Economic Review of the DAERA Consultation on Potential Wildlife Intervention Options for Bovine TB

Compiled for



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Executive Summary

- The Andersons Centre has been contracted by AgriSearch to undertake an analysis of the economic calculations underpinning DAERA's Consultation on Wildlife Intervention Options for Bovine TB.
- It is recognised that producing estimates of potential costs and benefits is difficult and involves numerous assumptions and simplifications. The analysis contained within this short report is not designed as a criticism of DAERA. Instead it aims to highlight areas where there may be issues.
- Overall, an analysis of the economic assumptions is severely hampered by a lack of detail in many areas. This information was requested. *DAERA provided further data on the 11th September 2026 after this analysis had substantially been completed. The material has therefore not been assessed in this report which is based on the information available in the public Consultation.*
- The costs set out for the various Options in the Consultation are single figures (not ranges) and are expressed to the nearest £1,000. There is little acknowledgement in the analysis of the inherent uncertainty in producing such figures. Overall, this gives the impression of greater certainty and accuracy in the figures than is probably warranted.
- The Options that involve Cage trapping of badgers are costed based on data derived from DAERA's own test at Banbridge in 2014-2018. These should be relatively robust, but there are concerns over the age of this data, and whether costs from a trial are directly applicable to a general roll-out.
- Cost estimates for Restraint trapping and Shooting come from the culls in the Republic of Ireland (DAFM) and England (Defra) respectively. This data appears to be only at a high-level. For example, the DAFM data only at a 'cost per badger removed'. The lack of granularity in the comparable evidence calls into question the accuracy of the costing of these Options.
- All Options are costed over the same area and for the same timescales. Whilst this is valid for making meaningful comparisons, factors arising from differences between the methods should also be considered – for example, whether some interventions could be effective over a shorter period or produce benefits over a longer period. Similarly, a single unit of analysis of 100km^2 has been used across the Options. This makes sense for comparative purposes, although the actual intervention areas are likely to be larger in practice.
- The length of the interventions under all Options is five years. Given experience elsewhere, this could be too long. For some interventions, particularly culling by shooting, a four-year programme may be sufficient. Longer intervention pushes up costs and makes the Options less attractive in terms of costs versus benefits. The benefits are estimated to last five years after the intervention ends. This seems broadly fair although a longer effect could be argued. This is modelled in one of the sensitivity analyses.
- The cost of intervention depends on the number of badgers present in any area. Research from Queen's University shows that badger densities are highly variable, with local hotspots several times higher than previous estimates. If this were the case, this would require much more intensive levels of intervention to meet targets and thus result in higher costs. The cost implications of higher badger densities are also likely to differ between intervention methods because their capture, treatment and removal requirements differ. This has not been examined in DAERA's sensitivity analysis.

- The largest element of cost under any Option is likely to be labour. Ideally, this element would be built up from hours per activity multiplied by a relevant wage rate. These would then be published so that they could be 'sense tested', and the efficiency of operations and allocation of resources be questioned. This is not provided in the Consultation or its supporting Annexes. It is thus almost impossible to judge whether the Option costs are robust.
- In general, the Consultation seems to lean towards a private-sector delivery model mainly due to lower labour costs involved.
- As with labour, equipment and other costs are not broken down in detail so it is difficult to make any judgements on whether the costings are robust.
- Whilst the two economic Annexes set out costs for each Option, they are silent on who would be expected to pay these costs – specifically reserving it for later consideration. Interestingly however, the main Consultation document has a question (number 9) on this issue.
- The cost of each Option is set against the benefits it produces – this is measured in terms of herd breakdowns prevented. Therefore, the cost of each herd breakdown is a key variable in the analysis. The costs to Government (public costs) should be well-known to DAERA. The costs borne by the farming industry (private costs) are more uncertain. Based on earlier work undertaken by The Andersons Centre, it is believed that these costs are underestimated in the DAERA analysis. Consequently, the benefit of preventing these costs will be underplayed.
- The benefits are calculated based on modelled estimates of the effectiveness of the interventions in preventing herd breakdowns. There is uncertainty around these figures which is not made explicit in the analysis, especially around the TVR options where direct cattle-outcome evidence is lacking.
- In the sensitivity analysis one of scenarios modelled is that the benefits of the intervention are seen outside of the immediate 100km^2 area. The wider area increases the value of the intervention. It is unclear how certain these effects are. However, it is an interesting economic benefit which is not really highlighted in the main Consultation document.
- The various Options are given rankings. On a purely economic basis, Option 5 comes highest – cull via controlled Shooting. This is due to its relatively low cost of implementation.
- However, rankings are also provided for both non-monetary factors and (operational) risks. The three sets of rankings are combined to produce an overall score. Under this, Option 8 (Test, Vaccinate, Remove using Restraints) is the highest-ranked. It should be noted that each criterion is given equal weighting in generating the composite rankings. There could be an argument that some criteria (e.g. the economic benefit) should be weighted higher than others (e.g. the perceived risks; which are qualitative).
- The cost of Option 8, TVR undertaken by the private sector using restraints, is estimated at £0.865m for a five-year operation over 100 km^2. Actual programme costs will depend on the number, size and characteristics of the areas ultimately selected for intervention. DAERA states that the total area under wildlife intervention would not at any one time exceed 30% of Northern Ireland's agricultural land in order to remain consistent with the Bern Convention. Intervention is therefore likely to be targeted towards areas where wildlife is judged to be contributing materially to persistent cattle bTB. This limits overall expenditure but also places greater importance on careful area selection, effective delivery and achieving the required population coverage so that the greatest possible disease-control benefit is obtained from the resources deployed.

