about this information? Is anything unclear? What would you like more information about?



We are interested in all the questions and comments that come to mind as you go through the study.

We will be responding to the questions and comments you raise in the comment boxes at the bottom of each page. Of course, not all questions have a straightforward answer but we will certainly do our best to provide some relevant material that might be of interest. We'll also be asking some experts in the field of bovine TB to provide answers to your questions.

Please feel free to express your thoughts openly. You are free to disagree and be critical of the information. It is really important for this study that we can get your honest views about the information presented.

Thank you. Please continue with the study.

#### ***Page 4: Bovine TB basics animation***

First of all, we'd like you to have a look at this short animated video which covers what bovine TB is, how it is transmitted and the reasons why Government needs to control it. Please record all your comments and questions in the comment boxes at the bottom of the page. You can pause, rewind and replay the video as much as you like.

([player.vimeo.com/video/75597663](https://player.vimeo.com/video/75597663) - actual video link to appear in the study)

#### ***Page 5: Open questions***

Please reflect back on the animation you just saw and answer the questions below.

**What thoughts did the animation bring to mind?** Please write in the box below.

**Was any of that information new to you?** Please write in the box below.

**What were you aware of before?** Please write in the box below.

#### ***Page 6: Bovine TB control measures on the farm***

This page provides a bit more information about:

- How bovine TB is found
- The measures farmers can take to reduce the risk of bovine TB infection on their farms
- What happens when bovine TB infection is found

You can click on the highlighted terms to get more information if you wish.

## **Bovine TB testing and surveillance**

The symptoms of bovine TB are not visible during the early stages of infection, so testing and surveillance is needed to spot infection in healthy-looking cows. All cattle herds are tested for bTB, as required by EU law. In the high risk area, herds are tested annually. In the low risk area, herds are tested every four years. Additional testing is going to be introduced in the areas that are on the 'Edge' of the high risk area to try to stop further spreading of the disease.

The test used is known as the 'skin test'. It is usually carried out on the farm by local private vets on behalf of the government. Like all diagnostic tests, it's not 100% accurate. Some infected cattle are missed and some uninfected cattle are incorrectly identified as having bovine TB.

Testing before and after cattle movement is carried out in some circumstances to reduce the risk of the disease moving into new herds. Currently, all cattle (except very young calves) leaving a farm in the high risk area must be tested before they are moved, referred to as 'pre-movement testing'. The government is considering expanding the circumstances for which pre- movement testing is required and considering whether compulsory post-movement testing should be introduced in certain situations.

All meat from cattle that are slaughtered commercially is inspected for signs of bovine TB abscesses. If abscesses are detected, the bTB infection can be traced back to the herd. Meat inspection is carried out by the Food Standards Agency. It is a cost-effective surveillance tool, however it depends on the inspector's skill and time spent inspecting each carcass. Also, only some infected cattle present visible abscesses and so not all bovine TB infection can be spotted. However, the meat is still safe to eat.

## **What can farmers do to prevent the spread of bTB on the farm?**

There are measures that farmers can put in place to reduce cattle-to-cattle and badger-to-cattle spread of bovine TB, including separating cattle from neighbouring herds and preventing badgers from accessing the areas where cattle feed and drink. These measures are voluntary, but the government is looking at ways of rewarding farmers who install these measures on their farms. For example, paying less compensation to farmers

who do not install proper fencing or similar measures to reduce the spread of disease on their farm.

Voluntary measures to encourage careful purchasing practices when buying new cattle into a herd are also being implemented. For example, by providing cattle keepers with information on the 'riskiness' of the cattle they are buying.

## What happens when bovine TB is found?

If a cow tests positive for bovine TB during a test, the aim is then to clear infection as quickly as possible and prevent spread. This is done through restricting movements from the herd and removal and slaughter of infected cattle. Surrounding herds are also tested, and the infected herd is repeatedly tested until it passes the required number of tests. The source of the infection is also investigated.

Farmers receive compensation from the government if their cattle have to be slaughtered to control bovine TB. The amount of compensation paid is the average sale price of healthy cattle. This depends on age, gender, type (dairy or beef) and status (pedigree or non-pedigree) and changes every month. An example table is below, showing compensation payable for non-pedigree beef animals during September 2013.

