Department
for Environment
Food & Rural Affairs

Bovine tuberculosis: consultation on proposals to help eradicate the disease in England

A consultation exercise contributing to the delivery of the government's strategy for achieving bovine tuberculosis free status for England

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Part A: About this consultation

1. Background

1.1. Bovine Tuberculosis (bTB) is an infectious and contagious disease with a complex epidemiology, which can spread within and between cattle and badger populations. BTB is one of the most pressing and costly animal health problems in England with a significant number of affected cattle herds. It threatens our cattle industry and presents a risk to other livestock, wildlife, pets and humans. Dealing with the disease is costing the taxpayer over £100 million each year. The latest official statistics show that more than 27,000 cattle were compulsorily slaughtered in England to control the disease in the last year, causing devastation and distress to hard-working farmers and rural communities.

1.2. The government's bTB Strategy[1], published in 2014, aims to achieve Officially Bovine Tuberculosis Free (OTF) status for England by 2038, whilst maintaining an economically sustainable livestock industry. The strategy complements Defra's strategic objectives of supporting and developing British farming and encouraging sustainable food production, enhancing the environment and biodiversity, managing the risk of animal disease, and the government's overarching objective of supporting economic growth.

1.3. By implementing and gradually adjusting cattle and wildlife controls since the introduction of the bTB Strategy, we are making progress in tackling the disease. Overall herd incidence and prevalence in England is stable with the long-term trend beginning to show a downward turn. We are seeing particularly encouraging progress in the High-Risk Area (HRA). We now need to bank the benefits of our approach to date and build on that momentum. We can do that by making the very best use of our primary disease control tools – i.e. more and better TB testing and stronger biosecurity to improve herds' resilience to the threat of bTB. And we can do more to develop and then deploy relatively new ones that are now much more within reach – such as the already available badger vaccine and a cattle vaccine which we hope is now on the not too distant horizon. In developing new disease control interventions, we need to find the right balance between managing disease risks and managing impacts on businesses. We also continue to need to deploy a combination of measures in cattle and badgers in order to achieve our TB eradication objective.

1.4. In 2018, Professor Sir Charles Godfray was commissioned to conduct an independent review to reflect on progress being made with the bTB Strategy and

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/300447/pb14088-bovine-tb-strategy-140328.pdf

consider what additional actions might be necessary now to ensure other tools and interventions are ready to be deployed in later phases of the strategy ('the Godfray Review'[2]).

1.5. The bTB Strategy is an adaptive, evidence-based, long-term approach to disease control. It is based on the fundamentals of effective testing, controls on movements to limit transmission between herds and strong biosecurity. It also includes the foundations of badger control in areas where the disease is widespread in cattle and in badgers, to complement other measures.

1.6. The government published a response to the Godfray Review[3] in March 2020, setting out three top priorities for the next phase of the bTB Strategy:

- accelerating work to develop **a deployable cattle vaccine** in the next five years – a potential game-changer;
- plans to **evolve the wildlife control policy**, by beginning to phase out intensive badger culling in the next few years and gradually replacing this with government-supported badger vaccination and surveillance. Culling would remain an option where epidemiological assessment indicates that it is needed;
- **improving diagnostic testing** to root out bTB more effectively, with deployment of more sensitive tests for surveillance supported by greater use of on-farm restriction of cattle with inconclusive test results.

2. Purpose of this consultation

2.1. This consultation sets out in more detail proposed changes to aspects of bTB policy in keeping with these priorities, in order to begin the transition into the next phase of the bTB Strategy. It purposefully brings together cattle and wildlife measures given our strategy is holistic.

2.2. Bovine TB policy is devolved. This consultation applies to England only. The proposals are set out in Part B. The consultation questions and details of how to respond are set out in Part C and views are invited by 24 March 2021.

3. How this consultation is structured

3.1. The proposals set out in this document are presented as follows:

a. TB Testing
   - Extending post-movement TB testing to parts of the Edge Area

[2] https://www.gov.uk/government/publications/a-strategy-for-achieving-bovine-tuberculosis-free-status-for-england-2018-review
[3] https://www.gov.uk/government/publications/a-strategy-for-achieving-bovine-tuberculosis-free-status-for-england-2018-review-government-response

- Use of the interferon-gamma test in the High-Risk Area and Edge Area

b. Wildlife Control

- Phasing out the current intensive and supplementary badger control policies, with related updates to Guidance to Natural England on licences to kill or take badgers under the Protection of Badgers Act 1992[4].

4. Additional options and actions to accelerate eradication of bTB

4.1. In parallel to this consultation, we are also seeking views on additional options stemming from the government's response to the Godfray Review, aimed at accelerating eradication of bTB. The Call for Views covers several ideas, including further changes and improvements to TB testing, incentivising increased uptake of biosecurity measures, supporting responsible cattle movements, rewarding low risk purchasing behaviour, and aligning our approach with wider agricultural change post EU-Exit. We seek initial input on the pros, cons, practical deliverability, costs and benefits of these ideas to assist with the development of further potential future proposals.

4.2. Our plans for the next phase of the Strategy also include a commitment to the following. These are not subject to consultation/the call for views, but will be subject to further engagement/communication:

a. Designing a successor to the TB Advisory Service (TBAS), for which the existing contract is due to expire in mid-2021.
b. Developing a training offer for private sector vets, in order to improve advice provision to farmers and establishing plans for rollout.
c. Establishing a new government/stakeholder bTB Partnership, which we plan to convene in early 2021.
d. Commencing field trials of a Bacillus Calmette-Guérin (BCG) cattle vaccine and associated DIVA test (to **d**ifferentiate **i**nfected from **v**accinated **a**nimals) with the ambition of deployment by 2025.

4.3. A cattle bTB vaccine could be a game-changer in terms of providing a strong additional tool to help eradicate bovine TB. In July 2020, we announced that the Veterinary Medicines Directorate (VMD) had granted permission for field trials of both the candidate vaccine, CattleBCG, and the candidate DIVA skin test. Like other veterinary medicines, both CattleBCG and the DIVA skin test will need

[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/909950/tb-licensing-guidance-ne.pdf

VMD marketing authorisations before they can be deployed. We hope that field trials will provide the evidence required for future United Kingdom (UK) marketing authorisations and for the DIVA skin test to be recognised internationally.

4.4. The aim is to start field trials in 2021 and complete them in 2024. We have now tendered for a Contract Research Organisation to run the trials. Provided the trials go as hoped and VMD considers the marketing authorisation applications satisfactory with respect to quality, safety and efficacy, the timeline envisages those authorisations being granted in 2025. This would pave the way for removing or relaxing the current legal barriers to vaccinating cattle against bTB in England. The government will work with stakeholders to develop an appropriate vaccine deployment strategy.

4.5. The World Organisation for Animal Health (OIE) sets animal health standards for international trade in animals as the principal reference for World Trade Organization members. OIE makes no provision for vaccination of cattle against bTB. In order to enable trade in vaccinated cattle, we will need the DIVA skin test to be recognised internationally and secure amendments to OIE standards, so they cover trade in vaccinated cattle, and (if necessary) also their products.

4.6. In February 2020, the government also published an update on the plans to reform agricultural policy, underpinning our ambitious vision for farming outside of the European Union (EU) and towards a system based on paying public money for public goods. On 1 January 2021 the agricultural transition period started. Between 2021 and 2027, we will gradually reduce and then stop untargeted Direct Payments. We will invest the money we free up to support agriculture in different ways. Farmers will have access to public money to help them deliver environmental outcomes on the land they manage; help their businesses become more productive and sustainable; and improve animal health and welfare.

4.7. One key pillar of the new agricultural policy is the Animal Health and Welfare Pathway, which we are co-designing with industry. This will promote the production of healthier, higher welfare animals at a level beyond compliance with current regulations through financial assistance; strengthen the regulatory baseline and improve consumer transparency. Key components of the Pathway will be critical to the success of the bTB Strategy.

4.8. For example, animal health and disease support will drive improved levels of biosecurity on-farm and deliver more focussed veterinary advice. We will also provide grants so that farmers can invest in equipment, technology and infrastructure that improve health, biosecurity, welfare, productivity and environmental outcomes. This will allow us the opportunity to expand support for our bTB eradication objective, beyond the grant support options that have been available under the Rural Development for England (RDPE) Countryside Productivity Small Grants scheme to date. There may be other opportunities to align our approach as we look to implement further changes to the bTB Strategy.

4.9. Initial discussions with industry suggest that a bespoke approach to bTB eradication is still needed at present to tackle the significant challenge it poses. That said, we continue to work in partnership with industry to maximise and capitalise on the opportunities this significant period of change presents, and where appropriate to align the approach we take on bTB to that of the Pathway.

Part B: Proposals to further help eradicate bovine TB in England

5. TB Testing

Background

5.1. The government's response to the Godfray review set out our plans to make better use of the existing range of tests to intercept bTB earlier and remove it from cattle herds more quickly. This means using the most appropriate bTB diagnostic tests for surveillance and breakdown management, in a targeted, evidence-based and flexible way, as part of a range of practical and proportionate measures.

5.2. The proposals set out in this consultation signal the next phase of adapting the bTB surveillance programme to reflect the best available diagnostic tools and resources available to deliver them, taking account of the local epidemiological situation, statutory obligations and international standards required for trade. Further ideas on how we could change and improve our approach to testing are included in the related call for views.

6. Proposal 1: Extending Post-Movement TB testing to parts of the Edge Area

Rationale

6.1. The latest statistics for England[5] show a gradually improving disease picture in the HRA and very low and stable levels in the Low Risk Area (LRA). Within the Edge Area, however, there is substantial variation from county to county. Some parts of the Edge Area have in recent years seen an increase in TB breakdowns, while herds in other parts remain at relatively low risk. While we need to tackle the former through more sensitive testing and, where necessary, addressing the

[5] https://www.gov.uk/government/collections/bovine-tb

reservoir of infection in wildlife, we also need to protect the lower incidence parts of the Edge Area.

6.2. The low TB rates in some Edge Area counties on annual surveillance testing are similar to those in the adjoining LRA. Introducing post-movement testing in annually tested Edge Area counties would help sustain their relatively low TB risk status by mitigating the risk of disease spread though cattle movements.

Proposal

6.3. **We propose to extend the current mandatory post-movement skin testing policy. Cattle moved into the parts of the Edge Area subject to annual TB surveillance testing would require a post-movement skin test.** This would apply to cattle moving from higher risk areas of Great Britain (GB) i.e. the HRA, Edge Areas on six monthly surveillance testing[6] and Wales. Mandatory post-movement skin testing is already required for cattle moved to the LRA from those parts of GB where herds are subject to annual or more frequent TB surveillance testing. We are discussing with Welsh Government the case for exempting from post-movement testing cattle moved from the low TB area of Wales to those parts of England where the policy operates.

6.4. As in the LRA, cattle moving to the lower TB incidence Edge Area counties from higher risk areas, and not slaughtered within 120 days, would have to be post-movement tested on the destination holding between 60 and 120 days of arrival. Cattle keepers would be responsible for arranging and paying for the post-movement skin tests, though government-funded herd surveillance skin tests would qualify as valid post-movement tests where the timing works. Cattle could not be moved out of the herd of destination without a post-movement test with negative results, except in limited and prescribed scenarios (see paragraph 6.8 below).

6.5. The Edge Area counties where post-movement testing would be required are:

- Buckinghamshire
- East Sussex
- Leicestershire
- Northamptonshire
- Nottinghamshire

6.6. In the following Edge Area counties, post-movement testing would only be required in those parishes on annual surveillance testing (see Annex A: List of

[6] The whole counties of Cheshire, Oxfordshire and Warwickshire and parts of Berkshire, Derbyshire and Hampshire

parishes in Berkshire, Derbyshire and Hampshire that would be required to post-movement test for details).

- Berkshire
- Derbyshire
- Hampshire

6.7. We are not proposing to introduce mandatory post-movement testing in the parts of the Edge Area subject to six-monthly surveillance testing.

6.8. Exemptions to the prohibition on movements of cattle required to be post-movement tested in the relevant Edge Area herds would be limited to:

- Cattle slaughtered within 120 days of arrival.
- Cattle moved from herds in the LRA, in Scotland, or in other annual surveillance testing parts of the Edge Area.
- Cattle moved to an agricultural show where the animals are not housed and/or do not stay on the showground for more than 24 hours.
- Cattle moved to a place of veterinary treatment provided that the animal is returned direct to its premises of origin after the treatment, or is killed, or goes directly to slaughter.
- Cattle moved to one of the following premises:
    - directly to a slaughterhouse
    - an Approved Finishing Unit (AFU) licensed by the Animal and Plant Health Agency (APHA);
    - a market from which all animals go directly to slaughter;
    - an exempt market; or
    - an approved collection centre.

6.9. If a bovine animal remains untested for more than 120 days after arriving in an annual testing part of the Edge Area, the post-movement test would become overdue. Movement restrictions would then be applied on the whole herd until all animals that should have had a post-movement test have been removed to slaughter or tested, with negative results, at the owner's expense.