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1. Introduction

1.1 This Report

This report has been commissioned by AgriSearch, Northern Ireland's farmer-funded research and innovation body. It is an independent review of the economic assumptions set out in the 'Consultation on Potential Wildlife Intervention Options as part of the Bovine Tuberculosis in Northern Ireland: Blueprint for Eradication[1]' as published by DAERA on 3rd July 2026.

The purpose of the project is to assess whether the economic assessments and assumptions used to compare the control options in the Consultation are clearly stated, justified, robust, transparent, internally consistent, appropriately tested, and relevant to Northern Ireland conditions.

This report, prepared by The Andersons Centre ('Andersons'), is a summary of the assessment. As part of this project, DAERA was asked to provide additional background workings. Additional data were supplied to Andersons on 11th September 2026, after the analysis for this Stage 1 review had substantially been completed. Given the timing and volume of the material, it has not been possible to assess it within this report. This Stage 1 review therefore assesses the economic appraisal on the basis of the information published as part of the Consultation. Subject to agreement with AgriSearch, the additional data may be examined in a subsequent Stage 2 analysis.

Both AgriSearch and Andersons have no preference for any of the wildlife interventions outlined in the Consultation. This project aims to provide independent scrutiny of the economic appraisal so that AgriSearch, farmers, industry organisations and wider stakeholders can better understand the strengths, limitations and implications of the analysis underpinning the Consultation.

The Andersons Centre previously undertook a study of the indirect costs of bovine tuberculosis (bTB) borne by Northern Ireland farmers, commissioned by the Ulster Farmers' Union, Livestock and Meat Commission and Dairy Council for Northern Ireland and published in March 2026. That work was separate from this review.

1.2 Project Approach and Report Structure

The analysis has been conducted as a desk-based exercise. It is based on the DAERA Consultation plus other relevant published data. No wider industry opinions have been sought. Therefore, the views expressed in this report are those of Andersons. *We are happy to receive feedback and comments on the analysis provided*.

The following chapter (2) provides a brief overview of the Consultation and the economic analysis within it. Chapter 3 looks at the overall methodological approach taken within the economic analysis. Chapter 4 focuses on the costs of the interventions, whilst Chapter 5 looks at the benefits of the policy.

1.3 About The Andersons Centre

The Andersons Centre (Andersons), is an agribusiness consultancy that is one of four separate businesses trading under the Andersons registered brand. Andersons has been advising UK farmers for over 50 years across all sectors of agriculture. Over the years, the firm has expanded beyond its original farm business consultancy role to supply economic and policy analysis through its Research Team. It is arguably the leading provider of business information, interpretation and advice for the UK agricultural industry. It has

delivered numerous studies on farming, food, the environment and rural economy for a wide variety of organisations over the past decade, including several focused on Northern Irish agriculture. It also owns The Agricultural Budgeting and Costing Book and the Nix Farm Management Pocketbook. The Andersons Centre is headquartered in Melton Mowbray, Leicestershire and also has offices in Wales (Brecon) and Yorkshire (Harrogate). More details can be found at www.theandersonscentre.co.uk.

2. The Consultation

2.1 Background

The Consultation looks at various options for 'interventions' in Northern Ireland's wildlife population to assist in meeting the aims of the Blueprint for Eradication. In this case, 'wildlife' simply means badgers.

The Consultation sets out eleven options for wildlife (badger) interventions. One of these (Option 1) is a 'Do Nothing' option. The others are a combination of various approaches;

- ***Type:*** non-selective or selective. *Under the latter, bTB infected badgers are treated differently from non-infected ones*
- ***Approach:*** either culling, vaccination or TVR. TVR is 'Test, and Vaccinate or Remove' – badgers are tested, infected ones are culled, non-infected animals are vaccinated.
- ***Trapping method***: cage trapping, restraints, or controlled shoot
- ***Deployment method:*** public sector (DAERA) or private sector

Not all combinations are covered in the Consultation as some have been rejected during an initial screening stage or approaches are incompatible with each other.

2.2 Economic Data

The main economic data for the Consultation is set out in Annex VIII and Annex IX. Figures from these are then pulled into the main Consultation document.

Within the two Annexes are two key tables. Table 4 Annex VIII summarises the calculations of the cost of each option. However, no calculations or detailed workings are provided in the Consultation on how these figures are arrived at. Table 5 Annex IX provides more detail on the *data sources* for various cost items, but doesn't give any information on what the data actually is. *Annex IX states that full costings have not been provided in order not to compromise any future procurement (para 1.1.2).*

Due to these constraints, it is difficult to analyse the costings in detail. This is covered in more depth in section 4. These constraints should be borne in mind when reading this report.

Additional background data to the costings were requested from DAERA. This was provided on the 11th September 2026 after the analysis for this Stage 1 review had substantially been completed. The material was not part of the published Consultation suite and has not been assessed in this report. Accordingly, this Stage 1 review assesses the economic appraisal on the basis of the information made available through the public Consultation. Subject to further consideration by AgriSearch, the additional material may be examined separately as part of a Stage 2 analysis.

2.3 Analysis Approach

Figure 1 below, summarises the Options, along with the cost calculated (present full economic variable costs – five-year total per 100km^2 area).

Due to the way the Options have been costed, they are ***not*** presented in numerical order. The best evidence available to DAERA on the cost of wildlife interventions comes from its own cage-trap TVR trial conducted from 2014-18 at Banbridge. The equivalent to this trial is Option 6. This is used as a basis for costing a number of the Options, with suitable adjustments made. These are summarised in Figure 1.

Where restraint trapping is used instead of cages, the costings are derived mainly from data from the Department of Agriculture Food and the Marine (DAFM) in the Republic of Ireland who use this method. No published data is referenced so we assume that this was via private communication. As above, this makes it very difficult to verify the published figures. Lastly, the single controlled shooting option (Option 5) used data from Defra sourced from the recent cull in England. This data is in the public domain, but it is unclear how it has been used within DAERA's calculations.