Male		Female	
Age	Compensation due (£/head)	Age	Compensation due (£/head)
Up to 3 months	249	Up to 3 months	202
Over 3 months up to 6 months	367	Over 3 months up to 6 months	313
Over 6 months up to 9 months	575	Over 6 months up to 9 months	489
Over 9 months up to 12 months	759	Over 9 months up to 12 months	636
Over 12 months up to 16 months	949	Over 12 months up to 16 months	803
Over 16 months up to 20 months	1,063	Over 16 months up to 20 months (inc calved)	934
20 months and over	1,143	20 months and over	1,022
Breeding bulls 20 months and over	1,777	Breeding bulls 20 months and over	1,096

The government receives some money for infected cattle sold to slaughter, from the sale of the meat once it has passed food safety checks. This money covers some of the cost of compensation paid to farmers whose cattle have to be slaughtered to control bovine TB.

Since 2012, the government reduced the amount of compensation farmers received for 'reactor' cattle if they are found in herd tests which are significantly overdue.

The government is considering further changes to the way it allocates compensation to farmers so that the money paid out better reflects the efforts of the farmer in keeping bovine TB out of their farm.

### ***Page 7: Open questions***

**What are your initial reactions to the information presented here?** Please write in the box below.

**What do you like about these measures?** Please write in the box below.

**What do you dislike about these measures?** Please write in the box below.

### ***Page 8: Vaccination and wildlife controls***

This page provides a bit more information about:

- Measures taken to control the disease in wildlife, including badger vaccination and badger culls
- Cattle vaccination

## **Badgers and bovine TB**

Although many other non-cattle species are susceptible to bovine TB, existing evidence suggests that badgers are the only other species that play a role in maintaining bovine TB infection levels in cattle in England.

Little is known about how bovine TB is transmitted between badgers and cattle. Transmission may be indirect, for example through badger faeces in cattle food and water. Alternatively, direct transmission through the air inside farm buildings may occur.

## **The pilot badger culls**

The Government recently piloted licensed badger culls in two areas in South West England where there is a high risk of bovine TB in cattle. Both cage-trapping and shooting,

and controlled shooting of free-ranging animals are being used. Both methods are being conducted by trained operators.

The aim of the pilot culls in 2013 is to monitor whether the cull method of controlled shooting of badgers is humane, safe and effective in terms of badger removal. The results will inform a decision on wider roll-out of the culling policy in England from 2014.

Research is underway to look at other ways of managing the badger population. For example:

- Humanely killing badgers in their setts - in the future, new tests may allow infected setts to be identified reliably.
- Contraception - research into the application of fertility control using an injectable contraceptive is ongoing.

## **Badger vaccination**

An injectable badger vaccine against TB is available on vet prescription. Private individuals can use it on their land, as long as they have a licence from Natural England and a trained person to deliver it.

Using injectable badger vaccination involves cage-trapping badgers, so the main cost of vaccination is the man-power required for trapping. The programme also needs to be repeated every year to make sure that new cubs are vaccinated. This badger vaccine only works on uninfected animals. Modelling work suggests that its use could lower the amount of TB in a badger population if applied on an annual basis over several years.

Research is underway to try and develop other badger vaccines, for example those that can be taken by mouth.

## **Cattle vaccination**

Currently there is no licensed cattle vaccine available. The most suitable vaccine is called BCG (*M. bovis* Bacille Calmette-Guerin). In tests so far, the vaccine has been around 50%-60% effective. It provides a spectrum of protection on individual cattle.

BCG does not have an effect in already infected animals.

It is also currently against EU law to vaccinate cattle against bTB. This is because it is not possible to tell the difference between vaccinated cows and cows infected with bTB using the skin test.

The government is planning field trials on the BCG vaccine and a test for telling the difference between infected cows and vaccinated cows, to gather information to support a change in the law. This process is expected to take at least 10 years.

***Page 9: Open questions***

**What are your initial reactions to the information presented here?** Please write in the box below.

**What do you like about these measures?** Please write in the box below.

**What do you dislike about these measures?** Please write in the box below.

***Page 10: Perspective interviews***

We've got one more video for you to look at before the end of this session. You will now hear from four different people (farmer, vet, Wildlife Trust, RSPCA) about the main issues and impacts of bovine TB, what should be done to control it and who should be responsible for controlling it.