6.10. Introducing this proposal would require a legislative change.

Expected economic impacts

6.11. We recognise that post-movement testing will have cost implications for industry and have completed a 'Regulatory Triage Assessment' (RTA - a form of cost benefit analysis) which can be found at Annex B: Regulatory Triage Assessment

- Extending Post-Movement TB testing to parts of the Edge Area .

6.12. We invite your comments on the assumptions and data that underpin this assessment, which will be updated following the conclusion of the consultation exercise.

Questions:

Q1a. Do you support the proposal to introduce mandatory post-movement testing of cattle moving from higher TB risk regions of Great Britain (the HRA, Edge Areas on six-monthly surveillance testing and Wales) into those parts of the Edge Area where herds are on annual surveillance testing?

a. Yes
b. No
c. I don't know/I don't have enough information

Q1b. Please give reasons for your answer. Where available, please provide supporting evidence.

Q2a. Do you agree with the assumptions and the assessment of costs and benefits in the Regulatory Triage Assessment on introducing post-movement testing to parts of the Edge Area?

a. Yes
b. No
c. I don't know/ I don't have enough information

Q2b. Please give reasons for your answer. Where available, please provide supporting evidence. We particularly welcome evidence on the following assumptions:

- additional time and/or inconvenience to farmers of facilitating a post-movement test,
- batch size of bovine animals tested (i.e. the number of bovines tested) in a post-movement test,
- proportion or number of inward cattle movements which use a routine diagnostic test to double up as a post-movement test (so would not require an additional post-movement test), in either 6 monthly or 12 monthly counties of the Edge Area.

7. Proposal 2: Use of the interferon-gamma test in the HRA and Edge Area

Rationale

7.1. Our current interferon-gamma (IFN-γ) test policy has been in place for over three years. In the HRA, the test is used in new breakdown herds in badger control

areas that have completed at least two years of culling. In the Edge and LRA, it is used to supplement the skin test in all new breakdowns with lesion and/or culture positive animals. The IFN-γ test is also deployed in persistent breakdown herds and in other prescribed situations, for example in severe ('explosive') breakdowns which do not automatically qualify under the above criteria, and to inform partial or whole herd slaughter decisions.

7.2. IFN-γ is the main ancillary test we use to maximise the detection of infected animals in TB breakdown herds. It is a valuable tool for increasing the sensitivity of TB testing (the ability of the test to identify truly infected animals as test-positive). It is therefore appropriate to consider how its use might be enhanced, particularly as the Godfray Review highlighted the need to use more sensitive TB diagnostic methods, such as the IFN-γ blood test, in a more targeted way.

7.3. Within the HRA in 2019, 56% of new TB incidents occurred in herds that had suffered at least one previous breakdown in the preceding 36 months. In the Edge Area, the proportion was 46%. Although we cannot definitively identify the source of infection for all TB breakdowns, residual cattle infection in herds (after movement restrictions have been lifted) is a known potential source. Recurrence of infection plays a large part in the bTB epidemic in the HRA, and to a lesser but still significant extent in the Edge Area too. Targeting herds that suffer repeat breakdowns with supplementary blood testing would reduce the likelihood of leaving undetected infected animals in the herd and so reduce the risk of the disease being spread to new herds through cattle movements.

Proposal

7.4. **We propose that all new 'Officially TB free status withdrawn' (OTFW)[7] breakdowns in the HRA and six-monthly surveillance testing parts of the Edge Area, that meet the following criterion, should be subject to mandatory IFN-γ testing:**

- the breakdown occurred within 18 months of the herd regaining TB free status following a previous OTFW breakdown.

7.5. Our proposal involves moving away from the current approach of deploying the test in new breakdown herds in badger control areas, and instead targeting herds across the HRA and the six- monthly testing parts of the Edge Area that suffer repeat breakdowns. In the annual surveillance testing parts of the Edge Area we would continue with mandatory gamma testing of all new OTFW breakdowns. As a result of these changes overall, use of the IFN-γ test would be spread across the HRA and decrease in the Edge Area, however the test would be targeted to

[7] Officially bovine Tuberculosis Free status Withdrawn (OTFW) refers to a herd with a TB incident in which additional evidence of *M. bovis* infection has been identified in at least one slaughtered bovine animal, i.e. *M. bovis* cultured from tissue samples and/or lesions detected in the carcase of a skin or IFN-γ test reactor.

herds where more sensitive testing is of most benefit in resolving the TB breakdown.

7.6. Supplementary blood testing of persistent OTFW breakdowns and discretionary testing of, for example, 'explosive' breakdowns that do not qualify under the above criterion would continue (this is part of the current policy). The policy in the LRA would remain unchanged, i.e. all new OTFW breakdowns would continue to be subject to mandatory IFN-γ testing.

7.7. A summary of the existing IFN-γ testing policy in England, together with a detailed explanation of the changes we are now proposing, is included at Annex C: Comparison of the current IFN-γ testing policy in England and the proposed refinements to the policy.

7.8. Preliminary findings from an unpublished study by APHA, which looked at the effect of parallel IFN-γ testing on cattle TB breakdowns' duration and recurrence in the Edge Area, support the targeting of recurrent breakdowns in the way we propose. This study found that in the former Edge Area (i.e. as defined prior to 2018), deployment of the IFN-γ test was associated with approximately half as many breakdown recurrences compared to when it was not used.

7.9. To date IFN-γ testing in the HRA has been focused primarily on OTFW herds in areas where there have been at least two years of badger culling. The continuing high TB recurrence rates in the HRA and Edge Area indicate that this more sensitive test would now be better deployed in the way we propose.

7.10. A legislative change would not be needed to deliver this proposal. The earliest we would anticipate introducing this policy change is April 2021.

Expected economic impacts

7.11. The changes we are proposing to our IFN-γ testing policy will not result in any additional costs for industry. The main benefits of the proposal are:

- reduced risk of leaving cattle with undetected infection in herds following a breakdown,
- reduced risk of cattle with undetected infection moving to other herds following lifting of movement restrictions at the end of a breakdown,
- reduced risk of spill over of infection from cattle breakdowns back into the local wildlife population, which is particularly important in areas that have benefited from badger culling.

Question:

Q3a. Do you agree that Defra should revise the current policy for using the more sensitive IFN-γ test in the HRA and Edge Area, so that in addition to persistent breakdowns, use of the test is mandatory where the below criterion is met?

- **TB breakdowns in the HRA and six-monthly testing Edge Area counties that occur within 18 months of the herd regaining TB free status following a previous OTFW breakdown.**

  a. Yes
  b. No
  c. I don't know/ I don't have enough information

Q3b. Please give reasons for your answer. Where available, please provide supporting evidence.

8. Wildlife Control

Background

8.1. The current cull policy has been effective (Figure 1). We have seen statistically significant reductions in OTFW incidence of 66% and 37% in the first two cull areas over the first four years of culling[8]. There has also been no significant perturbation effect immediately outside these cull areas where it had been predicted TB would increase.

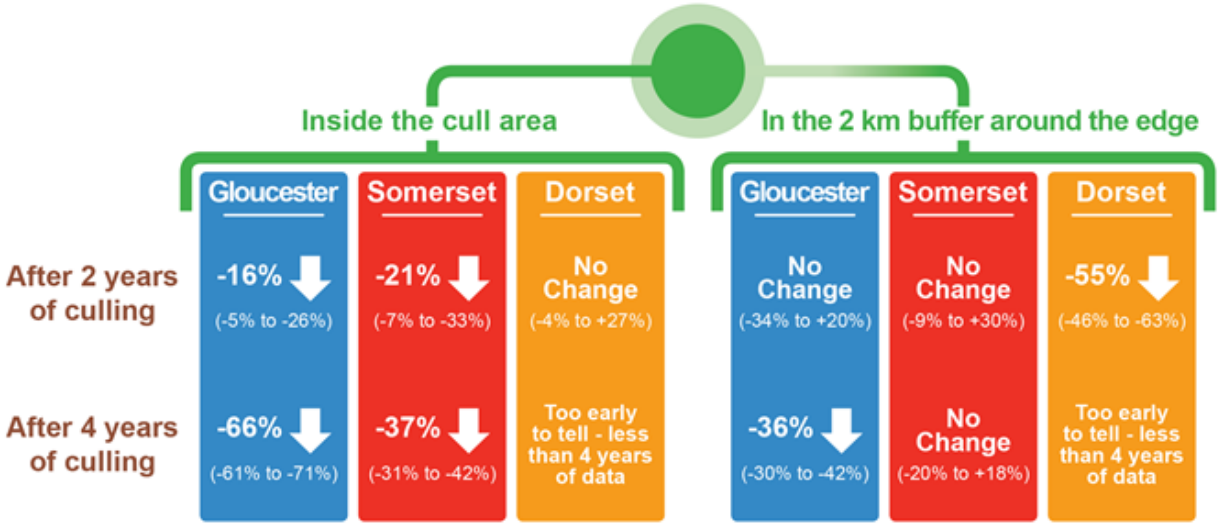


Figure 1. Change in TB incidence rates relative to comparison areas; from Downs et al[8].

[8] Downs et al., Assessing effects from four years of industry-led badger culling in England on the incidence of bovine tuberculosis in cattle, 2013–2017 Scientific reports (2019) 9:14666 https://doi.org/10.1038/s41598-019-49957-6

8.2. Recent published raw data[9] shows encouraging trends of reduced incidence and prevalence across the first 32 cull areas compared with the years before culling began. Compared with the average of the four years before culling started, OTFW incidence has dropped by an average of 27% after 2 years, 51% after 4 years and 53% after 6 years in the first twenty-one, three and two areas respectively.

8.3. The 2014 bTB strategy, which included widespread badger control, is working. Across England the number of new TB herd incidents has reduced steadily over the last three years with fewer herd breakdowns in 2019 than in any year since 2007 and 2020 is on course to see even fewer breakdowns[10]. This trend is most pronounced in the HRA where the bulk of infections occur, with OTFW incidence reducing from 14.7% in 2013, to 10.9% in 2019[11]. Although in the Edge area it has increased from 3.1% to 5.8% over the same time period.

8.4. Intensive badger culling has been implemented in 52 areas over approximately 68% of the HRA and 13% of the Edge Area. Government considers that it is important that intensive culls are deployed across as much as possible of the area where there is a reservoir of infection in badgers to ensure progress towards the 2038 eradication goal. Maximum benefits should arise after simultaneous culling across all licensed areas.

8.5. As set out in the government response to the Godfray Review, widespread culling of badgers was only ever envisaged as a phase of an adaptive disease control strategy. Now that industry is nearing the point where culling has been implemented in all areas looking to address the risk from badgers using this tool, it is time to prepare for a transition to wider non-lethal badger control.

8.6. The scientific consensus, summarised in Professor Charles Godfray's independent restatement of the evidence base in 2013[12], is that TB spreads within and between populations of badgers and cattle, in the absence of effective biosecurity and disease control measures. If the gains from widespread culling are not to be eroded over the short-to-medium term, there remains the need for ongoing control of the risk of TB from badgers, albeit with more emphasis on non-lethal tools.

8.7. The proposals within this consultation make up an early phase of the Government's evolving strategy on badger disease control, clearly signalling the end of the current widespread cull policy. This transitional period will give us time

[9] https://www.gov.uk/government/publications/bovine-tb-incidence-of-tb-in-cattle-in-licenced-badger-control-areas-in-2013-to-2019
[10] https://www.gov.uk/government/statistical-data-sets/tuberculosis-tb-in-cattle-in-great-britain
[11] https://www.gov.uk/government/publications/bovine-tb-epidemiology-and-surveillance-in-great-britain-2019 (see tab B3 in the data spreadsheet)
[12] Godfray, H.C.J and others (2013) A restatement of the natural science evidence base relevant to the control of bovine tuberculosis in Great Britain. Proceedings of the Royal Society B. https://doi.org/10.1098/rspb.2013.1634

to undertake badger vaccination pilots and develop our future badger vaccination policy, as well develop a policy which enables culling in exceptional circumstances, where supported by epidemiological evidence. It is envisaged that development of future culling policy will build on the adaptive approach taken in response to bTB outbreaks in the LRA of England. The end of widespread culling is also anticipated to coincide with changes in cattle measures, including the timeline for market approval of the CattleBCG vaccination. Taken together, it is anticipated that these cattle and badger measures should preserve the benefits from intensive culling.

9. Proposal 3: Cease issuing Badger Disease Control (intensive cull) licences for new areas post 2022

Rationale

9.1. Announcing the end to the issuing of new intensive cull licences now demonstrates government's commitment to transitioning away from widespread badger culling as the principal strategy to address risks from the spread of disease from wildlife to cattle.

9.2. The Government anticipates that any remaining areas located where there is a significant reservoir of infection in badgers, and that wish to undertake culling for the purposes of tackling bovine TB, will come forward to apply for a licence by 2022. This approach of simultaneous culling across all remaining licensed areas should maximise the benefits of culling as this phase of the policy concludes.

9.3. Setting a clear date for when the last new intensive cull licences could be issued will allow sufficient time for those areas who still wish to carry out a cull and are able to do so, to prepare adequately to ensure they meet the requirements to undertake a safe, effective and humane operation. This approach also provides an opportunity for government to work with stakeholders on future wildlife control policy (see paragraph 158.7).

