

Summary: Intervention & Options

Department/Agency: Department for Environment, Food and Rural Affairs	Title: Impact Assessment for the introduction of sheep and goat EID under EC Regulation 21/2004	
Stage: Final Proposal	Version: 0.02	Date: 25 November 09
Related Publications: EC Regulation 21/2004		
Available to view or download at: www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0021:20081014:EN:PDF		

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

To improve the traceability of sheep and goats in order to combat animal disease. This led to the adoption of Council Regulation (EC) 21/2004 (the "Regulation") in 2003. The UK is legally required to implement the electronic identification (EID) and individual recording requirements of the Regulation by 31 December 2009.

What are the policy objectives and the intended effects?

The policy objective is to implement a system to meet our commitment under European Law and which is as practical as possible for industry to implement and easy to understand. The intended effect is to improve our ability to trace animals and control outbreaks of animal disease.

What policy options have been considered? Please justify any preferred option.

Sheep born or identified after 31 December 2009: Options considered were about the extent to which the slaughter derogation should be applied (see www.defra.gov.uk/corporate/consult/eid/impact-assessment2.pdf). The recommended option is to implement the regulation to the minimum level and derogate all sheep intended for slaughter under 12 months of age from the need to be electronically identified.. In addition we will authorise the use of the Central Point Recording Centre derogation The use of these derogations reduces implementation costs and increases flexibility in the way they can apply the new rules to their business.

Sheep identified before 31 December 2009: Options considered were about the rules for replacements (see www.defra.gov.uk/corporate/consult/eid/impact-assessment2.pdf) Recommended option is to apply the same replacement rules regardless of age to simplify the system.

Goats: Options considered were about the slaughter derogation. Recommended option is to continue with the slaughter derogation because it is the lowest cost option and maintains the status quo for the goat industry.

Note the costs and benefits of the options for goats are small (see 5.6) and these have not been included in the following section on Summary Analysis and Evidence.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

EID is an EU obligation and can only be reviewed by the Commission. The way in which EID is implemented in England will however be reviewed after 2012, when the transitional measures come to an end.

Ministerial Sign-off For Final Impact Assessment:

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 chosen option.

Signed by the responsible Minister:



Summary: Analysis & Evidence	
Policy Option: 1.b	Description: EID with a slaughter derogation for all sheep intended for slaughter, which are under 12 months of age.

ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
One-off (Transition)	Yr	
£12.49m to £24.20m	7	The one-off costs for industry (keepers, markets and abattoirs) range from £8.50m to £18.82m which occurs in 2010 for equipment and training and in 2016 for equipment only. Their average annual costs range from £3.70m to £5.75m
Average Annual Cost (excluding one-off)		The government costs are £2.48m for equipment and rebuild of the Ear Tag Allocation System (ETAS) and equipment for inspectors which occurs in 2010. The average annual cost is £0.28m to cover inspections. There is no range for government figures.
£3.98m to £6.03m	10	(PV) £42.88m to £69.46m
Other key non-monetised costs by 'main affected groups' None		

ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
One-off	Yrs	
£	10	Research has been carried out to monetise the benefit which the introduction of EID and individual recording could bring for reducing the costs of a major disease outbreak. This research showed the largest outbreak reduction for this option to be £66m.
Average Annual		
£ £2.2m to £2.62m¹	10	(PV) £18.3 – 21.7m
Other key non-monetised benefits by 'main affected groups' The 2001 FMD outbreak is estimated to have cost the public sector over £3 billion and the private sector more than £5 billion. Independent research has estimated that for this option EID and individual recording would enhance traceability by between 3 and 13% over the current double tagging system. There may also be some management benefits for those keepers who choose to go beyond the minimum requirements of the regulation.		

Key Assumptions/Sensitivities/Risks. Annual lamb crop of 8.5m of which 1.7m will be electronically identified and individually recorded. These figures are assumed to remain constant. Estimated time for batch reading and recording store lambs is 24 and 32 seconds per animal for farms and markets/abattoirs respectively. See Annex 2 for key assumptions.

Price2009 Base 2009	Time Period 10 Years	Net Benefit Range (NPV) -£24.5m to -£47.6m	NET BENEFIT (NPV Best estimate -£36.1m (net cost)
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What is the geographic coverage of the policy/option?

England

¹ Assuming a major infectious disease outbreak might happen once every 30 years, the £66m outbreak reduction is averaged over this period. Other plausible assumptions can be made regarding the size and frequency of disease outbreaks, but alternative realistic scenarios would not yield substantially different outturns.