Please record any comments and questions you have about the film. As before, you can pause, rewind and replay the video as much as you like.

([player.vimeo.com/video/76742510](https://player.vimeo.com/video/76742510) - actual video link to appear in the study)

***Page 11: Open questions***

Please reflect back on the film you just saw and answer the questions below.

**What are your reactions to what was said in the film?** Please write in the box below.

**What impact has this film had on your previous views about bovine TB policy and control?** Please write in the box below.

**What else do you need to know to help you give advice to the minister about the future of bovine TB control policy? (We will also be responding to all the questions and comments you recorded at the end of each information page).** Please write in the box below.

## **Thank you for finishing Part 1 of the study**

You have now finished Part 1 of the study. We hope that you have found it interesting.

We will respond to your questions and comments by email by next Thursday. We would like you to read these carefully before you take part in the second part of the study. This will be followed by an invitation to the second part of the study on Friday.

In the second part of the study we will ask for your views about a few final questions and this will take no longer than 20 minutes. Don't forget to check your junk mail folder in case the responses and the invite to the second study goes there.

Please complete the second part of the study by Monday 9<sup>th</sup> December.

Please refer to the original email invite for details on the payment for your participation.

Thank you for participating in Part 1, we look forward to seeing you again in Part 2.

To complete the study, please click the Finish button.

## Round 2 content

### ***Page 1: Welcome back***

Welcome back to this study about bovine tuberculosis in England and what should be done about it.

In this second and final part of the study, we are going to ask what you thought of the responses we provided to your questions, before asking for your final recommendations to the minister on the future bovine TB eradication strategy.

Feel free to leave comments at any time during this study. We will not be able to respond to these but they will be included in the final report.

Please click Next to continue with the study.

### ***Page 2: Views on our responses to your questions***

You should have received an email with responses to your questions and comments from the first round of engagement. We hope you found these useful and informative.

Open questions:

**What are your reactions to the responses you received?** Please write in the box below.

**What was most surprising from the information you received?** Please write in the box below.

**In what way, if at all, have the responses changed your views on bovine TB control measures?** Please write in the box below.

### ***Page 3: Summary of answers to all participants***

At the end of the last round, we asked you what else you needed to know to help you give advice to the minister about bovine TB control policy.



Lots of people asked for more information on bovine TB. We asked a panel of experts to provide this information and we've summarised it below to help you with the rest of this study.

[See Appendix 3 for summary of responses]

### ***Page 3: Your recommendations for the Strategy***

Taking into account all that you have read, seen and heard during this study, please answer the following question:

**If you were constructing a Strategy for becoming officially 'free' of bovine TB in England in 25 years, what would be your recommendations?** Please write in the box below.

### ***Page 4: Evaluation questions (TBC)***

**On a scale of 1 - 10, with 1 being 'Not Good At All' and 10 being 'Very Good', how would you rate this way of Defra seeking your views about managing bTB?**

(Scale question 1 - 10)

**Please provide reasons for your answer in the box below.**

**What specific things did you like about this way of exploring bTB and giving your views?**

**What specific things did you dislike about this way of exploring bTB and giving your views?**

### ***Page 5: Report of the study***

One last question from us:

**Would like to receive a copy of the final report of this online study about the future strategic direction of bovine tuberculosis policy in England?**

If you tick yes, we will send a version of the final report to you by email.

Multiple choice: Yes/No

Thanks for taking part. You will receive your £15 voucher for taking part in this study by 14 December 2013.

## Appendix 2 Vizzata study screener questionnaire

Please answer the following questions about yourself.

### 1. What is your gender?

1.Female

2.Male

### 2. Which age group do you fall into?

1.Under 18  - CLOSE

2.18-24

3.25-30

4.31-35

5.36-40

6.41-50

7.51+

Close if under 18

### 3. Where do you live?

1.Scotland - CLOSE

2.North West

3.North

4.Yorkshire & Humberside

5.East Midlands

6.East Anglia

7.South East

8. Central/Inner London

9. Greater/Outer London

10. South West

11. Wales - CLOSE

12. West Midlands

**4. Please indicate which occupational group best represents that of the Chief Income Earner in your household.**

The Chief Income Earner is the person in your household with the largest income. This might be you or another member in your household.