Proposal

9.4. **No areas will be issued with a new Badger Disease Control (intensive cull) licence under the current policy after 1 December 2022.**

Questions:

Q4a. Do you agree with the proposal to cease the issuing of new Badger Disease Control (intensive cull) licences after 2022?

a. Yes
b. No
c. I don't know/I don't have enough information

Q4b. Please give reasons for your answer.

10. Proposal 4: New Badger Disease Control (intensive cull) licences issued in 2021 and 2022, could, after 2 years of culling, be revoked after a progress evaluation by the Chief Veterinary Officer (CVO).

Rationale

10.1. The licensing criterion currently found in the Guidance to Natural England (NE) of a minimum of four years of culling was based on analysis of the Randomised Badger Control Trial (RBCT - a large-scale field trial that was set up in the 1990s to quantify the impact of culling badgers on incidence of TB in cattle). This analysis showed that it was only after the fourth annual cull that the net benefits of culling inside cull areas outweighed the negative effects attributed to perturbation where TB herd incidence increased in the area outside the culls (the "perturbation effect").

10.2. Only intensive cull licences are required to have a minimum duration of 4 years. The duration of licences in the LRA is determined on a case by case basis, with no minimum required by the policy due to the risk of the potential perturbation effect being different and much lower than in the HRA and Edge Area. No minimum cull duration is required by the Supplementary Badger Control (SBC) policy, as the risk of a potential perturbation effect is expected to be much lower after several years of culling.

10.3. Analysis of the initial three cull areas by Downs et al.[13] shows an unexpected, apparent lack of a perturbation effect in the areas surrounding the cull. The reason for this is unknown, but a possible explanation is that cull areas have harder boundaries than those in the RBCT. This is thought to lead to a reduction in badger movement into and out of cull areas, therefore resulting in a reduction in the spread of disease. Since the evidence for the perturbation effect in the current culls is not as compelling as in the RBCT, the rationale for the requirement for a four-year minimum cull which, as explained above, was designed primarily to offset the disbenefits of the perturbation effect, is substantially weakened.

10.4. It is evident from the RBCT that the benefits of culling are long term, lasting several years after culling ceases. It would be wrong to conclude from the RBCT results that, for example, the first year of culling had no long-term effect: it is almost certainly the case that the reductions in cattle incidence inside cull areas between the third and fourth cull cannot be attributed solely to the third cull but

[13] Downs et al., Assessing effects from four years of industry-led badger culling in England on the incidence of bovine tuberculosis in cattle, 2013–2017 Scientific reports (2019) 9:14666 |https://doi.org/10.1038/s41598-019-49957-6

must be due, at least in part, to the first and second cull. Furthermore, the benefits of culling persisted for at least a year after the RBCT trial period ended and thus ~2 years after the last cull was completed.

10.5. It is possible that the benefits of culling, which plateaued after the third cull, may have been generated by the first two years of culling and then maintained by subsequent culls. This indicates that it should be possible for an intensive cull to stop after two years and still potentially achieve considerable reductions in TB incidence inside cull areas[14]. While this approach would reduce the costs of culling (by reducing the overall cull length), shortening the cull from four years to two or three years may lead to fewer total benefits than a four-year cull as the RBCT results indicate that the benefits from culling would start to erode one or two years earlier. This approach also assumes, pessimistically, that no alternative measures, such as badger vaccination, are put in place.

10.6. The CVO agrees that in areas licensed for intensive culling in 2021 and 2022, it may be possible to stop culling after two years. She advises that in order to make such a decision, a progress evaluation would need to be made on an area by area basis using all the epidemiological information available at the time. This would be consistent with the adaptive management policy in place for the LRA.

10.7. This proposed change would not apply to existing intensive cull licences (i.e. issued in 2020 or earlier) revoked and re-issued in order to give effect to a boundary change or some other amendment to the original licence.

10.8. It should be noted that it is currently possible for any badger cull licence to be revoked by Natural England so long as the revocation is not unreasonable (see sections 10(8) and (9) of the Protection of Badgers Act 1992) and this will not change as a result of this proposal.

Proposal

10.9. **New Badger Disease Control (intensive cull) licences issued in 2021 and 2022, could, after 2 years of culling, be revoked after a progress evaluation by the CVO.**

[14] There is no direct experimental evidence of the effect of a two- or three-year cull as all RBCT areas culled for at least four years so this approach is based on assumptions about what would happen based on extrapolation from existing evidence.

Questions:

Q5a. Do you agree with the proposal that new Badger Disease Control (intensive cull) licences issued in 2021 and 2022, could, after 2 years of culling, be revoked after a progress evaluation by the CVO?

a. Yes
b. No
c. I don't know/I don't have enough information

Q5b. Please give reasons for your answer.

11. Proposal 5: Reduce the initial financial commitment of cull companies to three years funding

Rationale

11.1. Government wants to maximise the benefits achieved from enabling intensive badger culling. It is important that the last remaining areas that meet the licensing requirements start in 2021 and 2022.

11.2. To meet the requirements for an intensive cull licence the current Guidance requires 90% of land within the licensed area to be either signed up or within 200m of participant land and for the company to hold sufficient funds to cover 4 years of culling and a 25% contingency sum.

11.3. Industry frequently report that it is difficult to collect these upfront costs from all farmers, and key to successful sign up is face to face meetings between company Directors and potential participants, which have been severely impacted by COVID-19 restrictions. Despite the success of face to face meetings, approximately 10% of landowners need significantly more time and effort before they sign up.

11.4. Decreasing the potential duration of intensive culls, as outlined above in proposal 3, coupled with the current substantial upfront financial costs may deter some companies from applying for licences in 2021 or 2022.

11.5. Fifty-two licensed cull areas have completed between 1 and 4 years of culls, and the vast majority of culls have been judged effective by the CVO. The government has not had to step in and deliver badger control in any area and it is considered unlikely that it will have to do so for areas which receive a cull licence in 2021 or 2022. The proposal to reduce the upfront financial commitment, currently required under the Guidance, reflects the demonstrated low risk of government involvement.

11.6. NE has a reliable process for ensuring that companies have robust operational plans to deliver effective culls that meet the criteria contained in the Guidance, and that sufficient funds are in place prior to any year's culls commencing. Despite some areas having greater costs than initially predicted, none have failed the financial test.

11.7. In the unlikely event that government had to deliver operations to complete an effective cull, the cost of such activity can be reclaimed from the company. There are provisions within the agreements between cull companies, participants and government which cover the reclaiming of any such costs.

11.8. To mitigate the risk of areas not coming forward before the 2022 deadline due to the financial commitment currently required under the Guidance, we propose to reduce the initial financial commitment required from the companies to the cost of three years of culling.

Proposal

11.9. **Reduce the initial financial commitment required from the companies prior to application for a Badger Disease Control licence to the cost of three years of culling.**

Questions:

Q6a. Do you agree with the proposal to reduce the initial financial commitment required from the companies prior to application for a Badger Disease Control licence to the cost of three years of culling?

a. Yes
b. No
c. I don't know/I don't have enough information

Q6b. Please give reasons for your answer.

12. Proposal 6: Restrict any new Supplementary Badger Cull (SBC) licences to two years and cease re-issuing licences for areas which have previously undertaken SBC

Rationale

12.1. In its response to the Godfray Review, the government acknowledged that it is unrealistic to switch immediately to badger vaccination from widespread culling. The response proposed piloting badger vaccination as soon as possible during

the transition phase. The information gained from these pilots will inform development of our future policy for badger control.

12.2. To facilitate uptake of badger vaccination and participation in these pilot schemes, we propose to restrict the duration of new SBC licences to two years and to not issue new SBC licences to areas that have previously been included in an SBC licence. Under this proposal, cull areas would have the two years in which they were undertaking SBC to plan and undergo training to enable them to switch from culling to vaccination if they so choose. We consider that two years should be sufficient time to plan for and undertake this switch.

12.3. Under this proposal, once an area completes a 4-year intensive cull, it will not be possible to apply for another 4-year intensive cull licence instead of a 2-year SBC licence as a means to undertake 4 further years of culling.

12.4. We also propose that it will not be possible for areas that commence intensive culling in 2021 and 2022 to be issued with SBC licences following the end of their intensive cull.

12.5. Decreasing the duration of SBC may dissuade some cull companies that have completed four years of intensive culling from applying for an SBC licence. However, given the licensing requirements for SBC are much less onerous than those for intensive culling already, we do not see this as a major blocker for those cull companies who do wish to proceed with supplementary culling.

Proposal

12.6. **Restrict SBC licences to a maximum of two years, from the current five. Prohibit issuing of SBC (or Badger Disease Control) licences for areas that have previously been included in one of these licences or areas licensed for Badger Disease Control after 2020.**

Questions:

Q7a. Do you agree with the proposal to restrict SBC licences to a maximum of two years, and to prohibit the issuing of SBC licences for previously licensed areas or areas licensed for Badger Disease Control after 2020?

a. Yes
b. No
c. I don't know/I don't have enough information

Q7b. Please give reasons for your answer.

Expected economic impacts

12.7. Intensive badger culling involves some economic costs associated with labour, equipment and policing, but also results in some benefits from reduced incidence of TB in cattle. SBC was introduced to maintain the badger population at low levels to prolong the benefits of reduced TB breakdowns in cattle accrued from intensive culling. Once SBC stops the badger population will grow over time and the associated benefits of culling will be expected to erode unless other measures, such as badger vaccination, are put in place.

13. When will any Guidance changes be implemented?

13.1. The responses to this consultation will be analysed and considered as part of decisions about changes to the Guidance. Any decision by the Secretary of State to introduce any of these proposals will be informed by the scientific evidence and veterinary advice available, experience from the licensed badger control operations and vaccination to date and responses to this consultation. If the Guidance is revised as a result, the updated Guidance will be implemented immediately.

Question:

Q8. Do you have any comments on the proposed revisions to the Guidance (Annex D)?

Part C: Tell us what you think

14. Your comments invited - questions

Question (i): What is your name?

Question (ii): What is your email address?

Question (iii): What is your organisation?

Question (iv): Do you want your response to be confidential?

Q1a: Do you support the proposal to introduce mandatory post-movement testing of cattle moving from higher TB risk regions of Great Britain (the HRA, Edge Areas on six-monthly surveillance testing and Wales) into those parts of the Edge Area where herds are on annual surveillance testing?

a. Yes
b. No
c. I don't know/I don't have enough information

Q1b: Please give reasons for your answer. Where available, please provide supporting evidence.

Q2a: Do you agree with the assumptions and the assessment of costs and benefits in the Regulatory Triage Assessment on introducing post-movement testing to parts of the Edge Area?

a. Yes
b. No
c. I don't know/ I don't have enough information

Q2b: Please give reasons for your answer. Where available, please provide supporting evidence. We particularly welcome evidence on the following assumptions:

- additional time and/or inconvenience to farmers of facilitating a post-movement test,
- batch size of bovine animals tested (i.e. the number of bovines tested) in a post-movement test,
- proportion or number of inward cattle movements which use a routine diagnostic test to double up as a post-movement test (so would not require an additional post-movement test), in either 6 monthly or 12 monthly counties of the Edge Area.

Q3a. Do you agree that Defra should revise the current policy for using the more sensitive IFN-γ test in the HRA and Edge Area, so that in addition to persistent breakdowns, use of the test is mandatory where the below criterion is met?

- **TB breakdowns in the HRA and six-monthly testing Edge Area counties that occur within 18 months of the herd regaining TB free status following a previous OTFW breakdown.**

b. Yes
c. No
d. I don't know/ I don't have enough information

Q3b. Please give reasons for your answer. Where available, please provide supporting evidence.

Q4a. Do you agree with the proposal to cease the issuing of new Badger Disease Control (intensive cull) licences after 2022?

a. Yes
b. No
c. I don't know/I don't have enough information

Q4b. Please give reasons for your answer.

Q5a. Do you agree with the proposal that new Badger Disease Control (intensive cull) licences issued in 2021 and 2022, could, after 2 years of culling, be revoked after a progress evaluation by the CVO?

a. Yes
b. No
c. I don't know/I don't have enough information

Q5b. Please give reasons for your answer.

Q6a. Do you agree with the proposal to reduce the initial financial commitment required from the companies prior to application for a Badger Disease Control licence to the cost of three years of culling?

a. Yes
b. No
c. I don't know/I don't have enough information

Q6b. Please give reasons for your answer.

Q7a. Do you agree with the proposal to restrict SBC licences to a maximum of two years, and to prohibit the issuing of SBC licences for previously licensed areas or areas licensed for Badger Disease Control after 2020?

a. Yes
b. No
c. I don't know/I don't have enough information

Q7b. Please give reasons for your answer.

Q8. Do you have any comments on the proposed revisions to the Guidance (Annex D)?

Q9: Do you have any other comments?

15. How to respond

15.1. We have written to organisations that we believe have a direct interest in the proposals to raise awareness about this consultation and have invited them to respond. We hope this will help ensure a wide range of informed views can be considered. Anyone else who would like to respond to the consultation is encouraged to do so. Each response will be considered in its own right and on its own merits. **The deadline for responses is 24 March 2021.**

15.2. You can respond in one of three ways:

- **Online** by completing the questionnaire at: https://consult.defra.gov.uk/bovine-tb-2020/eradication-of-btb-england
- **Email** to: bTBengage@defra.gov.uk
- **Post** to:

  Consultation Coordinator,
  Defra 2nd Floor,
  Foss House,
  Kings Pool,
  1-2 Peasholme Green,
  York,
  YO1 7PX

15.3. **Our preferred method is online** because it is the fastest and most cost-effective way for us to collate, analyse and summarise responses. If you require a different format, please let us know.