Figure 1: Summary of Intervention Options

Option	Approach	Method	Operator	Cost Calculation Approach	Cost* £m
1	No Nothing			No Cost	£0
6	TVR	Cage	DAERA	Data from DAERA pilot	£2.429
↳7	"	"	Private	Option 6 data adjusted for private sector	£1.645
↳9	Vaccinate	"	DAERA	Option 6 data adjusted for vaccination	£2.227
↳10	"	"	Private	Option 9 data adjusted for private sector	£1.496
↳2	Cull	"	DAERA	Option 6 data adjusted for cull	£2.201
↳3	"	"	Private	Option 2 data adjusted for private sector	£1.462
4	Cull	Restraint	Private	Data from DAFM, ROI	£0.664
↳8	TVR	"	Private	Option 4 data adjusted for TVR	£0.865
↳11	Vaccinate	"	Private	Option 8 data adjusted for vaccination	£0.714
5	Cull	Shoot	Private	Data from Defra, England	£0.408

Source: DAERA, summarised by The Andersons Centre * present full economic variable cost, 5-year total

Clearly, having no wildlife intervention generates zero cost. Shooting is the cheapest option of all the interventions. All the options based on Restraint capture are cheaper than the equivalent Cage options due to easier deployment of this system.

The TVR option is the most expensive, followed by Vaccination, with a Cull being the least expensive. Operations undertaken by the private sector are cheaper than if the work is done in-house by DAERA.

3. Overall Approach

3.1 General

It is recognised that a costings exercise, such as that carried out for the Consultation, will never be 100% accurate and will always involve an element of estimation. It is easier to critique such an exercise than it is to undertake it. Nevertheless, the economic analysis does not *explicitly* recognise the uncertainty involved. It is more implicitly recognised in the fact that a number of sensitivity analyses (section 6 of Annex VIII) are undertaken. In the main Consultation document, the costs of each option tend to be presented as a precise figure – possibly giving a misleading picture of the accuracy of the estimates.

3.2 Overall Methodology

The costs of each Option are built up from individual cost elements (see section 4.1 below). This is a logical approach. Any error in an individual element should be relatively small and not compromise the overall robustness of the figures. *Given that, however, labour is likely to be by far the largest component of the overall cost and has the capability to 'skew' the results*.

Using individual components should also allow various items of 'core' data to be set (e.g. wage rates) which are then used across the costing of all Options – helping consistency (see below). Not having sight of the actual calculations in the published Consultation, however, it is not known for certain that this has been done.

It seems likely that DAERA has had to deviate from the individual cost element basis where Restraint traps or Shooting are being costed – due to evidence availability. Overall, this is likely to increase the uncertainty around these Options.

3.3 Consistency

All the Options appear to have been treated consistently in terms of the methodology applied. Table 5 in Annex IX shows that the relevant cost items have been included in each case.

All Options are costed over the same area and for the same timescales. This seems valid in terms of making meaningful comparisons, but there may be factors arising from the different methods that should be considered (see 'Timings' below).

The costings are based on the three core sources outlined above – DAERA, DAFM and Defra. What is not clear is whether cost items have been equalised across the Options where different data sources have been used. A key example is private sector labour. It is unclear whether hourly rates have been 'harmonised' with data coming from NI, ROI and England, and over different time periods.

3.4 Intervention Scale

Discussion of the choice of the scale of 100km^2 for analysis is covered in section 2.7 of Annex IX. The Consultation itself states the area chosen is '*simply a convenient unit of analysis*'. Section 2.7.1 sets out that any culling needs to be undertaken over a relatively large area.

The scale of intervention is more of a scientific issue than one of economics. A note in the Annex states that there could be some 'scale effects' (i.e. economies of scale) of operating over a larger area. However, these should be seen across all Options, so would not change the overall rankings. This seems a reasonable conclusion.

The size is rather less than the areas designated at the end of the cull in England with the average size of the areas designated in 2019 being 632km^2[22]. The average area in the Republic of Ireland's Four Area Trial (1997-2002) was 245km^2[23]. Thus, 100km^2 might be considered small.

Overall, given that the actual areas have not been defined in NI, then a notional area has to be used. Whilst 100km^2 is arbitrary, it is no more so than any other measures and is not considered to be a major issue within the analysis.

3.5 Timing of Costs / Benefits

All the Options are costed for a five-year intervention period. The benefits are then assumed to last for nine years.

The five-year intervention period has been chosen as it is 'consistent with two large scale research trials: England Randomised Badger Control Trial and the ROI's Four Areas Trial. The former was carried out between 1998 and 2005 and the latter between 1997 and 2002. These are both over 20 years ago. In terms of culling by shooting the recent Defra programmes in England have been for initial intensive four-year periods[4] (although there has also been subsequent supplementary culls to maintain badger populations). This appears to have achieved satisfactory results. The ROI current culling system does not operate for a set period of time. Interventions take place in response to local herd breakdowns and only continues until the local epidemiological risk subsides. No evidence can be found that culling continues in a local area in ROI for five years.

Overall, the five-year period may be long. For some interventions (i.e. cull by shooting) four years would seem sufficient. A shorter intervention period would reduce costs. However, for the purposes of comparison, costing each Option over the same time period makes sense – unless there is solid evidence to deviate to a different figure.

In terms of the benefits, the rationale for the nine-year period is set out in para 5.3.4 of Annex VIII. However, this is unclear to us. A period of five years following the end of intervention is quoted. With a five-year intervention period, this would suggest benefits of 10 years. The lower nine-year figure is used because the NI Parameterised Model[5] used by DAERA to forecast how bovine tuberculosis (bTB) spreads between badgers and cattle, has an intervention period of four years. It is not clear, therefore, why a five-year period has been used in the economic analysis.