1. Semi or unskilled manual work (e.g. Manual workers, all apprentices to be skilled trades, Caretaker, Park keeper, non-HGV driver, shop assistant) D
2. Skilled manual worker (e.g. Skilled Bricklayer, Carpenter, Plumber, Painter, Bus/ Ambulance Driver, HGV driver, AA patrolman, pub/bar worker, etc.) C2
3. Supervisory or clerical/ junior managerial/ professional/ administrative (e.g. Office worker, Student Doctor, Foreman with 25+ employees, salesperson, etc.) C1
4. Intermediate managerial/ professional/ administrative (e.g. Newly qualified (under 3 years) doctor, Solicitor, Board director small organisation, middle manager in large organisation, principle officer in civil service/local government) B
5. Higher managerial/ professional/ administrative (e.g. Established doctor, Solicitor, Board Director in a large organisation (200+ employees, top level civil servant/public service employee) A
6. Student C1
7. Casual worker - not in permanent employment E
8. Housewife/ Homemaker E
9. Retired E
10. Unemployed or not working due to long-term sickness E
11. Full-time carer of other household member E

5. Do you, or any of your close friends or relatives, work in any of these industries or professions?

1.MARKET RESEARCH	CLOSE		4.PUBLIC RELATIONS	CLOSE
2.FARMING	CLOSE		5.JOURNALISM	CLOSE
3.NATURE OR WILDLIFE	CLOSE		6.TV OR THE MEDIA	CLOSE
<b>99.None of these [EXCLUSIVE]</b>				

We would like you to participate in a two-part online survey about the future direction of bovine TB policy for England, including disease control in both cattle and wildlife. This study is being conducted by a research and engagement organisation called OPM Group, on behalf of Defra and Sciencewise.

This survey is a bit different to other studies you may have participated in in two main ways:

Firstly, we do not want you just to choose options as is often the case with questionnaire surveys. Rather we are interested in the questions and comments you may have about the material that we will provide.

Secondly, when you have completed Part 1 and submitted your comments and questions, the research team will do some work to find out some answers to the questions & comments you submitted. We will send you this material a few days later and we would like you to have a think about this before logging back into Part 2 of the study and answering some final questions.

Taking part in Part 1 will take about 30 minutes, and about 20 minutes for Part 2.

Please be aware that it is important to take part in the BOTH phases of the study in order to be paid for your participation. If you take part in both parts of the study you will be reimbursed with £15 in amazon e-vouchers to thank you for your contribution. The voucher will be emailed directly to you on completion of Phase 2. Of course you are free to withdraw from the study at any time, but the payment is contingent on completion of Parts 1 and 2.

For all participants:

Please be aware that you need to be available **28<sup>th</sup> November - 9<sup>th</sup> December** to take part in the study. You will receive an email invite to take part in the study from [defra.consultation@opm.co.uk](mailto:defra.consultation@opm.co.uk).

Q6. Would you be willing to take part in this study and let us know the comments and questions you have about this issue?

1. Yes

2. No  - CLOSE

Close if No

Q6a. Please enter your email address in the space below: [PN: Use the standard email validation]

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## Appendix 3 Summary of responses

This summary of responses was shown to all participants as part of the second stage of the online engagement (see Appendix 1 for how this summary of responses fits into the wider process). The questions posed are those asked by participants at the end of the first stage, when prompted to state what else they would need to know to give recommendations to the minister.

Participants were also sent individual responses to the comments and questions they raised throughout the first stage of engagement.

***Question: How many badgers are there in the UK and what percentage is anticipated to actually have bTB? Are there more badgers in some areas than others?***

Areas of England where there is a high incidence of bovine TB in cattle also tend to have high numbers of badgers. The current estimate of the national badger population is 300,000, but this is based on a dated survey from 1996. The evidence from the randomised badger culling trial from 1998-2007 suggests that 16% of badgers in the cull areas were infected with TB. It is now accepted that this is likely to be an underestimate. This is because the post-mortem diagnosis of TB in badgers that was used to determine the level of infection is not very reliable, and missed around half of infected animals. However, there is a lot of variation in infection rates in different areas of the country.