On what date will the policy be implemented?		31 December	
Which organisation(s) will enforce the policy?		RPA and LAs	
What is the total annual cost of enforcement for these organisations?		£0.39m	
Does enforcement comply with Hampton principles?		Yes	
Will implementation go beyond minimum EU requirements?		No	
What is the value of the proposed offsetting measure per		£	
What is the value of changes in greenhouse gas emissions?		£ Negligible	
Will the proposal have a significant impact on competition?		No	
Annual cost (£-£) per organisation (excluding one-off)	Medium SDA £216 - £507	Medium Lowland £71 - £329	
Are any of these organisations exempt?	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)				(Increase -
Increase	£1.74m - £1.95m	Decrease of	£ 0.05m	Net Impact
	Please see Annex 5			£1.66m - £1.90m

Key: **Annual costs and benefits: Constant Prices** **(Net) Present Value**

Evidence Base

1. Executive Summary
2. Purpose and intended effect
3. Options for Implementing the Regulation
4. Benefits
5. Costs
6. Costs and impacts to specific businesses.
7. Enforcement, sanctions and monitoring
8. Compensatory Simplification

Annexes

A1: Outcome of Impact Tests not referred to in the Evidence Base

A2: Summary of Assumptions

A3: Trials and Research

A4: Detailed Comparative Cost Increase for two Typical Farm Businesses

A5: Policy Industry and Government – Current Costs and Present Values over the period 2010 – 2019

1. Executive Summary

1.1. Introduction

1.1.1. Council Regulation (EC) 21/2004 of 17 December 2003, as amended (the 'Regulation') sets out the rules on the identification and tracing of sheep and goats. The objective of the Regulation is to improve the effectiveness of the identification and tracing system for sheep and goats by introducing individual traceability. The Foot and Mouth Disease (FMD) outbreak in 2001 identified inadequacies in the EU sheep and goat identification and tracing arrangements laid down in Council Directive 92/102/EEC. In 2003 new rules were agreed to phase in improvements to EU identification and traceability arrangements.

1.1.2. The provisions of the Regulation are directly applicable in UK law. The first phase of the Regulation, which introduced double tagging has been implemented in England and the second phase, which introduces electronic identification and individual recording must be implemented by 31 December 2009.

2.1.3. Defra consulted stakeholders about options for implementation in March 2009. Further options were developed as a result of responses received to this consultation and because the UK secured a further EU concession in July 2009 to allow for Central Point Recording Centres (CPRCs) to read individual animal details on behalf of keepers. A second consultation on the enhanced options was carried out in August 2009. Separate Impact Assessments (IAs) were produced for the March consultation for the **Historic** (animals identified before 31 December 2009) and the **New Flock** (animals born or identified after 31 December 2009). In addition, a supplementary economic paper was produced to support the new options for the August consultation. This impact assessment combines the costs and benefits of the chosen policy options for the IAs for New and Historic sheep flocks and for goats.

1.2. Chosen options for implementation

Sheep

1.2.1. For the New Flock the chosen implementation policy is to introduce EID only for those animals which live beyond the age of 12 months. Animals intended for slaughter within 12 months of age continue to be identified with a single non electronic tag. An electronic slaughter tag would be voluntary. Individual recording will be required for all animals not intended for slaughter within 12 months of age.

1.2.2. For the Historic Flock the chosen policy is to apply the same replacement rules regardless of age to simplify the system.

Goats

1.2.3. For goats the chosen policy is to implement the Regulation to the minimum level. Firstly by adopting the derogation which allows Member States with a population of less than 160,000 goats to derogate from the need to electronically identify animals. However this derogation does not derogate keepers from the need

to record individual animal details. EID would be voluntary and keepers will be able to continue with the existing identification rules (ie double tagging). Secondly by adopting the slaughter derogation for animals intended for slaughter within 12 months of age. The animals subject to the slaughter derogation would be identified with a single non electronic tag or a voluntary electronic slaughter tag.

1.3 Costs

1.3.1 For the New Flock, the overall costs for the sheep industry and the government over the current regime are discussed in section 5 and summarised in table 1 below. Costs for industry comprise of one off costs for equipment and training (aggregated over 5 years) and annual costs for identification (i.e. tags and labour), equipment maintenance and administrative burdens (holding registers and movement documents). Costs government comprise of one off costs for rebuilding ETAS and for inspectors reading equipment and annual costs for inspections.

Table 1. New Flock - Comparison of the ongoing Total Annual Costs above the current system for 2015².

Farms	Markets	Abattoirs	Government	Total
+£3.61m to £6.77m	+£0.68m to £1.34m	+£0.51m to £0.28m	+0.£89m	+£5.69m to £8.39m

1.3.2 It is assumed that the Historic flock will all be slaughtered by 2014. By which time the total cost for the Historic flock in meeting the requirements of the Regulation is estimated to be £1.2m. The Average annual cost for the historic flock is summarised in the table below. Cost for industry comprise of annual costs for replacement identifiers and administrative burdens (movement documents). Cost for government comprise solely of the increase in annual costs to inspections.