The Defra cost/benefit analysis works on the basis of the effects lasting 11 years. It should, however, be noted that the culling period is extended through supplementary culls which may extend the benefits. There does not seem to have been any published cost-benefit evaluation specifically on the current ROI culling programme so there is no comparable period to use.

Overall, we would suggest the period for costs : benefits in years should be 5 : 10.

There is a wider question of whether any of the Options have different timings of costs and benefits. For example, can shooting be carried out over a shorter number of years than trapping as it is more efficient at removing badgers? Does vaccination offer longer-term benefits than simply culling badgers? These questions are of a scientific nature and beyond the scope of this review. They should be borne in mind, however. For the purposes of DAERA's economic analysis it seems reasonable to have all Options calculated over the same timeframe – otherwise fair comparisons become difficult.

3.6 External Benchmarks

For any cage trapping costings, DAERA's internal data from its TVR Pilot Project is the basis. It is assumed that this is robust but, as stated elsewhere, with no details available in the Consultation, it is impossible to know. It is also unclear what adjustments, if any, have been made to costs to reflect the move from a trial basis to a full deployment.

For the option of restraint traps, the data has been sourced from DAFM in the ROI. Whilst very high-level costs are in the public domain[6] more detailed figures do not appear to be. Para 2.16.1 in Annex IX states that 'DAERA secured some high-level information from DAFM in the ROI' but no further detail is provided. Based on the fact that a 'cost per badger trapped' is discussed, this may not provide much greater granularity than the figure reported in the press.

It is assumed that the ROI costs would be transferable to NI, despite some minor differences in areas such as farm systems, topography etc. As ROI is only undertaken by the private sector, no public sector option is costed. The current badger control system in ROI is not based on proactive area culling but reactive culling around bTB 'hotspots'. This may result in different cost structures.

The figures for culling by shooting are sourced from Defra's Value for Money Analysis of the badger cull in England[7]. This provides more detail than the ROI figures but is, again, quite high-level. It is not clear whether DAERA has requested additional background data from Defra, but it is assumed not.

In terms of other external benchmarks, reference is made to the Annual Survey of Hours and Earnings (ASHE)[8] for private sector costs. This is the most robust source for labour costs so is valid. For almost all the other costs, the only source provided is that the data comes from DAERA/DAFM/Defra. It is impossible to benchmark this data. With many of the Options being costed on the basis of DAERA's TVR Pilot, it relies heavily on the Pilot being conducted on an efficient, cost-effective basis.

3.7 Risk / Uncertainty / Sensitivity

3.7.1 Risk

The Consultation has a section devoted to risk (Annex VIII, section 8). This mostly covers operational risks and the likelihood of the intervention achieving the projects objectives. Therefore, this is more a question of the science than economics. These risks are given a relatively high weighting in the overall ranking of the Options (see section 5.6).

There is a brief mention of 'cost overrun' being a risk, but this is scored with a weighting of zero as it is deemed to be dealt with elsewhere – namely in the sensitivity analysis section. This is covered below.

3.7.2 Uncertainty / Sensitivity

The issue of uncertainty is mainly dealt with through sensitivity analyses. The following variations are modelled;

- ***Perturbation effects*** – badgers ranging more widely than normal due to the intervention
- ***Policing costs –*** not included in the 'base' analysis
- ***Cost changes*** – cost of cull being 15% or 30% above standard
- ***Length of benefit*** – 7 years or 11 years of benefits rather than standard 9
- ***Measuring benefits over a wider 'arena'*** – area beyond the 100km^2 intervention zone

Of these, the first is essentially a scientific matter as it covers epidemiological issues. The same is also true of the last point, although it is worth noting that looking at a wider area increases the value of the

intervention as some benefits are seen outside of the core 100km^2 area. It is unclear how certain these effects are. However, it is an interesting economic benefit which is not really highlighted in the main Consultation document.

Policing costs do not change the overall analysis significantly. These are estimated to be £56,000 over a five-year period for a 100km^2 area – based on recent Defra data. The cost of policing the cull in England dropped dramatically from its inception to when it had become established. In the ROI there is no policing of badger control.

The cost changes are only applied to private sector options. DAERA appears confident that the costings for public sector provision, derived from its own Banbridge trial are robust and do not need to be subject to sensitivity. This could be seen as optimistic given the trial was around a decade ago. Also, there would presumably be effects from scaling-up from a trial to a multi-area intervention. These could either be positive (economies of scale and learning best-practice) or negative (issues with resourcing and managing larger interventions). It seems a little blasé to assume costs from so long ago, adjusted for inflation, will be so certain.

For the private sector Options, costs have been increased by 15% and 30% to model potential differentials. These percentages seem reasonable. However, given the base costs have come from different geographies, it might be argued that a more extreme cost uplift be used to model a 'worst case' scenario.

Finally, as mentioned above, in the main Consultation document (which is the only part that most people will read) a single 5-year cost for each Option is given. This is provided down to £1,000. Given the inherent difficulties in such a costings exercise, it is felt that this provides a misleading sense of certainty and accuracy in the figures.

4. Costs

4.1 General

For all ten costed Options the individual cost categories included are outlined, in general terms, in Table 5, Annex IX. In order to undertake a thorough analysis of the costings, both the cost and volume of the items listed in this table would need to be known.

As stated in section 1.1, more detail of the calculations behind the costings was requested from DAERA. This was provided on the 11th September 2026 in a series of CSV and PDF files. References in this section to information, detailed workings or supporting calculations not being available relate to the material published within the Consultation suite. They do not take account of the additional information supplied by DAERA on 11th September 2026, which was received after the Stage 1 analysis had substantially been completed and was in a format difficult to assess quickly. This material has not been assessed in this report.