***Question: What links badgers to the spread of bovine TB if other animals carry this. Has the link been proven or is just a guess?***

The greatest TB risk to cattle in wild mammals is from badgers, which are the main wildlife host. The disease is present in badgers in parts of England and that the disease can be transmitted among cattle, among badgers, and between the two species.

Areas of England where there is a high incidence of bovine TB in cattle also tend to have high numbers of badgers. Although the overall impact was lower, the Randomised Badger Culling Trial showed that the rate of disease in cattle was reduced by up to a maximum of 60% in areas where badgers were killed, demonstrating conclusively that badgers contribute significantly to bovine TB in cattle.

***Question: If we are able to prevent the effects of TB in humans through pasteurisation and BCG inoculations what exactly is the risk from having TB in the cattle population?***

Whilst cattle-related new *M. bovis* infections in humans are extremely rare in the UK at the moment, there is a concern that if the epidemic in cattle escalate further, spill over hosts, such as alpacas and cats, will pick up more infection. These two species in particular appear to be more likely to transmit the disease directly to humans due to their closer than cattle contact with humans.

However, another perspective is that close contact is not an issue because plenty of farmers have close contact with TB cattle but are not diagnosed with TB.

***Question: Are the cattle themselves in any suffering as a result of the disease?***

The symptoms of bovine tuberculosis usually take months to develop and most animals infected with bovine TB do not become obviously or detectably sick. In general, bovine TB results in abscesses, such as in the lungs, which in turn produce and spread more bacteria. Other symptoms include fever, weight loss, vomiting and diarrhoea, although this changes depending on the species.

The clinical signs of bovine TB (e.g. weakness, coughing and loss of weight) are now rarely seen in GB cattle due to the slow progression of infection and the frequent testing and removal of test positive cattle. The Government's compulsory testing and slaughter programme ensures that most cattle herds in the infected areas of the country are tested for bovine TB annually. This identifies most infected cattle before the disease can become apparent.

***Question: What research is currently ongoing into other methods of preventing the spread and where is this research up to / who is carrying it out? Independent groups need to be involved to help prevent bias when deciding what methods to implement when the research becomes available.***

Our main source of evidence on the role of badgers in cattle TB is the Randomised Badger Culling Trial which showed conclusively that badgers contribute significantly to bovine TB in cattle. Subsequently, AHVLA and independent research institutes have carried out research into how the spread from badgers to cattle and *vice versa* could be prevented. Some of this research, particularly in relation to cattle-badger contact in grazing is ongoing. Some of the research has produced methods that have been shown to exclude badgers from cattle buildings and feed stores very effectively. The uptake of these measures has not been high by cattle keepers, as they can be costly and do not prevent infection in grazing situations.

***Question: How have Scotland and the Republic of Ireland managed to stay bTB-free?***

Scotland successfully applied a package of conventional cattle measures to achieve OTF status in 2009. We have a dated estimate of the GB badger population of 300,000 from the 1990s but we do not know how this number is distributed within GB. Scotland has badgers but no evidence of badger infection with TB, for instance from Road Traffic Accidents or from local spread that cannot be explained by cattle movements. In the low incidence areas of England, the levels of bTB are similar to those in Scotland. Defra are applying similar policies in these areas to those applied by Scotland prior to official TB freedom. Defra is also proposing to pursue official TB freedom in the low risk areas of England that are similar to Scotland in terms of bTB levels.



The Republic of Ireland (RoI) has one of the highest levels of bTB in the EU (second to the UK) In RoI, the bTB control policy is somewhat different from the policies applied in the UK. For instance, cattle bTB testing and compensation are co-funded by industry. Their bTB eradication programme, which includes annual testing of all cattle (as in the high risk areas of England) and targeted capture and culling of badgers, has seen the proportion of bTB herd breakdowns fall from 9.6% in 1995 to 7.4% in 2010, compared to an increase from 0.8% to 9.0% in England over the same period

**Question: How have other countries managed to become bTB free?**

Defra's Strategy draws upon the demonstratively successful approaches taken by other countries around the world, for example in:

- Australia, where the national eradication programme spanning almost three decades achieved official freedom from bTB in 1997 through a comprehensive package of measures to tackle the disease in domestic cattle and wildlife. This included rigorous culling of feral water buffalo, which were introduced into Australia in the nineteenth century;
- Scotland, which in the absence of a wildlife reservoir successfully applied a package of conventional cattle measures to achieve OTF status in 2009;
- Michigan in the United States of America, where the bTB eradication project includes cattle and wildlife controls. Since the mid 1990s, Michigan State has made significant progress in lowering the apparent prevalence of *M. bovis* in free ranging white-tailed deer in the endemic area by over 60% through reduction of deer densities by hunting and restrictions on public feeding and baiting of deer. This strategy has been implemented with the cooperation of local hunters. Livestock herd breakdowns averaged 3-4 per year from 2005 to 2011;
- New Zealand, where a farmer-led organisation has taken the lead in formulating, implementing and raising funding for a comprehensive and successful package of measures to eradicate bTB. The primary wildlife reservoir of *M. bovis* is in brush-tailed possums, introduced into New Zealand in the nineteenth century. Wildlife control measures include aerially- or ground-deployed poison bait and trapping. The number of *M. bovis* infected cattle and deer herds has reduced from over 1700 in the mid 1990s to 66 (0.1%) in 2011/12; and
- The Republic of Ireland, where cattle bTB testing and compensation are co-funded by industry. The comprehensive bTB eradication programme, which includes targeted capture and culling of badgers, has seen the proportion of bTB herd breakdowns fall from 9.6% in 1995 to 7.4% in 2010, compared to an increase from 0.8% to 9.0% in England over the same period.

***Comment: I would like to hear a few more dissenting voices.***

There are a range of views on how best to deal with bovine TB, with the most polarised views relating to how to control the risks from wildlife.

We've provided some more comments from the interviews with the RSPCA and the Wildlife Trust. You can read more on their websites here:

<http://www.rspca.org.uk/getinvolved/campaigns/wildlife/badgers>

<http://www.wildlifetrusts.org/badgers-and-bovineTB>

Wildlife Trust:

“At the moment within the government strategy, cattle vaccination, cattle histories and bio-security have very limited coverage. We believe that there's a lot more could be done to encourage biosecurity, to limit the amount of interactions between the cattle and the carriers of the disease, we believe that cattle histories are critically important.”

“I think that the focus should be on controlling the disease in cattle so therefore there might be the absolute need to make sure that within particular herds that disease is being reduced. And that could entail removing more cows than are showing the exact symptoms of the disease.”

“A really important element of the strategy that is currently missing is badger vaccination. The government in their strategy have mentioned vaccinating with an oral vaccine in several years' time but there's an injectable vaccine now that we need to be using and getting out there.”

“If we are looking at the badgers we must always remember that badgers are a social animal that have very tight social groups, a badger will be born into a community and die in that community unless something happens to actually cause it to move around. So in areas where Bovine TB is persistent in the badger population the effect of removing badgers from those populations is to cause the survivors to move around much more potentially spreading the disease further. So our preferred method would be to start to inject a vaccine into those badgers over a period of years, building up their immunity to the disease and therefore reducing the overall level of disease in that population without having this negative effect of removing badgers and causing them to move further around the countryside.”

“The largest scientific trial, ever conducted on this issue, which took ten years to conduct, showed that even in the best case scenario, applied over a large area, rapidly undertaken with specialized staff and expertise, the best we could hope for in a cull of badgers would be a reduction of 16% in the overall increase in the spread of Bovine TB. So even in the best case scenario, we're only reducing the spread by 16%.”

RSPCA:

“The RSPCA believes, like the government in a multi task approach to combat the disease with one very important exception, we don’t believe that targeting the badger will actually reduce the disease significantly.”

“Bovine TB is one of the most difficult diseases we’ve got at the moment in the farming industry and the RSPCA completely sympathizes with dairy farmers and other farmers about this disease and we want to see it under control. The only area of course that we disagree with them is how to get it under control. We believe that you can do it through non-lethal and humane methods without killing badgers and that’s the only area that we disagree on.”