Table 2. Historic Flock – Comparison of the average annual costs by sector

Farms	Markets	Abattoirs	Government	Total
+£0.16m	+£0.04m	NA	+0.09m	+£0.29m

1.3.3 The overall costs for the goat industry and the government over the current regime are discussed in section 5 and summarised in table 3 below. Annual cost to goat keepers comprise of the increase in the annual cost of replacement identifiers and the increase in administrative burdens (holding registers and movement documents).

Table 3. Goats – Comparison of the on-going Total Annual Costs above the current system for 2015.

Farms	Markets	Abattoirs	Government	Total
+£7k	negligible	negligible	negligible	+£7k

² Costs demonstrated are annual cost (ie ongoing cost + annual charge – see tables 3, 4 and 5)

1.4 Benefits

1.4.1 For the New Flock independent epidemiological research has identified that the chosen option could reduce costs of managing an outbreak of exotic disease over the current UK system by between 3 and 13% as a result of fewer infected premises and less animals being culled. Assuming a major disease outbreak would happen every 30 years, this would equate to an annual benefit of between 2.2m to 2.62m depending upon the take up of electronic slaughter tags. Since this research was carried out the UK has also secured a derogation to allow individual recording to be carried out at CPRCs on behalf of the keeper. This may provide more robust and reliable data and may therefore further increase the benefit identified above.

1.4.2. The implementation rules have been simplified wherever possible, this will help improve compliance. The direct financial benefits, to the UK of implementing the EU EID requirements is a reduced risk of Single Farm Payment disallowance and EU infraction proceedings.

1.4.3 There will also be management benefits for those farmers who want to make use of EID and gather individual performance data to make their businesses more profitable. This could benefit such things as flock health status, lambing ratios, carcass quality, weight, milk yield etc.

2. Purpose and intended effect

2.1 Background

2.1.1. Following the 2001 FMD outbreak the Commission decided that there was a need to improve the traceability of sheep and goats in order to combat future animal disease outbreaks . This led to the adoption, on 17 December 2003 of Council Regulation (EC) No. 21/2004 (“the Regulation”) governing the rules for the identification of sheep and goats. During the negotiations the UK secured the use of a slaughter derogation which avoids the need for all animals to be electronically identified (EID) and delayed the introduction of individual recording until EID was introduced.

2.1.2. The Regulation came into force in 2 stages. First, it provided for the double tagging of all breeding sheep and goats from 2005 and secondly electronic identification and individual movement recording from 1 January 2008. However, the introductory date for EID was subject to confirmation or amendment by the Council following a report from the Commission. The implementation date was subsequently delayed until 31 December 2009.

2.1.3. Since the EID implementation date was agreed Defra and the industry have lobbied the Commission to secure concessions to the annexes of the Regulation.

2.1.4. The Regulation now provides a phased in approach to individual recording which will significantly reduce costs to English keepers during the transition period by £1.7m for the historic flock and by between £10k and £20k for breeding animals born after 31 December 2009.

2.1.5. The Regulation allows for the use of certain derogations from the need to electronically identify and individually record animals. We intend to apply the slaughter and Central Point Recording (CPR) derogations and take advantage of the 160,000 threshold set for goats, under which they **do not** need to be electronically identified, although they will still need to be individually recorded.

2.1.6. On 30 March Defra launched a 3 month consultation exploring options about the application of the slaughter derogation (see Table 1). These options proved to be controversial and no consensus industry view, on how the slaughter derogation should be applied, was reached. This was because the use of the slaughter derogation introduced practical problems for markets, store lamb finishers and abattoirs. Where the slaughter derogation is used there is an EU requirement the number of animals with different holding of birth identifiers in a mixed batch to be recorded in the holding register. Without an electronic means of recording this increased record keeping burden store lamb finishers may have been reluctant to purchase store lambs for further fattening with a resultant fall both in store lamb prices and, because of the knock on effect, of fat lambs an overall loss of value to the sheep chain.

2.1.7. However, the further concession to provide for Central Point Recording introduced flexibility within the EU rules which did not previously exist and allowed a further slaughter derogation option to be considered. Research, commissioned by Defra, showed that using Central Point Recording Centres (CPRCs) could significantly reduce the costs and burden of implementation in the UK, by reducing the need for keepers to purchase reading and IT equipment. This cost reduction is estimated to be in the region of 35 to 40%.

2.1.8. The further slaughter derogation option was to provide, in addition to the single non electronic slaughter tag, a voluntary electronic slaughter tag, the use of which would be commercially driven. A further short consultation exercise was carried out in August. Industry agreed that this further option would provide a workable slaughter derogation solution for them and address their concerns about the store lamb trade. They also identified concerns that CPR would not help keepers who move animals to temporary grazing as these movements would not pass through a CPR and therefore would need to be recorded individually as animals move off the holding. These concerns have been addressed through a change to the business rules which currently apply to sheep and goat movements.