As outlined earlier, for the Restraint and Shooting options, however, it seems unlikely that the costs have actually been built up from these individual elements – as the data from DAFM/Defra does not go into such detail.

Rather than look at each of the Options individually, it is more logical to look at the cost categories. This is particularly the case as the detailed costings are not available.

As set out in section 2.5 of Annex IX most of the costs will be variable costs – they will depend on the number and sizes of areas for intervention. Within each area, and important for the costings exercise, is the badger population – the higher the population the greater the number of captures or kills required to meet target thresholds. The badger population per 100km^2 is estimated to be 423 (see para 2.14.2). This is based on a model from 2012. Emerging research[9] from Queen's University Belfast indicates that badger densities are highly spatially variable, with substantially higher densities recorded in some local hotspots than assumed in DAERA's central costing scenario. If this were the case, this would require much more intensive levels of intervention to meet targets and thus result in higher costs.

There is also the prevalence of bTB in the badgers captured for options 7 and 8, as this will drive whether the animals are culled or vaccinated. There will be a cost difference for each Option, but this is felt to be small and probably would not hugely affect the overall costings.

4.2 Labour

This is likely to be, by far, the largest component of costs. The total cost will be the product of the value of labour (wage rates and associated costs) multiplied by the volume (hours). Each of these are dealt with separately below.

Included in this general discussion of 'labour' is various subcategories outlined in Table 5 such as trapping labour (likely to be the main item), treatment labour, training time, travel, sett survey labour, project management and monitoring.

From Annex IX it appears that this approach (hours x wages) has been used in the Cage trapping Options (see para 2.15.1). However, for the Restraint Options it appears that the analysis has only been based on a total cost per badger trapped (para 2.16.1) sourced from DAFM. This includes all the cost elements such as equipment and disposal, as well as labour (2.16.5).

For the Shooting Option (no. 5) the cost data was sourced from Defra's 2019 Value for Money Analysis[10]. Section 2.2 of this sets out the costs of the English cull. It is not entirely clear from Annex IX (section 2.20) what has been used, but it is assumed to be the combined farmers' and Government costs. These are given in aggregate and not broken down. DAERA may have received more detailed background costings from Defra, but this is not explicitly stated. It is not clear how the aggregate costs have been extrapolated to the NI situation.

4.2.1 Value – Public Sector

How the public sector labour cost has been arrived at is set out in para 2.4.1 of Annex IX. It is based on average salaries paid in DAERA plus National Insurance and pension costs. In addition to this, a 30% supplement is added to account for 'central services and accommodation for staff'. This figure potentially looks high and it would be interesting to know whether this is a standard rate when arriving at a full 'economic cost'.

Looking at Table 5 in Annex IX it appears that various grades of staff have been assigned roles. It is not clear what the balance of different grades are or whether the most cost-effective allocation has been done. For example, where vaccination is being undertaken (Options 6 and 9) this is being undertaken by a vet. This seems unnecessary which is perhaps reflected in the wider Consultation's questions around licenced 'Lay Vaccinators' (section 9 of the Consultation).

Overall, this is an area of the costings where more detail is clearly needed.

4.2.2 Value – Private Sector

Private sector labour appears to have been treated in two different ways in the costings. Firstly, for the Cage trapping Options (numbers 7, 10 and 3) the hourly labour rates have been adjusted from a public sector cost (see para 2.15.1 for details). For the Restraint and Shooting options (4, 5, 8 and 11) the cost data has come from DAFM/Defra. It does not appear this provided a breakdown in terms of hours x rates. Therefore, aggregate metrics such as 'cost per badger' have been used. The private sector wage rate in these cases is 'buried' in the overall figure and seems unknown. This raises the possibility that significantly different private sector wage rates are being used in each group of options.

In terms of the hourly rates used in the private sector cage trapping, this is based on the Annual Survey of Hours and Earnings. As a comprehensive survey of actual amounts being paid, it is agreed that this is the best source of data. However, Annex IX only states that a 'percentage adjustment' has been made, but does not provide any detail of this percentage, or wage grades used.

Para 2.15.3 states that 'assumptions are not outlined in detail in order to avoid compromising any potential future procurement exercise'. Whilst the logic of this is recognised, it is felt that any private sector contractor would be driven by their own costs and labour use estimates when bidding for a contract, rather than being swayed by estimated rates. Therefore, more detail could be provided without significant risk.

As with the private sector rates above, this is an area where greater detail is required to really understand the costings.

On page 39 of the main Consultation document, two options for private sector involvement are set out;

- Delivery through private sector ***commercial*** providers authorised, monitored and overseen by the Department

- Delivery through ***farmer-led not-for-profit*** companies operating under the authorisation of and monitored and overseen by the Department

In reality, most of the private sector costings appear to have been undertaken on the basis of a commercial contractor being appointed. Only Option 5 (Shooting) is based on farmer-led companies due to the data source being the English cull.

On page 35 of Annex VIII it is noted that farmer-led approach may lead to costs 'lower than the estimates provided in this document'. However, this would be contingent on farmer-controlled companies in NI being prepared to do approaches other than controlled Shooting (Option 5), which is currently unknown. Any lower cost of intervention would make the cost / benefit calculation more attractive.

In general, the Consultation seems to lean towards a private-sector delivery model mainly due to lower labour costs involved. The reasons are set out in both para 4.2.9 of Annex VIII and in the main Consultation document itself – page 38.

