

Annex C: updated cost benefit analysis

Title: Bovine TB and Badger Control Lead department or agency: Defra Other departments or agencies:	Impact Assessment (IA)
	IA No:
	Date: 15/06/2011
	Stage: Consultation
	Source of intervention: Domestic
	Type of measure: Other
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Summary: Intervention and Options

What is the problem under consideration? Why is government intervention necessary?

Bovine TB (bTB) is a serious infectious disease of cattle. Disease freedom is a “public good” affecting the whole cattle industry. Private actions to control or eradicate disease are likely to be non-optimal because of externalities and information asymmetry. Badgers are known to harbour bTB and without addressing TB in badgers, it will not be possible to eliminate the disease in cattle. However, badgers are an important native species, and the general public value their existence and freedom from cruel treatment. There is no practical market mechanism that could adequately internalise the trade-off between the existence and welfare of badgers and the control of bTB, so there is a need for Government policy to address this explicitly.

What are the policy objectives and the intended effects?

The objectives of a badger control policy, as part of a package of measures to tackle bTB in cattle, are to address the reservoir of the disease in the badger population; reverse the rising trend of incidence of bTB in cattle in areas with high and persistent levels of the disease; and to empower farmers and landowners to use all appropriate measures to take control of the disease in their local areas in order to minimise the risk to their cattle herds.

The intended effect is to reduce the incidence of bTB in cattle in the areas where badger control measures are being applied, also reducing the cost to farmers and Government of dealing with the disease.


What policy options have been considered? Please justify preferred option (further details in Evidence Base)

This document updates the assessment of the preferred option (Option 6) in the Consultation Stage Impact Assessment: issuing licences to farmers/landowners under the Protection of Badgers Act 1992 to cull and/or vaccinate badgers. This option has been revised to take account of issues raised in the 2010 public consultation and the revised policy proposal is set out in the consultation document and draft Guidance to Natural England.

When will the policy be reviewed to establish its impact and the extent to which the policy objectives have been achieved?	It will be reviewed 06/2015
Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?	Yes

Sign-off For consultation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:  **Date:** 18 July 2011

Summary: Analysis and Evidence

Policy Option 1

Description:

Issuing licences to use a combination of culling and vaccination in one area of 350km² and 2km around

Price Base Year 2010	PV Base Year 2011	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low:	High:	Best Estimate: +£1.78m

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low				
High				
Best Estimate			£0.26m	£2.62m

Description and scale of key monetised costs by 'main affected groups'

Farmers in cull area: surveying, culling and vaccination operations, administration and coordination £1.38m.
Farmers in neighbouring area: contribution to survey and coordination, financial cost of cattle bTB incidents due to badger perturbation £0.11m.
Government: licensing and monitoring, financial cost of cattle bTB incidents due to badger perturbation £1.02m.

Other key non-monetised costs by 'main affected groups'

General public: strong aversion to a badger cull among many members of the public (no reliable estimate of valuation).
Policing and security costs of culling (to be investigated further).

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low				
High				
Best Estimate			£0.52m	£4.29m

Description and scale of key monetised benefits by 'main affected groups'

Farmers in cull area: financial benefit of avoiding cattle bTB incidents £1.32m.
Farmers in neighbouring area: financial benefit of avoiding cattle bTB incidents £0.04m.
Government: financial benefit of avoiding cattle bTB incidents £2.94m.

Other key non-monetised benefits by 'main affected groups'

Farmers in cull and vaccination areas: non-financial benefit of avoiding cattle bTB incidents (includes stress of operating business under restrictions, emotional impact of loss of prized cattle), and of seeing action taken to reduce risk of TB transmission from a known wildlife reservoir.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5

This option is not prescriptive about how badger culling and vaccination are combined. For illustration, the figures are based on culling within the area of 350km² plus limited vaccination in the neighbouring area. Effect of culling on bTB in cattle: assumed as in RBCT but persists for six months more than so far observed and then stops completely. Cost of culling operation: assumes mainly controlled shooting with some use of cage trapping. In line with licensing conditions and guidance, barriers or buffers reduce impact in the neighbouring area. For farmers in cull area, monetised costs exceed expected monetised benefits; any potential risk to sustained implementation would be mitigated by licensing conditions. There are considerable uncertainties around the central estimates shown here.