2.1.9. Separate IAs were produced for the March consultation for the **Historic** (animals identified before 31 December 2009) and the **New Flock** (animals born or identified after 31 December 2009). A supplementary paper was also produced to support new options for the August consultation. This IA combines the costs and benefits of the chosen policy options for all animals.

2.2. Evidence

2.2.1. Defra has commissioned trials and research to assess the impact of the new rules on UK industry and Government. Results are discussed in the previous IA. Since then:

- 2009 Research by ADAS into keeper training needs to support the implementation of EID of sheep in England:
www.defra.gov.uk/foodfarm/farmanimal/movements/sheep/documents/eid-adas090519.pdf
- 2009 ADAS analysis of the cost implications for English sheep keepers where CPRCs are used:
www.defra.gov.uk/foodfarm/farmanimal/movements/sheep/documents/eid-adas-cost-090728.pdf

2.2.2. The key findings of the pilot trial and the research can be found at annex 3.

2.3. Business sectors affected

2.3.1. Sheep and goat farms and smallholdings, and those markets and slaughterhouses handling sheep and goats. There are approximately some 48,000 keepers of sheep, 8,000 keepers of goats, 78 livestock markets and 200 slaughterhouses, which deal in sheep and goats.

2.4. Rationale for Government Intervention

2.4.1. The driver for government action is the Regulation, which is directly applicable in all Member States. If the Government fails to act there is a high risk that European Commission would commence infraction proceedings against UK. The Regulation is also one of the pieces of the legislation considered for the purpose of cross compliance. Failure to comply in full or in part with the Regulation could result in disallowance at farmer level and/or at national level.

2.4.2. The ability to trace livestock movements is also an integral part in the Government's strategy for controlling the spread of infectious animal diseases to manage an outbreak and achieve eradication.

2.5. Sensitivity Analysis

2.5.1. Whilst the cost of equipment, tags and a labour are reasonably well known, we do not yet know how many keepers use CPRCs or to what extent electronic slaughter tags will be used. These variables will impact on the costs for equipment, tags and labour for reading. Therefore this IA gives figures for costs in ranges. There will undoubtedly be wide variation in unit costs and total costs between individual businesses and sometimes from year to year, but overall these will balance out. Annual costs have been estimated for 2 typical farm businesses and are included at Annex 4. The estimated time taken for operations associated with EID is largely based on a thorough programme of practical trials in a wide range of conditions. Where they are not, they are clearly highlighted. The unit costs of equipment and materials are based on current prices for a relatively well-established technology and are known to be relatively unaffected by the large increase in volume in the particular application of sheep EID that would follow implementing the Regulation. The number of sheep and businesses handling sheep are important variables and will probably change over time regardless of EID. More detailed references to the sources of the assumptions are given as appropriate in the document.

3. Chosen option and other options considered

Sheep

3.1. New Flock

3.1.1. The chosen option, which is supported by industry, provides for the use of the slaughter derogation, but with voluntary use of an electronic slaughter tag, and CPRCs. The other options considered were Full EID (i.e. all animals electronically identified), a slaughter derogation whereby all animals intended for slaughter within 12 months of age did not need to be electronically identified and a restricted slaughter derogation whereby animals moving directly to slaughter within 12 months of age did not need to be electronically identified. Table 1 summarises the options considered.

3.1.2. The chosen option takes full advantage of the derogations contained in the EU Regulation and provides maximum flexibility for the sheep industry's stratified production system, whilst complying with the EU requirements.. It provides a

solution to the store lamb trade problem and the reading of animals with mixed identities. It also addresses their desire to be able to upgrade slaughter animals to full breeding animals once they reach 12 months of age. Using the slaughter derogation option without a voluntary electronic slaughter tag limits upgrading to the holding of birth only which does not fit the industry's business needs. It is also the lowest cost option for a practical and workable system, only one option is cheaper and this is not a practical solution for the industry.

Table 1. Comparison of options considered for implementing the identification and recording requirements for the New Flock

	Slaughter derogation	Restricted slaughter derogation	Full EID, no derogation
Basic options (March consultation)	(1) Lambs for slaughter under 12 months batch identified and batch recorded. Full EID and individual recording for all other sheep.	(2) Lambs for slaughter under 12 months batch identified and batch recorded if they go direct or via market to slaughter. Full EID and individual recording for all other sheep.	(3) Full EID and individual recording for all sheep.
Central Point Recording allowed. (August consultation)	(1a) as (1) above but an approved reading point can read tag on farmers' behalf.	(2a) As (2) above but an approved reading point can read tag on farmers' behalf.	(3a) As (3) above but an approved reading point can read tag on farmers' behalf.
Slaughter tag allowed. (August consultation)	(1b) As (1a) above but farmers have the option of using an electronic slaughter tag for lambs exempt from full EID.	Note: Options shown in brackets	

3.2. Historic Flock

3.2.1. The identification rules for the historic flock do not change. Individual recording on movement documents does however become a requirement for farm to farm moves from end 2011. There is however scope to simplify the replacement rules for historic flocks and apply the same replacement principles to all animals regardless of when they were born (see table 2).