4.2.3 Volume / Hours

A key evidence gap in the Consultation is any data on how long any particular task is estimated to take. Without this, it is impossible to apply a 'sense test' to whether the hours allocated seem sensible. As set out above, for the Cage trapping Options, DAERA should have a good estimation of hours from its Banbridge pilot in 2014-2018. However, without detailed information, it is impossible to know whether these operations were 'efficient' and if there is scope for time savings through scale, different methods of operation, or use of the private sector.

As both the DAFM and Defra data only appears to be available as aggregate amounts, it is not clear whether hours have been calculated from this – it is assumed not. As with wage rates above, this potentially generates inconsistency between the costings of different Options.

As mentioned previously, labour will be the largest cost component. Having robust figures for this element is key to the overall validity of the costings.

4.3 Equipment

As set out in Table 5 of Annex IX, the main items of equipment are;

- ***Treatment:*** gun & ammunition for culling; vaccine, applicators & microchips for vaccination
- ***Trapping Equipment:*** cages (including import cost), restraints, bait, equipment for digging in etc., includes storage site for cages
- ***Transport:*** vehicles and trailers, plus washing and cleaning of the same
- ***Phones:*** including charges
- ***Carcase Disposal:*** bags, transport and rendering

Some of these will vary depending on whether the Option is being undertaken by public sector or private contractor.

This list is comprehensive and nothing significant has been excluded.

As with the labour costs above, no detailed breakdown of number and costs of individual items, or even categories of items, have been provided in the Consultation. This information would allow for a far more thorough review of the costs included and whether they are proportionate.

For the non-Trap Options, again the costs seem to have been taken from DAFM/Defra figures in-the-aggregate. A more detailed approach would make the figures more applicable to NI circumstances.

4.4 Other

4.4.1 Shooting / Trapping Balance

One additional point to make relates to Option 5 – the cull by controlled shooting. In the costings it is stated that 30% of the number of badgers culled will be caught by cage trapping to supplement the main shooting operation. This figure is based on early (2013) experience in the English cull (para 2.20.8, Annex IX). In recent years, the percentage of badgers having to be trapped in most English areas is far lower than 30%[11] . Cage trapping is more costly 'per badger' than shooting. If a lower cage trapping percentage was adopted for Option 5, the overall cost is likely to be lower.

4.4.2 Who Pays?

Whilst the two economic Annexes set out costs for each Option, they are silent on who would be expected to pay these costs.

Section 4.1 of Annex VIII specifically states that the current Consultation is only looking at options for ***what*** the wildlife intervention should be and ***how*** it should be deployed (public or private sector). Decisions around how any programme would be ***managed*** and how it would be ***funded*** will be covered at a later date.

Interestingly however, the main Consultation document has a question (number 9) on this issue. It asks (the somewhat leading question) of '*Do you agree that any wildlife intervention option selected should be funded by the private sector, with the Department funding oversight, regulation and monitoring?*'. It seems odd to include this question when there has been no analysis of the funding options. Given it has been included, it is useful to briefly look at the experience in England and ROI on this issue.

In England, farmer-led companies have conducted (and funded) the badger cull from 2013 to date. The cull is now being wound-down, with Defra transitioning to a vaccine-based approach. A tender[12] has been issued for a national coordinator in England to run the vaccination. This is Defra-funded and the contract has an estimated value of £15m (excluding VAT).

In the Republic of Ireland the wildlife intervention is contracted by DAFM to a private-sector operator (Farm Relief Services). This is partly funded by a statutory animal disease levy on farmers.

5. Benefits

5.1 Cost / Benefit Introduction

All the interventions apart from Option 1 involve cost. In order to test whether this cost is justified, the Consultation looks at the benefits that should be gained. Simplistically, these benefits are the prevention of herd breakdowns and the costs that come with them.

The *cost per breakdown* is important as it sets the value the wildlife intervention costs are being compared against. These are discussed in more detail below.

5.2 Breakeven Analysis

The Consultation initially does not attempt to quantify how many breakdowns each Intervention Option will prevent. This is because '*the number of herd breakdowns that would be avoided in an intervention area specifically as a result of badger intervention is unknown*' (para 1.2.1.3 in Annex IX). Therefore, what is done is that a 'breakeven' figure is calculated – knowing the cost of each Option, plus the cost of a single breakdown, the number of breakdowns prevented can be found that balances risks and costs.

An example of this calculation for Option 6 is included at Table 15 of Annex IX. A summary of the breakeven breakdown numbers for all the Options is included in Table 6 of Annex VIIII.

Within Annex VIII there is then an analysis of whether the breakeven number of breakdowns prevented is achievable for each Option. *The effectiveness of a particular Option in preventing bTB spread between wildlife and cattle is a scientific issue and is beyond the scope of this report.*

Following on from this breakeven analysis, the Consultation then *does* estimate an overall cost/benefit for each Option, based on a benefit derived from a modelled assessment of the assumed disease benefit.

5.3 Cost to Government (DAERA)

Section 3.2 of Annex IX sets out the cost to Government (DAERA) of bTB in Northern Ireland. Then, in section 3.3 the cost associated with herd breakdowns, rather than ongoing disease monitoring are broken out. These are updated to proposed 2026/27 costs.

There has been an increase in cattle values since the base year of 2024/25 – affecting compensation values paid. An uplift has been applied for 2025/26 and thus for 2026/27 too (see para 3.2.4). No detail is provided on how this uplift has been calculated and whether it is proportionate to actual cattle market value changes.

An adjustment was also made to DAERA figures to reflect unfilled posts within the Department relating to the bTB programme (13% of relevant posts unfilled at the time the calculations were made – Annex VIII, notes on page 5).

Overall, the calculations for the Government's costs seem robust – this is not surprising as DAERA has good information to hand on these elements. The 'headline' figures are that bTB is estimated to cost the public purse in Northern Ireland £77.8m in 2026/27. Of this, £66.1m can be attributed to breakdown costs.