15.4. We intend to publish a summary of responses to this consultation on gov.uk. It will not be practical to describe every response in detail.

15.5. The summary will not include your personal name (unless you have asked us to include it) or other personal data such as contact details. The summary may contain the name of your organisation, if you are responding on an organisation's behalf.

15.6. Defra will retain copies of responses for a suitable length of time. Please note that a member of the public can ask to see copies of information held. If you need to keep any part of your response confidential, please tell us when you respond. Please note that confidentiality disclaimers automatically added to emails do not count.

15.7. **Important**: We will take your reasons into account if someone asks for information. Because we must comply with the law, including access to information legislation, we cannot promise that we will always be able to keep details that you provide to us confidential.

16. Confidentiality and data protection

16.1. This consultation document and consultation process have been planned to adhere to the Consultation Principles issued by the Cabinet Office.

16.2. Representative groups are asked to give a summary of the people and organisations they represent and where relevant who else they have consulted in reaching their conclusions when they respond.

16.3. Information provided in response to this consultation, including personal data, may be published or disclosed in accordance with the access to information regimes these are primarily the Environmental Information Regulations 2004 (EIRs), the Freedom of Information Act 2000 (FOIA) and the Data Protection Act 2018 (DPA). We have obligations, mainly under the EIRs, FOIA and DPA, to disclose information to particular recipients or to the public in certain circumstances.

16.4. If you want the information that you provide to be treated as confidential, please be aware that, as a public authority, the Department is bound by the Freedom of Information Act and may therefore be obliged to disclose all or some of the information you provide. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

16.5. This consultation is being conducted in line with the Cabinet Office "Consultation Principles" and be found at: https://www.gov.uk/government/publications/consultation-principles-guidance.

16.6. If you have any comments or complaints about the consultation process, please address them to:

Consultation Coordinator,
Defra 2nd Floor,
Foss House,
Kings Pool,
1-2 Peasholme Green,
York,
YO1 7PX Or email: consultation.coordinator@defra.gov.uk

Annex A: List of parishes in Berkshire, Derbyshire and Hampshire that would be required to post-movement test

1. List of parishes in Berkshire that would be required to post-movement test

CP Number	Parish Name		CP Number	Parish Name
02/068	Bisham		02/178	Ruscombe
02/069	Bray		02/179	St Nicholas Hurst
02/070	Cookham		02/180	Sandhurst
02/071	Hurley		02/181	Sonning
02/072	Maidenhead		02/182	Twyford
02/073	Remenham		02/183	Waltham St Lawrence
02/074	Shottesbrooke		02/184	Warfield
02/075	White Waltham		02/185	Wargrave
02/076	Winkfield		02/186	Wokingham
02/117	Reading		02/187	Wokingham Without
02/118	Shinfield		02/188	Woodley
02/123	Grazeley		02/191	Grazeley
02/126	Christchurch		02/195	Bracknell
02/166	Windsor		02/196	Charvil
02/167	Old Windsor		02/480	Britwell
02/168	Sunningdale		02/487	Datchet
02/169	Sunninghill		02/488	Eton
02/170	Arborfield and Newland		02/489	Horton
02/171	Barkham		02/492	Slough
02/172	Binfield		02/495	Wraysbury
02/173	Crowthorne		02/496	Cox Green
02/174	Earley		02/497	Wexham Court
02/176	Finchampstead		02/498	Colnbrook with Poyle
02/177	Winnersh			

2. List of parishes in Derbyshire that would be required to post-movement test

CP Number	Parish Name		CP Number	Parish Name
09/003	Pilsley		09/162	Glapwell
09/006	Blackwell		09/163	Grassmoor Hasland & Winswick
09/008	Morton		09/164	Heath & Holmewood
09/009	Pinxton		09/166	North Wingfield
09/011	South Normanton		09/167	Pleasley
09/013	Tibshelf		09/168	Scarcliffe
09/063	Abney & Abney Grange		09/169	Shirebrook
09/066	Baslow & Bubnell		09/170	Sutton Cum Duckmanton
09/071	Calver		09/172	Temple Normanton
09/073	Curbar		09/173	Tupton
09/076	Eyam		09/175	Holymoorside And Walton
09/080	Froggatt		09/184	Breaston
09/084	Grindlow		09/190	Draycott and Church Wilne
09/088	Hathersage		09/195	Hopwell
09/089	Hazlebadge		09/200	Long Eaton
09/090	Highlow		09/203	Ockbrook
09/091	Little Hucklow		09/208	Risley
09/097	Offerton		09/210	Shardlow & Great Wilne
09/098	Outseats		09/220	Barlborough
09/101	Pilsley		09/222	Clowne
09/107	Stoney Middleton		09/225	Dronfield
09/134	Aston		09/226	Eckington
09/135	Bamford		09/227	Elmton
09/138	Bradwell		09/228	Holmesfield
09/139	Brough And Shatton		09/229	Killamarsh
09/140	Castleton		09/233	Unstone
09/141	Chinley Buxworth & Brownside		09/234	Whitwell
09/143	Derwent		09/235	Charlesworth
09/144	Edale		09/236	Chisworth
09/145	Whaley Bridge		09/237	Glossop
09/146	Hayfield		09/246	Ilkeston
09/147	Hope		09/252	Sandiacre
09/148	Hope Woodlands		09/256	Stanton By Dale
09/150	New Mills		09/271	Coton In The Elms
09/152	Thornhill		09/274	Lullington
09/153	Old Bolsover		09/275	Netherseal
09/154	Brimington		09/276	Overseal
09/155	Staveley		09/309	Chatsworth
09/157	Ault Hucknall		09/311	Chapel En Le Frith
09/158	Barlow		09/577	Tintwistle

09/159	Brampton		09/578	Grindleford
09/160	Calow		09/579	Aldercar & Langley Mill
09/161	Chesterfield		09/581	Ironville

3. List of parishes in Hampshire that would be required to post-movement test

CP Number	Parish Name		CP Number	Parish Name
15/001	Wield		15/208	South Warnborough
15/002	Alton		15/209	Winchfield
15/003	Bentley		15/210	Yateley
15/004	Bentworth		15/212	Bramshott and Liphook
15/005	Binsted		15/213	Buriton
15/006	Chawton		15/216	Clanfield
15/007	East Tisted		15/217	Colemore & Priors Dean
15/008	Farringdon		15/218	Eastmeon
15/009	Froyle		15/220	Froxfield
15/010	Grayshott		15/221	Greatham
15/012	Headley		15/222	Hawkley
15/014	Kingsley		15/224	Langrish
15/015	Lasham		15/225	Liss
15/016	Medstead		15/226	Petersfield
15/017	Newton Valence		15/230	Steep
15/018	Selborne		15/233	Breamore
15/019	Shalden		15/234	West Tisted
15/020	Worldham		15/235	Burley
15/026	Barton Stacey		15/237	Bransgore
15/027	Bullington		15/238	Damerham
15/028	Chilbolton		15/239	Ellingham Harbridge & Ibsley
15/032	Goodworth Clatford		15/240	Fordingbridge
15/038	Leckford		15/241	Hale
15/041	Longstock		15/247	Martin
15/043	Nether Wallop		15/249	Ringwood
15/051	Stockbridge		15/250	Rockbourne
15/054	Upper Clatford		15/251	Sopley
15/056	Wherwell		15/253	Whitsbury
15/058	Old Basing		15/254	Woodgreen
15/061	Cliddesden		15/255	Ampfield
15/064	Dummer		15/256	Bossington
15/065	Ellisfield		15/257	Broughton
15/066	Farleigh Wallop		15/258	Buckholt
15/068	Herriard		15/260	East Dean
15/069	Mapledurwell & Up Nately		15/261	East Tytherley
15/072	Newnham		15/263	Houghton
15/079	Tunworth		15/264	Kings Somborne
15/081	Upton Grey		15/265	Lockerley

15/082	Weston Corbett		15/266	Michelmersh
15/083	Winslade		15/267	Mottisfont
15/089	Bradley		15/268	North Baddesley
15/091	Popham		15/269	Nursling & Rownhams
15/092	Preston Candover		15/270	Melchet Park & Plaitford
15/094	Bishops Waltham		15/271	Romsey Extra
15/095	Corhampton and Meonstoke		15/272	Romsey
15/096	Curdridge		15/274	Sherfield English
15/097	Droxford		15/277	West Tytherley
15/098	Durley		15/278	Wellow
15/099	Exton		15/282	City Of Southampton
15/100	Hambledon		15/284	Ashley
15/102	Shedfield		15/286	Beauworth
15/103	Soberton		15/287	Bighton
15/104	Swanmore		15/288	Bishops Sutton
15/105	Upham		15/289	Bramdean
15/106	Warnford		15/290	Candovers
15/107	West Meon		15/291	Cheriton
15/109	Botley		15/292	Chilcomb
15/111	Fair Oak & Horton Heath		15/294	Compton & Shawford
15/112	Hedge End		15/295	Crawley
15/113	Otterbourne		15/299	Headbourne Worthy
15/115	Bursledon		15/302	Hursley
15/116	Chilworth		15/304	Itchen Stoke & Ovington
15/117	Eastleigh		15/305	Kilmiston
15/118	Hamble-Le-Rice		15/306	Kings Worthy
15/119	Hound		15/307	Little Somborne
15/122	West End		15/308	Littleton & Harestock
15/123	Gosport District		15/310	Micheldever
15/125	Boarhunt		15/312	New Alresford
15/128	Fareham		15/313	Northington
15/130	Havant District		15/314	Old Alresford
15/135	City Of Portsmouth		15/316	Owslebury
15/139	Southwick and Widley		15/317	Ropley
15/143	Wickham		15/319	Sparsholt
15/166	Boldre		15/321	Tichborne
15/167	Brockenhurst		15/322	Twyford
15/168	East Boldre		15/324	West Tisted
15/170	Lymington & Pennington		15/325	Winchester
15/175	Sway		15/326	Wonston
15/176	Beaulieu		15/327	Colden Common
15/177	Bramshaw		15/328	Four Marks
15/180	Copythorne		15/329	Itchen Valley
15/181	Denny Lodge		15/330	Denmead
15/182	Hythe and Dibden		15/331	Horndean
15/183	Totton and Eling		15/332	Rowlands Castle
15/184	Exbury and Lepe		15/333	Hook
15/185	Fawley		15/334	Weston Patrick

15/186	Lyndhurst		15/335	Whitehill
15/187	Marchwood		15/338	Frenchmoor
15/188	Minstead		15/341	Braishfield
15/189	Netley Marsh		15/342	Crookham Village
15/190	Rushmoor District		15/343	Olivers Battery
15/191	Bramshill		15/344	Lindford
15/193	Crondall		15/346	Awbridge
15/195	Dogmersfield		15/348	South Wonston
15/197	Eversley		15/349	Ashurst & Colbury
15/199	Fleet		15/351	Badger Farm
15/200	Greywell		15/353	Hyde
15/201	Hartley Wintney		15/354	Hordle
15/202	Blackwater and Hawley		15/355	Milford-On-Sea
15/203	Heckfield		15/356	Nutley
15/204	Long Sutton		15/357	Sandleheath
15/205	Mattingley		15/359	New Milton
15/206	Odiham		15/360	Stroud
15/207	Rotherwick			

Annex B: Regulatory Triage Assessment - Extending Post-Movement TB testing to parts of the Edge Area

Regulatory Triage Assessment	
Title of measure	Edge Area Post Movement Testing (PoMT) for Bovine Tuberculosis (TB) Cost Benefit Analysis
Lead Department/Agency	Defra
Expected date of implementation	Autumn 2021
Origin	Domestic
Date	10/03/2020
Lead Departmental Contact	Dan Hackett
Departmental Triage Assessment	Deregulation (fast track)

Rationale for intervention and intended effects

Background.

Bovine Tuberculosis (bTB) is the biggest and most significant animal health problem facing farmers and government in our country. It is a devastating disease, causing financial problems for cattle farmers and their families. Government is committed to working with industry and the vet profession to eradicate the disease by 2038. England is divided into three geographic areas reflecting the variable TB prevalence rates across the country. Although at the national level there has been some improvements in the disease picture, we still have the highest TB rates in Europe. To protect our Low TB Risk Area (LRA) in the north and east of England, there is already a requirement to post movement test (PoMT) cattle moved into herds in the England LRA from higher risk areas of GB.

Within the 'Edge' Area, a buffer zone between the HRA and LRA, the aim is to bear down on the disease and reduce the risk of spatial spread to the LRA. Although there is not a consistent picture in all Edge Area counties, the incidence and prevalence of bTB for the area as a whole have steadily increased over the last five years. Therefore, tackling bTB in the Edge Area of England is strategically important if we are to achieve Officially TB Free (OTF) status for England by 2038 as outlined in the Government's bTB eradication Strategy for England. An independent review of the bTB Strategy, led by professor Godfray in 2018, noted the worrying trend of increased herd incidence of TB in the Edge Area and recommended introducing compulsory PoMT into parts of this Area.