Table 2 Replacement options for the Historic Flock

Option 1	Retain existing rules for replacement tags.
Option 2	Align replacement tag rules with those of EID'd animals from 2010.

Option 3	Same as Option 2 except no cross referencing when historic flock loses a tag on their holding of birth.
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3.2.2. Option 3 was chosen because the record keeping costs are slightly less than Option 2. This will reduce the administrative burden whilst simplifying the rules so making them easier to follow.

3.3 Goats

3.3.1. The rules for the identification of goats will not change, but goats will be subject to the individual recording requirements to be phased in from 31 December 2009. Goats will continue to be required to be identified with two non-electronic identifiers, but keepers may fit electronic identifiers if they wish. The options considered were about whether or not to apply the slaughter derogation. The slaughter derogation was chosen because it had lower costs.

3.4 Central Database

3.4.1. The Regulation also provides derogations from the requirement to maintain farm records and complete movement documents, where a central database containing individual animal information is operational. Potentially the options for implementation could be enhanced by a national database. A national database containing individual animal information is not however an EU obligation and there are no Government plans at the moment for such a database to be developed in time for the introduction of EID. Therefore costings for an enhanced option has not been estimated.

4.0. Benefits of Chosen Policy Option

Sheep Industry

4.1. Disease control benefits of all options

4.1.1. Independent research estimated that the contribution of the EID tracing system was between 3 and 13% of the total cost reduction (see Annex 3 for the main findings of the 2007 report. The epidemiological modelling suggested that improved tracing through sheep EID might reduce the total cost of a major outbreak of FMD by between £66.6m and £78.8m for the chosen policy. The likelihood of such a major outbreak is impossible to predict. For this IA, it is assumed that there would be a major outbreak of FMD or some similar disease about once every thirty years, so the maximum expected benefit in any one year is between £66.6m and £78.8m divided by 30. This likelihood is thought to be high compared to current expert opinion about the probability of a major FMD outbreak in Britain, so the benefits of EID in this assessment are probably overstated.

4.2 Sheep industry

4.2.1. The main benefits for the New and Historic flocks for sheep are outlined in table 3 below.

Table 3 Sheep - Benefits to industry and government

	Industry, Farms, Markets & Abattoirs	Government
New Flock		
Disease Control Benefit – The proposed policy is estimated to improve disease control over the current system to industry and Government by between 3 and 13%.		
	The policy will implement the Regulation to the minimum level EU requirements (no gold plating). This is the least expensive option and so main benefit is savings on cost and time for industry as it exempts around 80% of all new born lambs The system provides a solution to the problems in recording individual batches (mainly store lambs) for markets & abattoirs and allows them to continue with the current farming system.	The policy will implement the regulation fully and eliminates the risk of infraction proceedings.
Indirect benefits	There will be indirect management benefits for keepers, depending on the level individuals choose to record additional information beyond that contained in the Regulation. Improved management systems could improve efficiency, profitability and flock health. Recording only the information required by the Regulation will not result in management benefits.	
Historic Flock		
Disease Control Benefit – Not quantified, but the policy would improve traceability from 2012, when individual farm to farm moves are recorded in the Holding Register.		
Indirect benefits	By amending the replacement rules for animals born prior to 31 st December 2009 it will make them similar to the new agreed rules for New Flock. This results in a much more simple regulation which will improve keeper understanding and should lead to improved compliance.	Improved compliance and would save money for Government (lower inspection rates).

Goat Industry

4.4.2 The main benefits of the chosen policy for goats are outlined in table 4.

Table 4. Goats – Benefits to industry and government

	Industry, Farms, Markets & Abattoirs	Government
Will offer some improvement in controlling disease because it introduces individual recording. The Research did not cover disease control benefit for goats. Given the relatively small number of goats and that few movements take place, disease control benefit likely to be low.		

<p>Minimum implementation (individual recording for breeding goats, batch recording for slaughter goats)</p>	<p>Implements the Regulation to the minimum EU requirements (no gold plating). Main benefit as compared to Option 1 is potential cost saving for the Industry. This option will exempt around 50% of all new born goats from the requirement to double identify and record.</p>	<p>Implement the Regulation fully and eliminates the risk of infraction proceedings.</p>
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5. Costs of the chosen policy option for government and industry

5.1. Compliance costs key assumptions for SHEEP

5.1.1. The following costs are for different businesses and are calculated on a full year basis i.e. as if they took effect from 1 January and have been estimated as those above the current system.