5.4 Cost to the Industry

Whilst the calculation of costs of bTB to DAERA will be relatively robust, there is far greater uncertainty about its wider costs to the industry.

Given the lack of knowledge in this area, the LMC, DCNI and UFU commissioned The Andersons Centre to produce a report[13] on this topic, which was published in March 2026. As authors of this report, we obviously believe it is robust and it forms the background to this section. DAERA reference this in para 1.6.7 of Annex VIII and state that the report was published after the production of the calculations in Annex IX and so was not considered. The figures differ significantly, with DAERA's estimation of costs being much lower. More detailed discussion of individual points are set out below. *Our costings have been provided to DAERA and we have received no substantive feedback on any errors within them.*

Overall, a lower farmer cost means that the calculated benefits from any intervention are lower and makes that intervention seem less worthwhile.

Section 3.4 of Annex IX sets out farmers' costs of complying with bTB Programme rules – this is essentially farmers' time for testing and then dealing with any subsequent reactor animals. The time element has been taken from the 2009 Better Regulation Survey[14] with hourly rates applied from ASHE statistics. In terms of rates, the ASHE/DAERA rates (uplifted to 2026/27 values) provide a 'management' rate of £25.66 per hour and a 'manual labour' rate of £15.69. The equivalent figures in our study are £50 per hour and £15 per hour (albeit for the 2025 year). We would argue that farming should be regarded as a professional, valued, occupation and the discounting of 'farmers time' is an unhelpful and incorrect habit.

There is no breakdown of the split between management and manual hours in DAERA's figures. Also, the hours for each task are not explicitly stated – although they presumably relate back to the Better Regulation Survey.

The DAERA estimates in Annex IX put the total bTB Programme (labour) costs to farmers at £20.2m. of which the breakdown costs are £9.5m. On top of this are 'other costs' as set out in section 3.6 of Annex IX;

- Movement restriction costs
- Isolation costs for reactors, inconclusives etc.
- Loss of value of culled animals (beyond statutory compensation), plus loss of output, sourcing replacements etc.

The methodology for this comes from a Defra report published in 2011[15]. These cost items were covered in our LMC/DCNI/UFU analysis, plus some additional ones (see sections 6.2.4 to 6.2.7 of our report).

The costs under these categories generally come from historic Defra reports – the 2011 one referred to above plus others (see notes at the foot of page 44 of Annex IX). These costs tend to be historic and have been updated to 2026/27 values. However, this has been done only using standard Government inflation factors. Many costs and values in the agricultural sector do not move in line with general economic inflation, so it must be questioned whether this is a valid approach.

It should also be noted that Northern Ireland is not England – where most of this data has come from. Different farm structures, especially smaller and more fragmented holdings, are likely to make NI costs higher on average.

Figure 2 below sets out total farmers' costs as calculated by DAERA in its Consultation – split between breakdown and non-breakdown costs. This is set against the recent estimates prepared by The Andersons

Centre. *Note that the methodology of our report was designed to produce an overall cost and not one split between cost types. An approximation of non-breakdown costs has been shown based on the costs to farms not experiencing a breakdown. However, an element of the costs on 'breakdown farms' will also relate to non-breakdown activities such as routine testing. Therefore, the Andersons figure for breakdown costs will be a slight over-estimate.*

In Figure 2, a 'cost per breakdown figure is also provided for completeness. A discussion of this is covered in the following section.

Figure 2: NI Farmer bTB Costs

Costs - £m	DAERA Consultation			Andersons Report		
	Non-Breakdown	Break-down	Total	Non-Breakdown	Break-down	Total
Labour	10.6	9.5	20.2			
'Other Costs'	-	12.8	12.8			
Total	**10.6**	**22.4**	**33.0**	**49.4**	**46.8**	**96.1***
Government Costs	11.7	66.1	77.8			
Grand Total		**88.5**				
Breakdowns		*3,216*				
Cost per B'down		£27,500				

Source: DAERA / The Andersons Centre * components do not sum exactly due to rounding

It can be seen that there is a considerable difference between farmers' breakdown costs as calculated by DAERA and that in our recent report (£22.4m versus £46.8m). Even with a small over-estimate in the proportion of breakdown costs within our analysis, this is a large discrepancy.

If the cost of an outbreak was higher, this would increase the value of preventing it.

5.5 Cost per Breakdown

As set out in Figure 2, DAERA estimates that there were 3,216 'unique herd breakdowns' in 2024/25 (see para 3.10.3). This figure has also been used for 2026/27.

When divided into the total breakdown cost (£88.5m in DAERA's estimation), this arrives at a per farm breakdown cost of £27,500.

The methodology here seems robust, although the figure for the total NI breakdown cost can be questioned.

Some breakdowns will be more costly than others – for example, if they are prolonged or recurrent. It is likely that wildlife interventions will be targeted at areas where the epidemiological evidence indicates that wildlife is contributing significantly to herd breakdowns. It seems probable that this will include a higher proportion of such 'expensive' chronic breakdowns due to reinfection between cattle and wildlife. In this case, using an all-NI average of costs saved could under-estimate the economic benefit. However, as any targeting of intervention is currently unknown, and the contribution of wildlife to infection in specific areas is uncertain, using an average figure seems valid in the Consultation. However, this could be an area where further sensitivity analysis is useful.

5.6 Overall Cost / Benefit

The Consultation pulls together the costs of each intervention and the assumed benefits. The results are summarised in Table 8 of Annex VIII.

In order to generate a figure for benefits, the number of herd breakdowns prevented under each Option is required. In paragraph 5.3.22 of Annex VIII it is stated that '*the model suggests that an average of 7.5 herd breakdowns per year may be saved over a 9-year period for a non-selective cull, 7.3 for TVR and 2.3 for vaccination*'. The model in question is the NI Parameterised Model referred to in section 3.5 above.