Economic Rationale for Intervention

The movement of cattle (e.g. for sale) is a common feature of a market where different farms specialise in different stages of the supply chain such as rearing and finishing. However, cattle movements increase the likelihood (this is a negative externality) of spreading bTB from the origin herd to the destination herd because the available TB screening tests (especially the tuberculin skin test) will not identify all infected animals. When cattle move, farmers do not have perfect information on the likelihood that a given animal may be infected and may not take into account the impact of onward transmission of bTB infection. Therefore, farmers may have insufficient information to prevent bTB entering their herd and other herds, they may consider factors other

than likelihood of bTB infection to be more relevant when making cattle purchasing decisions, or they may simply not seek information on the bTB history of the animals they buy.

PoMT increases the likelihood of finding previously unidentified TB infection present in both the destination and origin herd and enables steps to be taken to reduce the extent of within-herd spread and future TB incidents.

Viable policy options (including alternatives to regulation)

Do nothing: No mandatory PoMT. Under the baseline scenario PoMT continues to be a requirement in the Low Risk Area (LRA) but not Edge Area counties as is current policy. Herds in the Edge Area will continue to have government funded TB surveillance tests – at 6 monthly intervals if they are in a county with a high TB incidence rate or annually if the disease levels are low. But there would be no additional PoMT requirement.

- Option 1(preferred option): Mandatory PoMT of cattle moved to herds in Edge Area counties on annual surveillance testing from the higher TB risk regions of GB i.e. from the High Risk Area (HRA), Edge Area counties on six monthly testing and Wales.

- Option 2: Mandatory PoMT of cattle moving into all Edge area counties (i.e. those areas on annual or six monthly testing) from the High Risk Area, Wales and cattle moving between holdings in all parts of the Edge Area.

A non-regulatory approach (e.g. encourage voluntary testing) is deemed unlikely to succeed. For other related TB policy changes, such as mandatory pre-movement and post-movement testing, the statutory requirement was introduced only after a voluntary approach had failed.

Initial assessment of impact on business

As is current policy in the LRA, PoMT is introduced into Edge Area counties and in most cases the farmer undertaking the PoMT would incur the financial cost. There are economies of scale in diagnostic testing, so the total cost of testing a batch of animals is conditional on how many cattle are tested in the batch. On a 'per animal tested' basis it is less costly to test larger batches of animals than smaller batches.

An estimate of the financial cost (fees) that the farmer pays for veterinary services is included in the analysis, as is the costs of tuberculin used in the SICCT[15] test. Finally, an estimate of the cost of time and inconvenience to the farmer is included as the farmer will need to ensure the animals are rounded up and ready to be tested.

Where a test positive animal[16] ('reactor') is identified the destination herd will lose its OTF status and become a breakdown herd, until follow-up TB herd testing is completed with negative results. If TB is confirmed in the herd (visible lesions found in the carcase at slaughter and/or *M. bovis* cultured from tissue samples), back- (and forward-) tracing activities are also initiated. The origin herd would have a 'check test' which means it could also become a TB breakdown herd. These breakdown herds would be put under movement restrictions and have to pass at least two rounds of 'Short Interval Tests' (SITs) to regain Officially TB Free status. The SITs would be undertaken at the financial expense of government, but with substantial inconvenience to the farmers concerned. However, because infection would be identified earlier in the selling and buying herds it is expected that there will be a net decrease in the number of breakdowns in other herds as infection would be identified and removed earlier.

Cost-Benefit analysis

[15] single intradermal comparative cervical tuberculin test.

[16] All test positive animals (reactors) are assumed to be infected (i.e. 'true positive' animals). Given the high specificity of the SICCT test (99.9%) it is unlikely that reactors will be uninfected animals incorrectly testing positive in the PoMT (i.e. a 'false positive' animal).

Table 1 outlines the average annual number of cattle movements per year into the annual and six-monthly testing parts of the Edge Area between 2016 and 2018 that are within scope of the policy options i.e. we exclude movements of animals slaughtered within 120 days of being moved because these movements are exempt from PoMT. Table 1 also does not include movements of cattle to Approved Finishing Units (AFU) – cattle in bio-secure housed AFUs are not routinely TB tested[17].

Table 1: Average annual count of individual cattle moved into the England Edge Area from higher risk counties of England and Wales (2016 to 2018)[18].

Movements to…	Option 1	Option 2
Edge annual testing counties	70,563	171,135
Edge six-monthly testing counties	N/A	68,831
Total for option	70,563	239,967

Farmers would generally incur the financial cost of the PoMT, though given the two month window for this test some farmers would be able to use their government-funded routine bTB surveillance test to double up as their PoMT where the timing of their PoMT coincided with their routine testing window. For those farmers there would be no additional cost burden.

To estimate the number of animals that would have a PoMT it is therefore necessary to deduct any movements of animals where the test would be undertaken as part of the routine surveillance testing.To estimate the cost (and benefits) of PoMT, a conservative assumption is made that farmers do not change the timing of their purchase. The implication is that surveillance tests are assumed to double up as a PoMT in one sixth (17%) of movements to annual testing counties, and one third (33%) of movements to 6 monthly testing counties. These reductions reflect the proportion of time between successive surveillance tests which will be covered by the 60 day window in which PoMT can be undertaken.

Table 2 below outlines the number of animals moved that are assumed to require a PoMT.

[17] An intended consequence of the policy is to incentivise the establishment of an increased number of AFUs. If the buying herd sends an animal to an AFU rather than have the animals PoMT at a non-AFU facility then they are revealing that the AFU is a cheaper option. Hence, by assuming that proportionally there are no additional AFUs in the Edge area compared to the LRA we are making a conservative (upper end) estimate of the costs of introducing PoMT into the Edge area.

[18] Note, there are more movements to annual testing counties for Option 2 because Option 2 includes movements from other annual testing counties. These movements are not within scope of Option 1. Specifically: Option 1 entails movements to England (annual testing counties only) from England HRA, England Edge (6 monthly testing counties) or Wales. Option 2 entails movements to England Edge (annual testing counties or 6 monthly testing counties) from England HRA, England Edge (annual testing counties or 6 monthly testing counties) or Wales.

Table 2: Average annual count of individual cattle who have a PoMT in England Edge Area counties.

Movements to…	Option 1	Option 2
Edge annual testing counties	58,802	142,613
Edge six-monthly testing counties	N/A	45,888
Total for option	58,802	188,500

Defra Statistics on PoMT within the LRA of England show that 0.042%[19] of animals tested in a PoMT test positive. This analysis therefore assumes that 0.042% of animals which have a PoMT in the England Edge Area will test positive for TB in the central scenario. The analysis also assumes that each individual reactor disclosed at a PoMT occurs in different destination herds such that each individual reactor is assumed to cause a breakdown in the destination herd[20]. Because the number of PoMT reactors in the LRA is small and Edge Area counties are more likely to move animals in from the HRA compared with the LRA, this assumption is uncertain. Therefore, a range around the central estimate of 0.042% made with an assumed 0.021% (pessimistic) and 0.063% (optimistic) proportion of animals PoMT tested assumed to disclose a reactor. Table 3 below summarises the range in the proportion of animals (and therefore PoMT) that are assumed to disclose a reactor animals.

Table 3: Proportion of animals tested assumed to be reactors.

	optimistic	central	pessimistic
Proportion of animals tested assumed to be reactors	0.063%	0.042%	0.021%

Costs

The analysis assumes that the 'single intradermal comparative cervical tuberculin test' (SICCT) is undertaken to inform the cost estimates of PoMT.

The estimated fees for cattle tests includes a fixed cost component (i.e. independent of the number of cattle tested) at £54 per testing event and a fee per animal tested of £2.13. In addition a cost of £3.77 for tuberculin is assumed for each animal tested, this specific cost will be incurred by government rather than at the expense of the individual farmer.

There will also be costs of time to the farmer to ensure that the animals are presented to be tested. This is assumed to be a fixed cost independent of the total number of animals tested – typically only a small batch of cattle would require a post-movement test. Data from the 'Annual Survey of Hours and Earnings' (ASHE) provided the basis for an assumed hourly cost of farm

[19] An average annual 25 reactors from 58,000 post movement tests (covering 2017 and 2018).

[20] The implication of this assumption is that no PoMT breakdowns are assumed to entail multiple reactor animals. This assumption may be optimistic when it comes to estimating the benefits of breakdowns avoided. However, the assumption is based on outturn data from PoMT introduced into the Low Risk Area herds which source animals from lower risk cattle so in the assumed proportion of reactors assumption on this basis is conservative in this regard. Given the uncertainty around this assumptions a sensitivity scenario was undertaken on this assumption as part of this analysis.

time of £9.37[21] per hour. The analysis assumes that a farmer will require four hours additional time to facilitate the PoMT over the two days of the SICCT test at a cost of per £37 per PoMT event. Table 4 below summarises the component costs of PoMT testing.

Table 4: Component costs of PoMT testing.

Cost component	Fixed cost	Variable cost (per animal tested)
Fees for test	£53.81	£2.13
Cost of tuberculin	£0.00	£3.77
Cost of farmer time	£37.46	£0.00
Total	**£91.27**	**£5.90**

Defra statistics[22] from PoMT in the LRA informs that typically tests were conducted on a median of 10 animals. The mean number of animals per PoMT in the LRA was 20 animals per test. Therefore to derive a central, pessimistic and optimistic cost estimate (on a cost per animal tested basis) the analysis assume a central scenario of 10 animals tested per PoMT (approximately £15[23] per animal tested), with 5 animals tested in the pessimistic scenario (approximately £24 per animal tested) and 20 animals tested in the optimistic scenario (approximately £10 per animal tested). Table 5 below outlines the range of costs assumed in each scenario based on the number of animals assumed to be tested in each batch for PoMT with a central estimate of £15 per animal tested with a range of £10 to £24.

Table 5: Cost of PoMT per animal tested.

	optimistic	**central**	**pessimistic**
Average number of animals tested in each PoMT batch	20	10	5
total cost to test batch	£209.23	£150.25	£120.76
Average cost of PoMT per animal	£10.46	£15.02	£24.15

The destination herd will become a breakdown herd as a result of the disclosure of a reactor at the PoMT. If TB is confirmed in the herd (visible lesions found in the carcase of the reactor at slaughter and/or *M. bovis* cultured from tissue samples), then tracing activities are undertaken. The origin herd will undergo a check test to assess whether infection is present and so the origin herd may also become a breakdown as a result of the PoMT. However, these breakdowns would

[21] Average of 'Raising of dairy cattle' at £9.25 and 'Raising of other cattle and buffaloes' at £9.48 equates to £9.37 (2018 data converted to 2019 prices).

[22] Derived from Defra 'SAM' dataset.

[23] Costs per animal are estimate based on the fixed and variable costs outlined as 'fees for test' in table 4 divided by the number of animals tested.

probably have been disclosed at the next routine surveillance test. As a consequence, these breakdowns are not considered to be *additional* breakdowns compared to the counterfactual of having no mandatory PoMT.

Benefits

By identifying and removing infected animals earlier than otherwise would have been the case (from both the origin and destination herds) there is likely to be a *net* decrease in the number of breakdowns in other herds as onward infection is avoided. It is not possible to identify which herds would otherwise have been infected and there will likely be a time lag between the PoMT disclosing a reactor and another herd becoming infected had the PoMT not been undertaken.

Because routine testing occurs more frequently in the six-monthly testing portion of the Edge Area compared to annual testing portion, the duration of time between the PoMT and the next scheduled routine test is lower. This means that there is a shorter duration of time when an infected but undetected animal is at risk of infecting other animals in other herds.

However, it is highly uncertain and complex to model the difference in onward transmission rates as a consequence of the duration of time that infection is not disclosed. The best judgement on onward infection avoided provided by APHA (Animal and Plant Health Agency) scientists is that each reactor at a PoMT will reduce onward infection to third herds at a rate of 1.5 secondary breakdowns avoided per reactor disclosed at a PoMT (in the low and high scenarios this estimate is 1.0 and 2.0 respectively). Table 6 below outlines the range of net breakdowns assumed to be avoided for each animal that tests positive in a PoMT.

Table 6: Net reductions in breakdowns resulting from each PoMT reactor disclosed.

	optimistic	central	pessimistic
Net reductions in breakdowns resulting from each PoMT reactor disclosed	2.0	1.5	1.0

Research undertaken by University of Reading (2004)[24] provides an estimate of the cost of an average breakdown at £19,409 converted into 2019 prices (of this £9,106 is incurred by government and £10,303 by industry).

Table 7 below outlines the assumed number of reactors disclosed at PoMTs each year for each option in the high, central and low scenario. The table also states the number of secondary breakdowns in third herds avoided for each reactor disclosed at a PoMT (through onward infection avoided). The final column calculates the net annual reductions in breakdowns as a result of the policy. In the central scenario 37 breakdowns are avoided per annum for option 1 and 119 for option 2.