Direct impact on business (Equivalent Annual) (£m):			In scope of OIOO?	Measure qualifies as
Costs: £1.49m	Benefits: £1.35m	Net: -£0.14m	No	NA

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?	England				
From what date will the policy be implemented?	01/05/2011				
Which organisation(s) will enforce the policy?	Defra/Natural England				
What is the annual change in enforcement cost (£m)?	£0.01m/area/year				
Does enforcement comply with Hampton principles?	Yes				
Does implementation go beyond minimum EU requirements?	No				
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)	Traded: 0		Non-traded: 0		
Does the proposal have an impact on competition?	No				
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?	Costs: N/A		Benefits: N/A		
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	Micro	< 20	Small	Medium	Large
Are any of these organisations exempt?	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Please note this checklist is not intended to list each and every statutory consideration that departments should take into account when deciding which policy option to follow. It is the responsibility of departments to make sure that their duties are complied with.

Does your policy option/proposal have an impact on...?	Impact	Page ref within IA
Statutory equality duties ¹ Statutory Equality Duties Impact Test guidance	No	
Economic impacts		
Competition Competition Assessment Impact Test guidance	No	
Small firms Small Firms Impact Test guidance	No	
Environmental impacts		
Greenhouse gas assessment Greenhouse Gas Assessment Impact Test guidance	No	
Wider environmental issues Wider Environmental Issues Impact Test guidance	Yes	9.4
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	No	
Human rights Human Rights Impact Test guidance	No	
Justice system Justice Impact Test guidance	No	
Rural proofing Rural Proofing Impact Test guidance	No	
Sustainable development Sustainable Development Impact Test guidance	No	

¹ Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

Evidence Base (for summary sheets) – Notes

Use this space to set out the relevant references, evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Please fill in **References** section.

References

Include the links to relevant legislation and publications, such as public impact assessment of earlier stages (e.g. Consultation, Final, Enactment).

No.	Legislation or publication
1	<u>Protection of Badgers Act 1992</u>
2	
3	
4	

+ Add another row

Evidence Base

Ensure that the information in this section provides clear evidence of the information provided in the summary pages of this form (recommended maximum of 30 pages). Complete the **Annual profile of monetised costs and benefits** (transition and recurring) below over the life of the preferred policy (use the spreadsheet attached if the period is longer than 10 years).

The spreadsheet also contains an emission changes table that you will need to fill in if your measure has an impact on greenhouse gas emissions.

Annual profile of monetised costs and benefits* - (£m) constant prices

	Y ₀	Y ₁	Y ₂	Y ₃	Y ₄	Y ₅	Y ₆	Y ₇	Y ₈	Y ₉
Transition costs										
Annual recurring cost										
Total annual costs	0.95	0.57	0.55	0.55	0	0	0	0	0	0
Transition benefits										
Annual recurring benefits										
Total annual benefits	0.04	0.19	0.64	0.52	0.58	0.60	0.62	0.63	0.65	0.67

* For non-monetised benefits please see summary pages and main evidence base section

Evidence Base (for summary sheets)

1. Introduction

- 1.1. This document accompanies the consultation on the draft 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”. This is the guidance that will be issued to Natural England under section 15(2) of the Natural Environment and Rural Communities Act 2006 if a decision is made to proceed with a policy of controlled badger reduction. The guidance sets out how Natural England should exercise its function to issue licences to allow controlled culling and vaccination of badgers in areas of high incidence of TB in cattle in a carefully regulated way for the purpose of controlling the spread of disease and includes the licence criteria with which licensees will be required to comply.
- 1.2. This is not a full Impact Assessment, but is instead intended to give an update to the Consultation Stage Impact Assessment relating to policy option 6 “Issuing licences to use a combination of culling and vaccination”. Since the Consultation Stage, we have made several changes to our assumptions to reflect changes in the detail of the policy and to take account of new information and advice. This document sets out the changes and shows the effect they have on the estimated impacts previously published. Further detail of the assessment were given in the Consultation Stage Impact Assessment which is available at <http://archive.defra.gov.uk/corporate/consult/tb-control-measures/100915-tb-control-measures-annexf.pdf>

2. Changes to assumptions

- 2.1. As before, the figures shown relate to a single licensed area. The following table explains the changes that have been made to the assumptions. The column “Effect on the CBA per licensed area” is included to give an idea of how important each change is in affecting the results. This is an over-simplification because the effects of the changes are interdependent, so it is not strictly correct to present the effects individually and the figures would alter slightly if the changes were applied in a different order. However the figures do still give a good indication of relative importance. All the figures are rounded.