The expected cattle benefit used in DAERA's economic appraisal is therefore substantially dependent on epidemiological modelling rather than a directly observed cattle effect from evidence. The economic findings in the Consultation remain conditional on the modelled cattle benefits actually being realised. There would appear to be a large degree of uncertainty around this.

For illustrative purposes, Figure 3 below takes the baseline number of breakdowns saved from the Consultation, and applies a ±15% range. This then is calculated through to a monetary cost/benefit figure using the same factors in the baseline calculation. This is to illustrate how the economic results respond to a modest change in assumed effectiveness. The ±15% range is applied across all the Option types. In practice, some may have greater uncertainty than others. For example, proactive culling has direct replicated cattle-outcome evidence, whereas the cattle-level effect of TVR remains modelled rather than directly demonstrated.

It is difficult to represent the greater *potential* variability of the effectiveness of some Options versus others. However, for the TVR Options only, a 30% variance is also shown in Figure 3. This does *not* mean there necessarily *will* be greater variation – it merely highlights the greater uncertainty around the effectiveness of these Options. This comes back to the point that presenting a single figure in the Consultation, rather than a range, suggests a greater degree of accuracy than is actually possible.

Figure 3: Variance in Cost / Benefit Due to Change in Effectiveness of Options

Cost / Benefit -£m	1	2	3	4	5	6	7	8	9	10	11
Base	0	-0.628	0.111	0.909	1.165	-0.896	-0.112	0.688	-1.739	-1.008	-0.226
15% Better	0	-0.392	0.347	1.145	1.401	-0.666	0.188	0.898	-1.666	-0.935	-0.153
30% Better						-0.436	0.348	1.128			
15% Worse	0	-0.864	-0.125	0.673	0.929	-1.126	-0.342	0.438	-1.812	-1.081	-0.299
30% Worse						-1.356	-0.572	0.208			

Source: DAERA / The Andersons Centre

Based on DAERA's modelling, Options 3, 4, 5 and 8 produce a positive net present value – i.e. the savings in terms of breakdowns prevented are greater than the cost of the wildlife intervention. If the interventions are 15% more effective at preventing breakdowns than modelled, then Option 7 also shows a net benefit. Conversely, a 15% worse effectiveness results in the NPV of Option 3 becoming negative.

In terms of ranking, under DAERA's base, Option 5 comes highest – cull via controlled Shooting. This is due to its relatively low cost of implementation. The next best Option is number 4 (cull via Restraint traps). This is followed by Option 8 (TVR by Restraint trap) and then Option 3 (cull by Cage (private sector)). The sensitivity does not change the rankings as it is applied at a flat-rate across all Options.

Overall rankings are discussed below.

5.7 Ranking

In section 9 of Annex VIII the various options are ranked, based on three criteria – economic benefit, non-monetary factors and the risk within each option.

The economic benefit is outlined above. The non-monetary factors recognise that any decision on wildlife intervention is unlikely to be solely an economic/scientific one but also a political/social/environmental decision. These non-monetary factors are set out, and ranked, in section 7 of Annex VIII.

Section 8 of Annex VIII sets out the risks estimated for each of the Options. Again these are ranked.

The overall rankings blending these three criteria are set out in Table 29. These put Option 8 (TVR using Restraints) as the highest-ranked.

Each criterion is given equal weighting in generating the composite rankings. There could be an argument that some criteria (e.g. the economic benefit) should be weighted higher than others (e.g. the perceived risks; which are qualitative). This is a public policy question, rather than one of economic analysis.

If the economic factors are given *twice* the weighting of the other two factors, then Option 8 still comes out as the highest with a weighted rank of 2.5. But it is closer to the second-placed Option 5 (cull via controlled shooting) with a weighted rank of 3.3. Option 5 is generally pulled down by its relatively high non-monetary factors ranking of 7. If the calculation is adjusted so that economic factors are given 3.5 times the weight of the other factors, then Options 5 and 8 have the same overall score (2.6).

It is also worth noting that, within the non-monetary category, three of the five criteria (cattle killed prematurely, GHG-related inefficiency and human welfare) are all derived from the same underlying APHA-modelled number of herd breakdowns avoided. Whilst these are all separate consequences, they are not analytically independent. Thus, the APHA model influences 60% of the score in this category.

5.8 Overall Cost

A 'mid-priced' Option such as TVR undertaken by the private sector with Restraint traps (Option 8) is costed at £0.865m for a 5-year operation over 100km^2.

Northern Ireland has a land area of approximately 13,500 km^2 with around 10,000 km^2 of that being 'farmland'. Assuming that wildlife interventions were carried out over the *entire area* then that would be 100 x 100 km^2 blocks.

However, DAERA states that, in order to remain consistent with the protection afforded to badgers under the Bern Convention, the total area under wildlife intervention would not at any one time exceed 30% of Northern Ireland's agricultural land. The actual area selected may be smaller, but no programme-wide deployment area has yet been specified.

Assuming Option 8 was applied concurrently across this maximum area, this would be approximately 3,000 km^2, or 30 units of 100 km^2. This equates to a five-year intervention cost of approximately £26.0m, or around £5.2m per year.

Actual costs would depend on the number, location and characteristics of the areas selected, badger density, operational scale and other factors discussed elsewhere in this report. Even at this maximum scale, the annual intervention cost would be relatively modest when compared with the estimated cost of bTB herd breakdowns used in this analysis. DAERA puts this figure at £88.5m per year - which we believe is low. Although wildlife intervention will not, on its own, eradicate bTB, this broad comparison supports the conclusion that investment in wildlife intervention seems worthwhile.

Annex I - References

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