[24] University of Reading
http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=10137

Table 7: Annual number of breakdowns avoided as a result of PoMT

Option	Scenario	Reactors disclosed at PoMT	Secondary herd breakdowns avoided per PoMT reactor	Annual Reduction in Breakdowns
Option 1	Pessimistic	12.4	1	12.4
	Central	24.8	1.5	37.2
	Optimistic	37.2	2	74.4
Option 2	Pessimistic	39.8	1	39.8
	Central	79.5	1.5	119.3
	Optimistic	119.3	2	238.6

For each reactor disclosed at a PoMT the appropriate assumed number of secondary breakdowns avoided is estimated for each option and assumed constant over the 10-year appraisal period. Each breakdown avoided is valued at the cost of a breakdown and monetised over time using the HMT Greenbook 3.5% annual discount rate.

Table 8 summarises the lifetime present value costs and benefits associated with the central scenario.

Table 8: Present Value costs and Benefits over 10 years – central scenario.

units: £m	Policy Option 1	Policy Option 2
PV Benefits	£6.22	£19.93
PV Costs	£7.61	£24.38
Net Present Value	-£1.39	-£4.45
BCR	**0.818**	**0.818**

The best assessment of costs and benefits is that monetised costs will exceed monetised benefits. The Present Value of costs and benefits for the preferred option (option 1) are £6.22 million and £7.61 million respectively the Net Present Value (NPV) is -£1.39 million.This results in a Benefit Cost ratio of 0.818[25]. Some key non monetised benefit are expected increase in the number of AFUs, reduction in the number of high risk movements and behaviour change[26]. These non monetised benefits have the potential to switch the NPV positive – but was deemed too uncertain to monetise explicitly.

[25] A BCR below 1 implies that monetised costs exceed monetised benefits. Conversely, a BCR above 1 implies that monetised benefits exceed monetised costs. A BCR equal to 1 implies a break-even scenario where the magnitude of monetised costs and monetise benefits are equivalent.

[26] Behaviour change may include: change in timing of purchase to coincide with routine test. A reduction in movements in aggregate (which may disproportionately affect movements of cattle in smaller batches), substitution to source cattle from lower risk herds / areas.

The modelled BCR of option 2 is also 0.818, the difference being that options 2 entails more PoMTs being undertaken each year such that assumed costs and benefits increase commensurately[27].

Sensitivity Analysis.

Tables 9-11 summaries three sensitivity scenarios where a single assumption is varied to assess the strength of the economic case to implement PoMT in the Edge area under optimistic and pessimistic assumptions.

Table 9: Present Value costs and Benefits over 10 years. Sensitivity on the cost of TB testing.

	pessimistic		**optimistic**	
Unit: £m (Present Value)	Option 1	Option 2	Option 1	Option 2
Benefits	£6.22	£19.93	£6.22	£19.93
Costs	£12.23	£39.19	£5.30	£16.98
Net Benefit	-£6.01	-£19.26	£0.92	£2.96
BCR	0.509	0.509	1.174	1.174

^ *Note, pessimistic assumes PoMT cost £24.15 per animal tested, optimistic assumes PoMT cost £10.46 per animal tested.(central scenario = £15.02)*

Table 10: Present Value costs and Benefits over 10 years. Sensitivity on assumed breakdowns avoided per reactor disclosed at a PoMT.

	pessimistic		**optimistic**	
Unit: £m (Present Value)	Option 1	Option 2	Option 1	Option 2
Benefits	£4.15	£13.29	£8.29	£26.58
Costs	£7.61	£24.38	£7.61	£24.38
Net Benefit	-£3.46	-£11.09	£0.69	£2.20
BCR	0.545	0.545	1.090	1.090

^ *Note, pessimistic assumes 1.0 breakdowns avoided per reactor disclosed, optimistic assumes 2.0 breakdowns avoided (central scenario = 1.5)*

[27] An important consideration that has not been modelled is that routine diagnostic testing is more frequent in 6 monthly testing counties than annual testing counties so the expected duration that infection may go undiagnosed may therefore be shorter in these counties with associated fewer breakdowns avoided.

Table 11: Present Value costs and Benefits over 10 years. Sensitivity on assumed proportion of PoMT that disclose a reactor.

	pessimistic		optimistic	
Unit: £m (Present Value)	Option 1	Option 2	Option 1	Option 2
Benefits	£3.11	£9.97	£9.33	£29.90
Costs	£7.61	£24.38	£7.61	£24.38
Net Benefit	-£4.50	-£14.41	£1.72	£5.52
BCR	0.409	0.409	1.226	1.226

^ *Note, pessimistic assumes 0.021% of animals PoMT are reactors, optimistic assumes 0.063% are reactors (central scenario = 0.042%)*

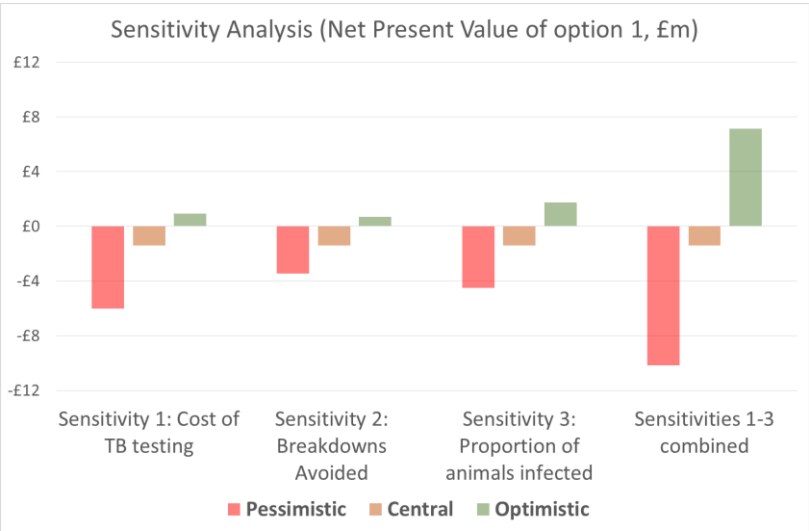
Table 12 provides a final sensitivity where all 3 of the assumptions varied in tables 9 to 11 are set to optimistic or pessimistic levels in combination.

Table 12: Present Value costs and Benefits over 10 years. Combined sensitivity scenario.

	pessimistic		optimistic	
Unit: £m (Present Value)	Option 1	Option 2	Option 1	Option 2
Benefits	£2.07	£6.64	£12.44	£39.87
Costs	£12.23	£39.19	£5.30	£16.98
Net Benefit	-£10.15	-£32.55	£7.14	£22.89
BCR	0.170	0.170	2.348	2.348

Chart 1 below summarises the sensitivity analysis of the preferred policy option (option 1).

Chart 1: Sensitivity Analysis of Net Present Value (NPV).



In each of the sensitivity scenarios the NPV of the preferred option becomes positive under more optimistic assumptions. Chart 1 illustrates that though the economic case for PoMT in our central scenarios is not strong, given the high level of uncertainty around some key assumptions it is within the bounds of uncertainty that the benefits of PoMT in the edge area could exceed costs.

BIT status/score

The policy is a NQRP because annualised costs to business are less than £5 million. The equivalent annual net direct cost to business (EANDCB) for options 1 is estimated to be £883,000 and for option 2 the EANDCB is estimated to be £2,832,000.

Within the analysis, the estimated costs and beenfts to industry comprised both the costs to business of undertaking the testing and the benefits (cost avoided) to business of future breakdowns avoided. These costs and benefits were equal to these levels (in real terms) for each year of the 10 year appraisal period.

Rationale for Triage rating

Annualised costs to business are less than £5 million.

Annex C: Comparison of the current IFN-γ testing policy in England and the proposed refinements to the policy

Mandatory testing	Current policy	Proposed refinements
HRA	OTFW breakdowns which meet the following criteria: **Criterion 1** – herds where the most likely source of infection determined by the APHA investigation was cattle related e.g. cattle movements, contiguous infection, recrudescence **Criterion 2** – herds located in a BCP area that has completed at least two annual rounds of licensed badger culling. **Criterion 3** – chronic and persistent breakdowns	OTFW breakdowns which meet the following criterion: breakdown occurred within 18 months of the herd regaining OTF status following a previous OTFW breakdown Chronic and persistent OTFW breakdowns
Edge Area	All new OTFW breakdowns Chronic and persistent OTFW breakdowns	OTFW breakdowns in **six-monthly** surveillance testing parts that satisfy the following criterion: breakdown occurred within 18 months of the herd regaining OTF status following a previous OTFW breakdown All new OTFW breakdowns in **annual** surveillance testing parts Chronic and persistent OTFW breakdowns
LRA	All new OTFW breakdowns Chronic and persistent OTFW breakdowns	All new OTFW breakdowns Chronic and persistent OTFW breakdowns

Annex D: Revised Guidance to Natural England

Department
for Environment
Food & Rural Affairs

Guidance to Natural England

Licences to kill or take badgers for the purpose of preventing the spread of bovine TB under section 10(2)(a) of the Protection of Badgers Act 1992

The additions/amendments are highlighted in yellow throughout.

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Contents

Scope of this guidance

1. This guidance is given by the Secretary of State to Natural England under section 15(2) of the Natural Environment and Rural Communities Act 2006 (NERC Act), and represents the Secretary of State's considered views, based on current scientific evidence, about what is required for any cull of badgers for bovine tuberculosis (TB) control purposes to be effective, safe and humane.

2. Section 15(6) of the NERC Act requires Natural England to have regard to this Guidance in discharging its functions. The Secretary of State has consulted Natural England and the Environment Agency in accordance with section 15(3)(a) and (b) of the Act and, in accordance with section 15(3)(c) of the Act, has also consulted more widely through public consultation.[28]

3. An agreement under section 78 of the NERC Act was entered into with effect from 1 October 2006 authorising Natural England to carry out various Defra functions including those relating to licensing under the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981.

4. This Guidance relates only to licensing functions under section 10(2)(a) of the Protection of Badgers Act to kill or take badgers for the purpose of preventing the spread of TB, and any associated licensing functions under section 16(3)(g) and (h) of the Wildlife and Countryside Act 1981 in relation to any activity that (in the absence of such a licence) would be prohibited under section 11 of that Act. Guidance for all other licensing relating to badgers is given in a separate document.

5. TB policy is devolved. With the exception of paragraph 41, this guidance relates to England only.

The policy

6. The Government's policy is to enable the licensed culling or vaccination of badgers for the purpose of controlling the spread of TB, as part of the Strategy for achieving Officially Bovine Tuberculosis Free status for England.[29] There are three types of culling licence. Which is applicable will depend on the phase of the proposed culling operations and the TB risk area in England concerned:

    - A **Badger Disease Control licence** is required where culling is to take place for the first time in the High Risk Area or Edge Area of England

[28] Defra consultations: 2011 The government's policy on bovine TB and badger control in England https://www.gov.uk/government/publications/the-government-s-policy-on-bovine-tb-and-badger-control-in-england; 2015 Bovine TB: updating the criteria for badger control licence applications https://www.gov.uk/government/consultations/bovine-tb-updating-the-criteria-for-badger-control-licence-applications; 2016 Bovine TB: supplementary badger disease control https://www.gov.uk/government/consultations/bovine-tb-supplementary-badger-disease-control

[29] The Strategy for achieving Officially Bovine Tuberculosis Free status for England (PB 14088). https://www.gov.uk/government/publications/a-strategy-for-achieving-officially-bovine-tuberculosis-free-status-for-england

- A **Low Risk Area Badger Disease Control licence** is required where culling is to take place in a zone of the Low Risk Area (LRA) of England specified by the Animal and Plant Health Agency, where there is evidence that infection with *Mycobacterium bovis* is present in badgers and linked with infection in cattle herds.

- A **Supplementary Badger Disease Control licence** is required where culling is to take place to prevent the recovery of the badger population following the completion of annual culling that has lasted at least four years under a Badger Disease Control licence.

7. Throughout this document, where the term 'completed' or 'prior' cull is used this describes a cull that was carried out under a Badger Disease Control licence for a minimum duration of four years. A Glossary can be found at the end of this Guidance.

Culling policy requirements

8. Applications for **Badger Disease Control licences** must meet the following **criteria**.

    a. All participating farmers are complying, and for the duration of any licence continue to comply, with **statutory TB controls**.

    b. Reasonable **biosecurity** measures are being, and for the duration of any licence will continue to be, implemented by participating farmers on their land to provide a strong protection against the spread of infection. For this purpose 'reasonable measures' means measures that in the particular circumstances are practicable, proportionate and appropriate, having regard to the Bovine TB Biosecurity Five-Point Plan.[30]

    c. The application must cover an area of at least 100km^2.[31]

    d. The area must be composed of land wholly within the **High Risk** or **Edge Areas** at the time of application[32].

    e. The size and number of areas of **inaccessible land** within the application area should be minimised for the purposes of effective disease control, with approximately 90% of the land within the application area either accessible or within 200m of accessible land. The variance from 90% which will be accepted will be decided by Natural England on a case-by-case basis, taking into account such specific circumstances as Natural England considers relevant, e.g. topography, land use and badger sett surveys or any other matter that Natural England considers relevant. Natural England should have regard to any advice on the application from the UK Chief Veterinary Officer (CVO).