5.1.2. Estimates and assumptions have been used to inform the development of the policy and to understand the potential scale and nature of the impact of the Regulation. It should be noted however that costs are sometimes based on estimates rather than established facts, e.g. the number of some movements and the time taken to undertake certain tasks are estimates based on advice from the industry.

5.1.4 The Regulation stipulates that animals born after 31 December 2009 and intended for intra-community trade or export must be electronically identified. No derogation is available on this issue. However animals born before 31 December 2009 may be exported where they are identified with a matching pair of conventional tags.

5.1.5 The Regulation allows for electronic eartags, boluses, pasterns and microchips to be applied as the second means of identification. However, there is insufficient evidence so far about micro-chipping and the risks to food safety and therefore Defra has decided to not allow for this means of identification. EIDs tags are the cheapest means of identification and this IA has been costed on this basis.

5.1.6. Lost identifiers must be replaced in accordance with the procedure described at Annex 2 for different numbered replacements. This option is cheaper than using like for like replacements and has been costed for this IA.

5.1.7. Whilst the Regulation requires all animals over 12 months of age to be electronically identified it is silent about how they are recorded. It will be for keepers to decide whether they complete records manually or electronically. Where keepers keep and move breeding ewes in small numbers it would be economic for them to record manually and not invest in reading equipment. The derogation which allows for CPRCs to read on behalf of keepers has been assumed for this IA and. (The assumptions for CPRCs are outlined at Annex 2).

5.1.8. Tipping points for markets and abattoirs are based on throughput. This recording method (also known as reading by scale) is assumed to be the most cost effective means of reading and recording and the costs in this IA have been demonstrated this way.

5.1.9. For all options no gathering costs are assumed because animals will be identified when gathered for some other purpose e.g. – vaccination, dipping, shearing etc.

Costs of chosen policy option

Table 5: Main cost to Government and Industry over and above the current system for 2015 when fully implemented

Industry				
Measure	Farms	Markets	Abattoirs	Total
Full implementation ongoing costs				
One off costs				
Equipment	£3.6 to £7.2m	£1.18m to £2.96m	£0.09 to £0.45m	£4.87m to £10.61m
Training	£0.27m to £0.7m	NA	NA	£0.27m to £0.7m
Annual costs				
Cost EID Devices Breeding animals	£1.32m	NA	NA	£1.32m
Electronic Slaughter tags	£0 to £1.81m	NA	NA	£0 to £1.81m
Breeding animal replacement tags	£0.86m	NA	NA	£0.86m
Electronic slaughter tag replacements	£0 to £0.05m	NA	NA	£0 to £0.05m
Maintenance	£0.26m to 0.53m	£0.14m to £0.36m	£0.01m to £0.11m	£0.41m to £1.0m
Holding Register	£0.22m to £0.25m	£0.25m to £0.26m	£0.48m to £0.06m	£0.95m to £0.57m
Movement Documents	£0.01m to £0.02m	Included in above	Included in above	£0.01m to £0.02m
	£2.67m to £4.84m	£0.39m to £0.62m	£0.49m to £0.17m	£3.55m to £5.63m
Annual charge for equipment	£0.88m to £1.76m	£0.29m to £0.72m	£0.02m to £0.11m	£1.19m to £2.59m
Annual charge training	£0.06 to £0.17m	NA	NA	£0.06 to £0.17m
Total Annual Costs 2015	£3.61m to £6.77m	£0.68m to £1.34m	£0.51m to £0.28m	£4.8m to £8.39m
Government				

Measure		Total
One off costs	<i>ETAS³ Rebuild 1.9m, Equipment 575k (RPA 250k & LA 325k)</i>	£2.48m ⁴
Annual costs		
Inspection & Enforcement	£15k inspection preparation costs + £267k inspection costs for individual sheep	£282k
		£282k
Annual charge	<i>ETAS £463k, Equipment £140k</i>	£603k
Total Annual Costs 2015		£885k
Average Annual Cost⁵	<i>Government + Industry 2010 - 2019</i>	£3.98 to £6.03m

The detailed calculations behind these figures are available from Defra on request

5.2. New Flock

5.2.1. The chosen option, which is supported by industry, provides for the use of the slaughter derogation, but with voluntary use of an electronic slaughter tag, and CPRCs. The main costs for industry and government are outlined in the table 5

5.3 Historic Flock

5.3.1. The chosen policy is to simplify the replacement rules so that the same principles apply regardless of when they were born.

5.3.2. The identification rules for the historic flock do not change, individual recording on movement documents does however become a requirement for farm to farm moves from end 2011. These animals, unless re-identified with EID identifiers are assumed to be identified with conventional tags and would need to be read and recorded manually. Therefore there are no equipment costs.