Change	Effect on the CBA per licensed area
<p>The size of the control areas are now assumed to be 350km² rather than 150km², to reflect our latest understanding of the average size of potential application areas. The assumed baseline incidence of TB in cattle in the 350km² area is the same as previously assumed for the 150km² area.</p> <p>The result of this change is that culling costs and positive effects on cattle TB increase with the larger area, while negative effects of perturbation increase less.</p>	<p>Increases both costs and benefits, but benefits by more. Increases NPV by £1.6m. Main net change is for Government.</p>

Change	Effect on the CBA per licensed area
<p>The area of participating land within the control area is now assumed to be 70% (of 350km²) rather than 75% previously assumed, to reflect the requirement in the draft guidance that there must be access for culling to at least 70% of the total land area in the application.</p>	<p>Reduces cost to farmers. Increases NPV by £0.1m.</p>
<p>The draft guidance includes a requirement for participants to 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.</p> <p>There are a range of possible impacts that could result from different combinations of measures and so for the purposes of this IA we have assumed that:</p> <ul style="list-style-type: none"> • 50% of the control area is surrounded by a hard boundary (e.g. sea coast, lakes and reservoirs, motorways); • On 40% of the boundary, farmers with vulnerable livestock have agreed to accept any TB risks associated with culling related perturbation; • Vaccination occurs on land comprising 10% of the surrounding area. <p>In practice it may be unlikely that 50% of a control area will be surrounded by a hard boundary, but this combination of assumptions is intended to reflect the effect that might be achieved by having some barriers, buffers or other measures in place around the whole boundary.</p>	<p>Reduces benefits of vaccination, but reduces costs to farmers by more. Increases NPV by £0.3m.</p>
<p>The draft guidance specifies that licences must be granted for a minimum of four years, based on scientific advice about the minimum culling period.</p> <p>We have therefore assumed that culling (and vaccination where applicable) takes place for four years only.</p> <p>The previous IA assumed culling for five years based on average number of culls in the Randomised Badger Culling Trial (RBCT) proactive areas (although these were affected by the Foot and Mouth Disease outbreak in 2001).</p> <p>The effects on cattle TB incidence are assumed to be the same.</p>	<p>Reduces cost to farmers. Increases NPV by £0.3m.</p>

Change	Effect on the CBA per licensed area
As the assumed length of the culling period has now been reduced to four years, the estimated impacts of culling derived from the RBCT have been applied differently to give estimated impacts for four year culling. Annual RBCT estimated impacts are used for the four years of the cull, with a single post-culling period estimated impact applied to the following six years. This is in line with scientific advice.	Very small reduction in benefits. Reduces NPV by £0.01m.
The assumed impacts of badger vaccination have been revised using new scaling factors based on updated modelling by Fera ² of the effect of vaccination relative to culling, during and after the control period. As for the previous IA, the scaling factors are applied to the RBCT estimated impacts.	Small reduction in benefits. Reduces NPV by £0.1m.
In line with the requirement in the draft guidance for participants to take reasonable measures to mitigate the risk to non-participants, we have assumed that any vaccination in neighbouring area will be paid for by farmers in the control area (rather than in the neighbouring area).	£0.5m cost met by farmers within the culled area rather than by farmers in the neighbouring area. No change in NPV.
The licensing and monitoring costs to Government have been revised based on new information and are now applied to two pilot 350km ² areas. The previous IA assumed lower costs, with fixed costs spread over a larger number of areas (five).	Increased cost to Government. Reduces NPV by £0.8m.

2.2. If a decision is made to proceed with a policy of badger control following the consultation, a full Final Impact Assessment will be produced.

Overall effect of the changes

2.3. The overall effect of the changes to our assumptions is to increase the costs of the option by £0.65m and to increase the benefits by £2.00m. The net effect is an increase in the Net Present Value to +£1.78m and the Benefit Cost Ratio to 1.71. The main contributor to these changes is the increase in the size of the licensed area. As set out at in the earlier Consultation Stage IA, there are significant uncertainties around the best estimates.

² See: <http://archive.defra.gov.uk/food-farm/animals/diseases/tb/documents/8control-strat-report.pdf>