[30] http://www.tbhub.co.uk/biosecurity/protect-your-herd-from-tb/
[31] Paragraphs 3.13 and 3.14 of the 2015 consultation on revised licensing criteria for Badger Disease Control explain the rationale for this area size: https://www.gov.uk/government/consultations/bovine-tb-updating-the-criteria-for-badger-control-licence-applications.
[32] These areas are currently subject to a minimum of annual herd testing.

f. Applicants must **put in place reasonable measures to mitigate the risk to non-participating farmers and landowners** of a potential increase in confirmed new incidents of TB in vulnerable livestock within the culled area and in the 2km ring surrounding the culled area; and consider whether any measures are needed to protect the interests of any non-farming interests that may be affected by badger control.

g. For this purpose 'reasonable measures' means measures that in the particular circumstances are practicable, proportionate and appropriate. When assessing the reasonableness of measures, applicants and Natural England should take into account the cost of measures relative to the potential cost to non-participants of the anticipated increase in TB incidence.

h. Applicants must enter into an agreement with Natural England under section 13 of the NERC Act (the "Badger Control Deed of Agreement") requiring them to comply with the requirements contained in this guidance and any additional licence conditions for the purpose of ensuring that –

    i. an effective cull is carried out each year in which the licence is in operation ~~for a minimum of four years~~; and

    ii. the financial deposit (see paragraphs 8k and l) is sufficient and is managed appropriately.

i. All land holders, unless the agreement states otherwise, must enter into agreements with Natural England under section 7 of the NERC Act (the "TB Management Agreement") requiring them to permit access to their land for culling (including by government) and to take appropriate biosecurity measures (as required in paragraph 8b), and agreeing that government can recover any additional costs of culling.

j. Where land is tenanted, the freeholder owners (or landlords) must generally also sign an undertaking appended to this agreement agreeing to permit access to the land for culling (including by government). Natural England may permit dispensations in certain cases, provided it considers that the likelihood of the total accessible land falling below an acceptable level (approximately 90% of the control area either accessible or within 200m of accessible land, see paragraph 8e above) as a result of the termination of any tenancy for any reason would still be very low. This may depend on:

    i. the margin of accessible land above 90% that is accessible or within 200m of accessible land;

    ii. the proportion of accessible land where the freehold owner is not participating, and

    iii. the length of the tenancies to which the accessible land is subject.

k. Applicants must have arrangements in place to **deposit sufficient funds** in a reputable bank to cover the total cost of an initial three-years of culling. This deposit must be made before culling begins into an account held by the applicants. Applicants will need to provide evidence to support the cost estimates and confirmation from the bank that the deposit has been made.

l. The funds must be managed in line with the requirements set out in the Badger Control Deed of Agreement, including the requirement to ensure that at all times the amount remaining in the account is sufficient to ensure that culling is carried out in accordance with the licence and the Badger Control Deed of Agreement.

m. The duration of a Badger Disease Control licence will be 4 years**.** The licence may, however, be revoked after 2 years, if appropriate, following a progress evaluation by the Chief Veterinary Officer or on reasonable grounds.

n. Licences will not be issued after 1st December 2022.

o. The area to which the application relates must not have previously been included in a Badger Disease Control licence.

9. Further, applicants must satisfy Natural England that they are able to deliver an **effective cull** in line with this policy and have arrangements in place to achieve this. To deliver an **effective cull**, the following requirements must be met.

    a. Culling must be **co-ordinated** on accessible land across the entire control area.

    b. Culling must be **sustained**, which means it must be carried out annually (but not in closed seasons) for the duration of the licence (~~minimum of 4 years~~). The culling of badgers must commence during the culling season, on or after the date specified by Natural England in its letter of authorisation and will continue until Natural England requires it to cease in all or part of a control area. The duration of the cull needs to achieve a balance between sufficient intensity to achieve effective disease control and what is realistically deliverable by a cull company.

    c. Culling will not be permitted during the following **closed seasons**:

        i. 1 December to 31 May for cage-trapping and shooting badgers;

        ii. 1 February to 31 May for controlled shooting; and

        iii. 1 December to 30 April for cage-trapping and vaccination.

    d. Culling must remove a minimum number of badgers in each year as specified below:

        iv. in the first year of culling, a **minimum number of badgers** must be removed which must be carried out throughout the land to which there is access, until the licensee is notified by Natural England that culling should be discontinued for the remainder of the culling season. This minimum

number should be set at a level that in Natural England's judgement should **reduce the estimated badger population of the application area by at least 70%**;

v. a **minimum number of badgers** must also be removed in subsequent years of culling carried out throughout the land to which there is access, until the licensee is notified by Natural England that culling should be discontinued for the remainder of the culling season. This minimum number should be set at a level that in Natural England's judgement should maintain the badger population at the reduced level required to be achieved through culling in the first year.

10. Further, vaccination sites located wholly or partially in the Edge Area that meet minimum criteria will benefit from no-cull zones around that part of the vaccination site located in the Edge area, proportionate to the size of the vaccination site located in the Edge Area.[33] This may have an impact on cull areas (both in the HRA and in the Edge area) near those vaccination sites. See pages 12 and 13 for Vaccination Policy Requirements.

11. Further, applicants must satisfy Natural England that they are able to deliver the cull as safely and humanely as possible. The following requirements must be met in that respect.

    a. In order to ensure humaneness, only two **culling methods** will be permitted (which can be used in combination, or alone):

        i. cage-trapping followed by shooting; and

        ii. controlled shooting of free-ranging badgers ('controlled shooting').

    b. Those licensed to cull badgers must be able to demonstrate a level of **competence** appropriate to the method they will be licensed to use. Successful completion of a training course approved by government will be taken as proof of competence.

    c. Culling must be in line with the relevant Best Practice Guide.

12. Natural England should aim to ensure that culling will "not be detrimental to the survival of the population concerned" within the meaning of Article 9 of the Convention on the Conservation of European Wildlife and Natural Habitats, and for this purpose in considering applications for a licence should have regard to the guidance of the Standing Committee on the interpretation of Article 9 of that Convention. For that purpose Natural England should:

    a. determine appropriate area-specific licence conditions; and

[33] Where a vaccination site is located partially in the Edge Area and partially in the HRA, a no-cull zone will only be applied to the Edge Area part of the vaccination site and will be of equal area to that Edge area part. The no-cull zones in these cases extend into the HRA in order that a no-cull zone is provided around the whole of the vaccination site which is located in the Edge Area.

b. set a maximum number of badgers to be removed from the licence area.

Defra considers that this approach is sufficient to be confident that culling will not be detrimental to the survival of the relevant population of badgers.

13. Further, Natural England should take into account conservation considerations for designated sites, for example Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and Special Protection Areas (SPAs). Under the Conservation of Habitats and Species Regulations 2017, (SI 2017/1012), an "appropriate assessment" must be carried out before granting a licence which might have a significant effect on a **European protected site** (principally SACs & SPAs).[34]

Supplementary badger disease control requirements

14. Applications for **Supplementary Badger Disease Control licences** must meet the following **criteria**.

    a. The application must relate to the whole of an area in relation to which, in the view of Natural England, an effective cull has been carried out under a Badger Disease Control Licence for a period of at least four years.

    b. Supplementary Badger Disease Control will commence in the year after the end of a successful completed cull, to provide continuity of badger population control.

    c. All participating farmers are complying, and for the duration of any licence continue to comply, with **statutory TB controls**.

    d. Reasonable **biosecurity** measures are being, and for the duration of any licence will continue to be, implemented by participating farmers on their land. For this purpose 'reasonable measures' means measures that in the particular circumstances are practicable, proportionate and appropriate, having regard to the Bovine TB Biosecurity Five-Point Plan.[35]

    e. The area to which the application relates must lie wholly within the **High Risk Area of England** or **Edge Areas** at the time of application.

    f. All land holders must permit Natural England access to their land for **compliance monitoring.**

[34] Where the assessment concludes that the grant of a licence might result in an adverse effect on the integrity of a European protected site, the licence must not be granted unless there are no alternative solutions and the rationale for the policy can be relied upon as an imperative reason of overriding public interest (pursuant to regulation 64 of those Regulations). Where the European protected site hosts habitat which for the purposes of the Habitats Directive is a priority habitat or a species which is a priority species, any such overriding public interest cannot be relied upon except pursuant to advice from the European Commission that it may be.
[35] See footnote 22.

g. The duration of a Supplementary Badger Disease Control licence will be **limited to 2 years.** (The licence may, however, be revoked if appropriate following a progress evaluation or on reasonable grounds.)

h. The area to which the application relates must not have previously been included in a Supplementary Badger Disease Control licence.

i. The area to which the application relates must not have previously been included in a Badger Disease Control Licence first issued after 1st December 2020.

15. Applicants must satisfy Natural England that they are able to deliver an **effective cull** in line with this policy and have arrangements in place to achieve this. Natural England should assess whether applicants meet this requirement having regard to the following criteria -.

    a. The application must be submitted by an experienced company or group considered capable of **co-ordinating and overseeing** effective control activity in the area.

    b. To be effective, culling should **maintain the population** at the level achieved after the prior cull, by removing each year the minimum number of badgers set by Natural England and not exceeding the maximum number set.

    c. Culling must be **co-ordinated** on accessible land across the control area and the resources deployed in culling must be such as are assessed by Natural England to be sufficient to ensure the supplementary control operation will be effective.

    d. Culling must be **sustained**, which means it must be carried out annually within the open season for the duration of the licence (unless wholly discontinued before the expiry of the licence), and for a limited duration of such period as Natural England permits in the year in question.

    e. Culling will not be permitted during the following **closed seasons**:

        i. 1 December to 31 May for cage-trapping and shooting badgers;

        ii. 1 February to 31 May for controlled shooting; and

        iii. 1 December to 30 April for cage-trapping and vaccination.

16. Further, vaccination sites located wholly or partially in the Edge Area that meet minimum criteria will benefit from no-cull zones around that part of the vaccination site located in the Edge area, proportionate to the size of the vaccination site located in the Edge Area.[36] This may have an impact on cull areas (both in the HRA and in the Edge

[36] Where a vaccination site is located partially in the Edge Area and partially in the HRA, a no-cull zone will only be applied to the Edge Area part of the vaccination site and will be of equal area to that Edge area part. The no-cull zones in these cases extend into the HRA in order that a no-cull zone is provided around the whole of the vaccination site which is located in the Edge Area.

area) near those vaccination sites. See pages 12 and 13 for Vaccination Policy Requirements.

17. Applicants must satisfy Natural England that they are able to deliver the cull as **safely and humanely** as possible. The following requirements must be met in that respect.

    a. In order to ensure humaneness, only two **culling methods** will be permitted (which can be used in combination, or alone):

        i. cage-trapping followed by shooting; and

        ii. controlled shooting of free-ranging badgers ('controlled shooting').

    b. Persons to be authorised to carry out culling pursuant to the licence must be able to demonstrate a level of **competence** appropriate to the method they are licensed to use. Successful completion of a training course approved by government will be taken as proof of competence.

    c. Culling must be carried out in accordance with the relevant Best Practice Guide.

18. Natural England should aim to ensure that Supplementary Badger Disease Control will "not be detrimental to the survival of the population concerned" within the meaning of Article 9 of the Convention on the Conservation of European Wildlife and Natural Habitats, and for this purpose in considering applications for a Supplementary Badger Disease Control licence should have regard to the guidance of the Standing Committee on the interpretation of Article 9 of that Convention. For that purpose Natural England should:

    a. determine appropriate area-specific Supplementary Badger Disease Control licence conditions; and

    b. set a maximum number of badgers to be removed from the licence area.

19. Licensees must complete a sett survey where NE, on the CVO's advice, deems it necessary after taking into account all appropriate information.

20. Natural England should take into account conservation considerations for designated sites, for example Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and Special Protection Areas (SPAs). Under the Conservation of Habitats and Species Regulations 2017, (SI 2017/1012), an "appropriate assessment" must be carried out before granting a licence which might have a significant effect on a **European protected site** (principally SACs & SPAs).[37]

Low risk area badger disease control requirements

[37] See footnote 25.