“If you’re going to kill badgers you’re not actually going to tackle the disease in the wildlife cos you’re going to be missing some badgers and also you’re going to get what is called perturbation, which is badgers moving out of the cull zone, infecting farmers outside of the cull zone and they’re the people that are then suddenly going to find the disease on their doorsteps. It makes total sense to me to do a humane, non-lethal approach to this disease, it’s worked in other countries and it can work here.”

***Question: What percentage of government spending has been/is/and will be directed at this issue? Is this enough? What are the costs of the different methods and how effective would each method be?***

Defra says it is not possible to estimate the full costs of achieving bTB-free status for England. However, it states that the current approach costs the taxpayer around £100 million per year and estimates that the cost to farmers runs to tens of millions per year. It says that, while additional investment will be needed to bring the disease under control, achieving bTB-free status for England will deliver savings to farmers and other taxpayers in the longer term.

The Government uses economic analysis to guide policy interventions so that the costs they impose are less than the benefit.

The aim of the Strategy is to achieve bTB-free status for England. Defra says this will reduce the financial and social impacts of the disease and stimulate international trade in cattle and cattle products, but that more investment will be needed in the face of ongoing pressure on government budgets, to bring the disease under control and deliver savings to farmers and other taxpayers in the longer term.

In terms of total government spend, the amount put into bTB is much less than 1%.

Our knowledge of the effectiveness of cattle measures in general is poor. Defra is currently promoting an initiative to create a modelling framework for TB control. This framework may help Defra to assess the impact (and costs and benefits) of different measures on the epidemic as a whole. Many of the measures are inter-dependent and linked, so that the success of one measure may depend on a simultaneous implementation of another. None of the measures alone will eradicate the disease and some measures can be useful at a

particular point in the epidemic but have to be scaled down at another. So, frequent evaluation of the situation is required, followed by appropriate changes in the measures.

***Question: How much is it costing to carry out the cull on badgers and how much do they compensate farmers each year?***

The cost of culling for farmers, as quoted in the impact assessment, is estimated to be £2,500 per km<sup>2</sup> per year for culling by cage-trapping and shooting and £300 per km<sup>2</sup> per year for shooting free-ranging badgers. Defra assumed an average cost of £1000/km<sup>2</sup> for a mixture of the two. The cost to Defra of implementing this policy is being met from within its existing budget. It is part of the package of measures Defra has in place to tackle TB.

Additional costs such as the costs of policing protests against badger culls would also need to be taken into account.

The estimated potential net reduction in compensation and testing costs for Government for one badger control area of 350km<sup>2</sup> is £2.5m over 10 years.

The Government pays statutory compensation to cattle farmers for cattle compulsorily slaughtered for bTB control purposes. Compensation is determined primarily using monthly table values, which reflect 100% of the average sale prices of bovine animals in 51 different categories. The categories are based on the animal's age, gender, type (dairy or beef) and status (pedigree or non-pedigree). The default position is to use table valuation although individual valuations may be used in defined circumstances. As the table values reflect average prices, there will be winners and losers. . Farmers may also suffer consequential losses and Defra has estimated that the average cost of a TB breakdown to a farmer is £12,000.

The Government spends around £25 million of public money each year on TB compensation (after recovery of carcass value).

***Question: Is there commitment to a joined-up approach? How will Defra encourage farmers to carry on farming cattle if it threatens their livelihood?***

Defra says achieving Officially bovine TB Free status will require a joined-up and thorough approach. The draft Strategy emphasises the need for a comprehensive, risk-based and staged approach that encourages partnership working, establishes a fair balance of costs and responsibility, and adequately supports farmers.

Defra says it will work with the farming industry and delivery partners (including local authorities) to monitor compliance levels and find practical, proportionate and effective ways to improve them.

***Question: Can farmers have a role in testing and controlling bTB in their own cattle?***

Farmers already have a role in testing and controlling TB in their own cattle. Examples include (i) working with their vets to arrange testing within the allocated window and

providing suitable facilities to enable the test to be done properly; and (ii) deciding how best to protect their herds e.g. making decisions about where to buy cattle from.

However, it is illegal for farmers to test their own cattle and declare the results themselves - there must be a vet or a trained tester involved.