5.3.3. The Historic Flock can be assumed to phased out in the main by 2014. By which time the cost to markets (for movement records) and to keepers (for movement records and replacements) is estimated to be £1m (see table 6).

Table 6 - Costs of compliance for the Historic Flock 2012 -2014

	Movement Documents From 2012 -14		Replacements From 2010-14		Total Cost	
	Total Cost	Average Annual Cost	Total Cost	Average Annual Cost	Total Cost	Average Annual Cost
Farms	£135k	£27k	£671k	£134k	£806K	£161k
Markets	£184k	£37k	n/a	n/a	£184k	£37k
Abattoirs	Not affected	Not affected	Not affected	Not affected	Not affected	Not affected
Total	£319k	£64k	£671k	£134k	£990k	£198k

³ Eartag Allocation System (ETAS). Government database which allocates unique identifier numbers for sheep and goats in accordance with the Regulation.

⁴ Note these are one off costs up to 2015. 2016 a further £0.58m for equipment and training is assumed (see Annex 5)

⁵ Average Annual cost as used in the Summary: Analysis & Evidence for this is option is the combined average annual cost for industry and government taken over a 10 year period. See annex 5

3.1.9 The main cost for Government for older animals relates to inspections. The costs calculated in the EID IA for breeding animals is £280k per year. This figure was used to calculate the inspections for older animals by pro-rating the cost by the percentage of older animals as proportion of the total breeding flock. On this basis the annual average inspections costs for the historic flock is £92K.

5.5 Other Businesses

5.5.1. Pet Food Manufacturers and Renderers

5.5.1.1 The Technical Guidelines part 1⁶ recommend that EID identifiers should be recovered and destroyed to prevent re-use, and that abattoir staff are ‘appropriately’ trained in recovery procedures. For eartags it is assumed that eartag recovery and disposal would be carried out at abattoirs along the lines that it is as the moment. If abattoirs failed to recover boluses, then it may have implications for businesses such as Pet Food Manufacturers and Renderers which utilize the ruminal gut. At the moment it is not known what the take up would be for boluses, so it has not been costed. Initial use of boluses is however expected to be very low.

5.6 Goats

5.6.1. Compliance Costs – GOATS

5.6.1.1. The chosen policy is that the rules for the identification of goats do not change, but replacement rules will be simplified and goats will be subject to individual recording which will be phased in from 31 December 2009 .

2015 Full implementation ongoing costs	
Farms	
Identification	
Cost of Devices slaughter animals	0
Replacements	
Breeding animals	£3078
Slaughter Animals	0
Total ID Costs	£3078
Holding Register	£2248
Movement Documents	£1198
Markets	
Holding Registers & Movement Documents	Negligible
Abattoirs	
Holding Registers & Movement Documents	Negligible
Total Annual Costs 2015	£6704

⁶ Full Title Technical Guidelines for Council Regulation No.21/2004 of 17/12/2003 Part 1 In-field aspects:application of identifiers, their reading and recovery.’

Measure	Government	Total
Inspection & Enforcement	Minimal - included as part of sheep inspections	Minimal
Training & Equipment	None both options are a manual system	0
IT and infrastructure	Part of sheep ETAS rebuild	NA
Infraction and Penalties	Full compliance	
Total additional costs		Negligible

Table 7: Main cost to Government and Goat Industry Industry over and above the current system in 2015 when fully implemented

The detailed calculations behind these figures are available from Defra on request.

5.6.1.1. There are around 6,000 holdings in England, which keep around 82, 000 goats. There is a total population of around 95,000 goats in the UK. The main costs to the industry and government are outlined in table 8.

6. Costs and impacts to specific businesses

6.1. Costs to Two Typical Farm Businesses

6.1.1. The projected financial impact has been costed (see Annex 4) for 2 typical farm businesses. These are a medium sized Severely Disadvantaged Area (SDA) farm (of 500 breeding ewes) and medium sized lowland farm (of 275 breeding ewes). The average annual farm annual income over the last 3 years for a typical SDA business is approximately £14,000 and for typical lowland business it is £11,000.

6.1.2. The results presented below show the total annual cost of implementation, cost per breeding ewe and the annual cost as a percentage of farm income.

Table 8: Annual costs and cost per breeding ewe for 2 typical farm businesses.

Policy	SDA Farm	Lowland Farm
Slaughter Derogation	£216 -£507 p.a. (£0.65 - £1.01 per ewe) 1.5% to 3.6% of income	£71 to £329 p.a. (£0.25 to £119 per ewe) 0.6% to 2.9% of income

6.2. Exporters

6.2.1. The current system for animals for export is that they have to be double identified and individually recorded on movement documents. This will continue for the Historic Flock. , From 31 December 2009 the New Flock identified for export will have to be electronically identified and individually recorded.