21. Applications for **Low Risk Area Badger Disease Control licences** must meet the following **criteria**.

    a. The application must relate to a **specific area** affected by bovine TB in which the Animal and Plant Health Agency (APHA) has found evidence that infection is present in both badgers and in cattle herds[38]. The application should cover a 'minimum affected area' and a buffer zone, where applicable, as defined by an epidemiological assessment of bovine TB and a survey of badger activity in the area, carried out by APHA.

    b. All participating farmers are complying, and for the duration of any licence continue to comply, with **statutory and (where applicable) temporary additional TB control measures** introduced as part of APHA's response.

    c. The size of any inaccessible land within the application area should be minimised for the purposes of effective disease control. Natural England will make decisions on the level of **accessible land** on a case-by-case basis, taking into account such specific circumstances as Natural England considers relevant, e.g. topography, land use and badger sett surveys or any other matter that Natural England considers relevant. Natural England should have regard to any advice on the application from the APHA and the CVO (UK).

    d. Reasonable **biosecurity** measures are being, and for the duration of any licence will continue to be, implemented by participating farmers on their land. For this purpose 'reasonable measures' means measures that in the particular circumstances are practicable, proportionate and appropriate, having regard to the Bovine TB Biosecurity Five-Point Plan.[39]

    e. The area to which the application relates must lie wholly or mostly within the **Low Risk Area** at the time of application.

    f. All land holders must enter into agreements with Natural England under section 7 of the NERC Act (the "Low Risk Area Badger Control Access Agreement") requiring them to permit access to their land for culling including by government.

    g. All land holders must permit Natural England access to their land for **compliance monitoring.**

    h. The duration of a Low Risk Area Badger Disease Control licence will be determined by Natural England's assessment of all the available evidence, including monitoring of the badger population, and on a case-by-case basis. The licence may, however, be revoked if appropriate following a progress evaluation

[38] Such areas are commonly known as bTB 'hotspots'. APHA can sometimes implement additional TB testing of cattle herds and TB surveillance of found-dead badgers and wild deer following the detection of one or more cattle herds with lesion- and/or culture-positive TB breakdowns of obscure origin in the LRA of England. This is a long-standing policy and the extent and duration of the enhanced TB surveillance in such areas ('potential hotspots') will differ from case to case, based on expert veterinary judgement and epidemiological assessments. Of the 21 'potential hotspot' zones set up in the LRA of England between 2004 and 2017, only in one of them was *M. bovis* infection eventually confirmed in the local badger population surveyed and thus became a confirmed 'hotspot'.

[39] See footnote 22.

or on reasonable grounds. This does not preclude an application in due course for a further licence.

22. Applicants must satisfy Natural England that they are able to deliver an **effective cull** in line with this policy and have arrangements in place to achieve this. Natural England should assess whether applicants meet this requirement having regard to the following criteria -.

    a. culling should **lower the badger population** of the affected area sufficiently to reduce the risk of infection of cattle from badgers (whether through direct or indirect contact), and ideally substantially reduce or even eliminate it.

    b. Culling must be **co-ordinated** on accessible land across the control area and the resources deployed in culling must be such as are assessed by Natural England to be sufficient to ensure the control operation will be effective.

    c. Culling must be **sustained**, which means it must be carried out annually within the open season for the duration of the licence (unless wholly discontinued before the expiry of the licence). The culling of badgers must commence during the culling season, on or after the date specified by Natural England in its letter of authorisation, and continue until Natural England requires it to cease in all or part of a control area.

    d. Culling will not be permitted during the following **closed seasons**:

        i. 1 December to 31 May for cage-trapping and shooting badgers;

        ii. 1 February to 31 May for controlled shooting; and

        iii. 1 December to 30 April for cage-trapping and vaccination.

23. Applicants must satisfy Natural England that they are able to deliver the cull as **safely and humanely** as possible. The following requirements must be met in that respect.

    a. In order to ensure humaneness, only two **culling methods** will be permitted (which can be used in combination, or alone):

    b. cage-trapping followed by shooting; and

    c. controlled shooting of free-ranging badgers ('controlled shooting').

    d. Persons to be authorised to carry out culling pursuant to the licence must be able to demonstrate a level of **competence** appropriate to the method they are licensed to use. Successful completion of a training course approved by government will be taken as proof of competence.

    e. Culling must be carried out in accordance with the relevant Best Practice Guide.

24. Natural England should aim to ensure that Low Risk Area Badger Disease Control will "not be detrimental to the survival of the population concerned" within the meaning of

Article 9 of the Convention on the Conservation of European Wildlife and Natural Habitats, and for this purpose in considering applications for a Low Risk Area Badger Disease Control licence should have regard to the guidance of the Standing Committee on the interpretation of Article 9 of that Convention. For that purpose Natural England should:

a. assess the risk of local extinction from a badger control operation; and

b. where necessary, determine appropriate area-specific Low Risk Area Badger Disease Control licence conditions.

25. Natural England should take into account conservation considerations for designated sites, for example Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and Special Protection Areas (SPAs). Under the Conservation of Habitats and Species Regulations 2017, (SI 2017/1012), an "appropriate assessment" must be carried out before granting a licence which might have a significant effect on a **European protected site** (principally SACs & SPAs).[40]

Vaccination policy requirements

26. It is possible to apply to Natural England for a licence to trap badgers for the purpose of TB vaccination. The vaccine may only be used under veterinary prescription. Vaccination must be carried out either by someone who is sufficiently competent (either by a trained and accredited lay vaccinator, or by a practising vet with access to personnel with adequate trapping experience).

27. Vaccination may be used independently of culling as part of a package of measures to prevent or control TB, or it may be used in combination with culling, for example vaccination may help reduce the risks to vulnerable livestock of increased TB incidence, both within and surrounding a control area, as a result of perturbation of the local badger population.

28. Where the use of vaccination in combination with any type of culling licence is proposed in the HRA or Edge Area, the following best practice is recommended:

a. where vaccination is to be used, it should be used at active badger setts found on, or adjacent to, land where vulnerable livestock are present and which fall within 2km of the edge of a control area;

b. vaccination should take place at least 4 weeks prior to culling to allow immunity to develop in uninfected vaccinated animals;

c. to mitigate any ongoing perturbation effect and begin to build up "herd immunity", vaccination should be carried out annually, continuing for at least the same length of time as any culling on adjacent land; and

[40] See footnote 25.

d. where culling and vaccination are taking place on adjacent land in the HRA, applicants should take reasonable steps to negotiate an agreed approach to badger control operations along the relevant boundary with the landowner/occupier of the land where vaccination is occurring.

29. Where vaccination is taking place on land within Edge Area counties, vaccination licence applicants must determine whether landowners/occupiers of licensed vaccination sites wish to have no-cull zones surrounding those sites and, if they do, to disclosure of no-cull zones around those vaccination site(s) that meet the criteria in paragraph 30 to cull companies applying for adjoining badger control licences.

30. Where vaccination is taking place on land within Edge Area counties and a Badger Disease Control or Supplementary Badger Disease Control licence is applied for in respect of land adjacent to such a vaccination site, any licence subsequently issued will require a no-cull zone to be put in place when the following criteria are met:

    a. The vaccination site was licensed at the closure of the previous open season for cage trapping, i.e. 30th November;
    b. The landowner/occupier and vaccination licence holder have requested a no-cull zone be put in place around the vaccination site and given consent for the location of the no-cull zone to be provided to cull companies
    c. The number of badgers vaccinated on the site in the previous year is comparable to the minimum number that would need to be removed during a culling operation. Where the vaccination site is smaller than 2.25km^2, the minimum number of badgers which need to have been vaccinated should be equivalent to the number of badgers required to be vaccinated on a site which is 2.25 km^2.

31. No-cull zones, where implemented, will have a maximum width of 2km and a minimum width of 200m, and be of approximate equivalent size to the vaccination site. The boundaries of no-cull zones should be set where, in Natural England's judgement, suitable recognisable physical features or hard boundaries occur.

32. When, in Natural England's judgement, a validated method to mark vaccinated badgers for a full season has been developed cage trapping followed by shooting of unmarked badgers should be permitted in a no-cull zone.

33. No-cull zones will be re-evaluated each year of the Badger Disease Control or Supplementary Disease Control Licence. Where sufficient badgers are not vaccinated in the relevant vaccination site (using the text in criterion (c) in paragraph 30 above) in the preceding year, the no-cull zone will be removed.

Implementation

34. Before granting a culling licence, Natural England should be satisfied that the application meets the licence criteria and the policy requirements. Natural England, on behalf of the Secretary of State, will determine applications for culling and vaccination licences on a case-by-case basis.

35. To enable Natural England to assess licence applications, it will require applicants to demonstrate how they will meet the culling policy requirements, including details of contingency plans in case the chosen culling strategy proves ineffective.

36. Natural England should keep the duration of a cull in each year under review. The review will allow Natural England to consider whether or not to take action to terminate operations on a case-by-case basis. Natural England may take into account factors such as the CVO's advice on disease control; the latest evidence and advice on the remaining badger population; and whether any immediate action is appropriate.

37. In considering whether operations should be terminated, Natural England should take into account the extent to which the licensee's annual operational planning is being complied with and the licensing criteria continue to be met (for example, in the case of a Badger Disease Control licence, whether the extent of access has been reduced since the licence was granted) and, if so, whether this is likely to adversely affect the effectiveness of operations in reducing badger numbers.

38. A maximum of ten new Badger Disease Control areas may be licensed each year unless there are compelling reasons to increase or decrease that number. Applications will be prioritised according to the extent to which they best meet the primary aim of the policy (i.e. to eradicate TB).

39. Each Badger Disease Control licence will be granted for a period of not less than four consecutive years or such other period as Natural England may determine is appropriate to ensure that the proposed cull achieves the policy aim.

40. Each Supplementary Badger Disease Control licence will be granted for a period of not more than two consecutive years following on directly from the conclusion of a successfully completed Badger Disease Control operation.

41. Each Low Risk Area Badger Disease Control licence will be granted for a period which Natural England determines is appropriate to ensure that the proposed cull achieves the policy aim.

42. Natural England should give the public an opportunity to comment on any licence applications that are made.

43. Natural England will seek advice from local police forces on whether additional licence conditions are required to protect public and operator safety.

Monitoring

44. As part of its licensing operation, Natural England should monitor compliance with licence conditions and agreements in place for culling and vaccination. The use of site visits will be in accordance with a risk-based approach that complies with Better Regulation principles and the Regulators' Code for Compliance. Natural England should maintain sufficient oversight of the progress of each cull area to ensure that removal of badgers and/or the level of effort deployed is consistent with that set out in operational planning, allowing cull companies or groups to flexibly manage their resources and approach to deal with changing circumstances. Natural England should be ready to advise the CVO on progress at regular intervals, reporting on effort across each cull area, progress with badger removal and compliance issues.

Reporting and disclosure of information

45. Natural England should disclose as much information as practically possible. Each year, or more frequently if appropriate, Natural England should, as a minimum, publish on its website the numbers of applications received and licences granted, and for each licence issued:

    a. the county or counties included within the licensed area;

    b. the size of the licensed area;

    c. the number of badgers reported culled by each method; and

    d. the number of non-target species caught and culled.

Enforcement

46. Natural England should apply its published Enforcement Policy Statement to breaches of licences that it has issued. Wildlife offences that are not breaches of licences may be reported to the police for investigation.

47. In relation to operations carried out under a Badger Disease Control licence, government intervention will be considered where, in particular, in the judgement of the Secretary of State, any of the following circumstances apply:

    a. where culling has not taken place at all during any year after the culling commenced in year one (applicants should detail in the operational planning the dates during which culling will be carried out);

    b. where in any of the years in which the Badger Disease Control licence is operational the minimum number of badgers to be culled during the cull period (specified by Natural England for the year in question) is not attained;

c. where the area of accessible land in relation to which the Badger Disease Control licence is granted has dropped below the acceptable level (approximately 90% of the control area either accessible or within 200m of accessible land);

d. where there has been any other breach of the Badger Disease Control licence which the licence holder has been asked to remedy and has failed to remedy within a reasonable period; or

e. where there is an Event of Default as defined in the Badger Control Deed of Agreement.

Welsh and Scottish border

48. Natural England and the Devolved Administrations should consider on a case-by-case basis any licence applications in respect of areas which cross the Welsh or Scottish border. If an application relates to an area which is solely within England but within 2km of the border, Natural England should determine the licence application in the normal way but will consult the Welsh or Scottish Government.

Glossary

Access/accessible land: land within a control area that is participating in the application and accessible for culling to take place.

Applicants: those persons named as the applicant(s) on the licence application.

Application Area: land included in an application, including both access land and non-participating land.

Badger Disease Control: a form of badger control which is undertaken on a naïve population.

Biosecurity measures: measures to reduce the risk of transmission of infectious disease.

Controlled shooting: the shooting of free-ranging badgers in the field (as distinct from shooting those that have first been trapped in cages).

Control Area: land included in the licence, once granted, including both land that is participating and land that is not participating in culling.

CVO: Chief Veterinary Officer (UK). Advises on the programmes necessary to control, and, where appropriate, eradicate disease.

Effective Cull: a cull that meets the requirements set out in paragraph 8.

Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna (OJ L 206, 22.7.1992. p.7).

Herd immunity: an epidemiological term that refers here to the protection of sufficient susceptible individuals through vaccination in a population as a means of protecting remaining susceptible, unvaccinated animals in that population from infection.

High Risk Area, Edge Area, Low Risk Area: three geographical TB management zones defined in the Strategy for achieving Officially Bovine Tuberculosis Free status for England.

Low Risk Area Badger Disease Control licence: a form of badger control in a zone of the Low Risk Area (LRA) of England specified by the Animal and Plant Health Agency, where there is evidence that infection with *Mycobacterium bovis* is present in badgers and linked with infection in cattle herds.

***Mycobacterium bovis (M. bovis)*:** the bacterium that causes tuberculosis (TB) in cattle (bovine TB) and can also infect and cause TB in other species of mammals.

Non-participating land: land within a control area that is not participating and where access has not been permitted for culling to take place.

Participating farmers: all freehold owners and tenants of accessible land who are in occupation of that land and have signed the TB Management Agreement.

Supplementary Badger Disease Control: a form of continuing badger control which follows an effectively completed Badger Disease Control operation.