***Question: What would be the financial shortfall if the UK imposed compulsory vaccination despite the opposition in Europe?***

The UK has the highest levels of bovine TB in Europe. Many other countries are TB free and therefore do not have an interest in the TB vaccine. In addition, vaccination of cattle with BCG, currently the best candidate vaccine, can cause them to test positive to the tuberculin skin test. This is the main reason for the EU ban on bTB vaccination in cattle. To use such a vaccine, a diagnostic test is required that can differentiate infected from vaccinated animals (the so-called DIVA test). Development of this test forms part of the ongoing Defra- funded research programme and a candidate diagnostic test has been developed. This is a modified version of the currently used interferon-gamma test.

Vaccinating cattle against TB is currently banned in Europe and this isn't therefore something we've talked to other Member States about – but as you will see from Defra's website, European Commissioner Borg wrote to our Secretary of State in January 2013 proposing that field trials of the vaccine and DIVA test should take place. It is unclear at this stage in the development of the vaccine and associated DIVA test what effect there might be on EU and international trade of cattle products. A unilateral 'go it alone' approach is a potentially significant risk and Defra is working on ways to mitigate this.

***Question: Why is the vaccination taking so long to deploy? How can vaccination be made to work better for cattle and badgers?***

Defra says a cattle bTB vaccine is likely to be a valuable additional tool in the fight to eradicate bTB but vaccination of cattle with a vaccine such as BCG (Bacillus Calmette-Guerin) will reduce but never eradicate bTB from the national herd if there remains a constant reservoir of *M. bovis* in badgers.

The best candidate vaccine to protect against TB in cattle is based on BCG. Like BCG used in other species, BCG does not offer complete protection from infection with *M. bovis*.

Research to date suggests that the proportion of cattle protected or partially protected may be in the order of 50-70% although further research is needed to verify this. Vaccination of cattle with BCG can cause them to test positive to the tuberculin skin test. This is the main reason for the EU ban on bTB vaccination in cattle. To use such a vaccine, a diagnostic test is required that can differentiate infected from vaccinated animals (a so-called DIVA test). Development of this test forms part of the ongoing Defra- funded research programme and a candidate diagnostic test has been developed. This is a modified version of the currently used interferon-gamma test. There is also a prototype skin test form of a DIVA test.

In January 2013 the European Commission wrote to Defra, setting out a tentative timeline of the steps to be able eventually to deploy a cattle BCG vaccine and associated diagnostic test. These steps include a field trial of the vaccine and associated test under EU conditions. Work to define the objectives and consider the design of such a trial is in progress. This trial will need to show that the DIVA test is effective at differentiating infected from vaccinated animals, that the vaccine is efficacious, and that the vaccine is safe for use in cattle.

The field trials will also be crucial for licensing the vaccine. In January 2012 AHVLA submitted an application for a provisional Marketing Authorisation (MA) for a BCG-based cattle TB vaccine (CattleBCG) to the Veterinary Medicines Directorate (VMD) for assessment. During the course of their assessment VMD identified data shortfalls in the application which are largely concerned with the lack of opportunity (to date) to conduct field trials in the UK. These data gaps must be filled before further consideration could be given to the application.

Subject to successful trials, the European Commission has estimated that it is unlikely that the EU ban on intra-EU trade in bTB-vaccinated cattle would be lifted before 2023. In the intervening period, the European Commission has indicated that it may be possible to allow the vaccine to be used under controlled conditions in the UK, but that live cattle would not be able to be traded within the EU until the wider ban was lifted.

It is possible that vaccination of cattle could affect trade in cattle products with the EU and third countries such as China or Russia. These are all significant very large export markets so Defra is working on ways to mitigate the potential risk.

Vaccination of cattle is not a panacea and is unlikely to prevent the need for the test and slaughter of infected cattle, nor control of TB in badgers.

Research to develop other cattle vaccines that are better than BCG or that do not sensitise cattle to the tuberculin skin test are long-term goals and will require scientific breakthroughs to achieve. BCG is the only licensed TB vaccine in humans.

## Appendix 4 Number of questions answered by participants

The graph below shows how many questions were answered by participants in the online process.

The graph shows that 37 of the 65 participants answered all 16 questions, with 57 participants answering 12 or more questions.