6.2.2. The 2007 FMD outbreak meant that there were relatively few exports in 2007. However, in 2006 there was 56,000 live sheep exported from England to other Member States. Of these only 15 animals were exported to Member States which are not required to electronically identify sheep and goats. As the rules for intra-

Community trade are the same for all Member States exporters should not be disadvantaged by the introduction of EID.

6.2.3. Based on the 2006 data it would cost exporters £48k (tags and tagging) to upgrade 56,000 sheep for export. However, the introduction of electronic identification will make the individual recording requirements easier.

6.2.4. For live goat exports identification requirements (i.e. a matching pair of conventional tags) has not changed.

6.3. Markets and abattoirs

6.3.1. The chosen policy provides a solution to the concerns expressed during the consultation by markets and abattoirs, that the slaughter derogation would be unworkable without an electronic means for reading batch identities (see paragraphs 2.1.6 to 2.1.8). It would be a commercial decision for keepers to decide whether or not to apply electronic slaughter tags and markets and abattoirs may insist upon them. So it is not yet known to what extent electronic slaughter tags would be applied and electronically read by markets and abattoirs. The annual costs to markets and abattoirs are therefore estimated to be in the ranges of £0.68m to £1.34m and £0.51m to £0.28m respectively.

6.3.2. Markets and abattoirs are required to record individual numbers and batch information in holding registers in the same way that keepers are. They are not obliged to become approved as a CPRCs but it is anticipated that most, if not all, will. Where they provide this service they may insist that animals presented at their premises are electronically identified. This would increase production costs to producers.

6.3.3. Some premises may choose to read breeding animals electronically and batch information for store lambs manually. Where they do they may have to construct a separate route from unloading bays (where race readers may be positioned) to a place where the manual reading of the flock marks could be carried out. Larger lairages may also be needed at some abattoirs to accommodate batch reading. It is difficult to quantify this, as the layout of markets and abattoirs vary. However, the logistical difficulties this presents may slightly increase the costs currently estimated. The impact of this could be reduced in some cases by arrangements between operators and their suppliers, such as running separate sales for breeding sheep and slaughter lambs. Some abattoirs and markets, which experience extra costs from handling mixed batches may pass that cost back to keepers in the form of lower prices, creating a price differential between electronically identified animals and mixed batches.

6.3.4. The Regulation does not require keepers to record individual animal information for the Historic Flock in holding registers. With movement documents the individual recording requirements will have an impact on markets only from the end of 2011. From then where a cull ewe identified before 31 December 2009 moves from a market to a farm, for further fattening, it would need to be individually recorded on the movement document. Approximately 25% of cull ewes move this way for further fattening, before slaughter. Markets will need to decide whether this commercially viable given that these animals are not electronically identified. It is

likely that markets may insist these animals are electronically identified from end 2011 to manage this recording requirement.

6.4. Store Lamb Finishers

6.4.1. There are approximately 1900 specialist store lamb finishers in England which exist because the stratified and extensive production system requires an outlet for hill and upland sheep farmers to sell on store lambs (approximately 2.7m lambs which require further fattening). The store lambs are typically purchased from markets and moved onto finishing units in batches, which contain animals with more than one holding of birth identifier.

6.4.2. The chosen policy would require store lamb finishers to read and record the mixed identities of store lambs in holding registers. The provision for electronic slaughter tags will provide an electronic solution to this recording requirement and it is reasonable to assume that store lamb finishers would insist on purchasing only electronically identified store lambs. The estimated annual cost to finishers ranges between £160k to £700k or between 6p to 33p per lamb depending upon how the animals are read and by whom. The added benefit of purchasing store lambs identified with electronic slaughter tags is that finishers would be able to upgrade them, if they wish to keep them beyond 12 months of age (provided that they are upgraded on 2nd holding).

6.5 Goat keepers

6.5.1. The policy will have a low impact on goat keepers, because it allows goat keepers to retain the current identification requirements. Only around 6000 goats are commercially slaughtered per year. The vast majority of these will be animals under 12 months of age and would be identified under the requirements of the slaughter derogation. Where goats over 12 months of age are commercially slaughtered abattoirs may ask keepers to identify them electronically. Individual recording also applies to goats, but as there are only around 30,000 goat movements per year the record keeping burden for goat keepers is low.

7. Enforcement, sanctions and monitoring

7.1. The Regulation will be enforced by The Sheep and Goats (Records, Electronic Identification and Movement) (England) Order 2009 which replaces The Sheep and Goats (Records, Identification and Movement) (England) (Amended) Order 2007.

7.2. Currently on farm inspections for sheep and goats are carried out by the Rural Payments Agency (RPA). Local authorities are responsible for enforcement. Provisional figures for inspections by the RPA are included in this IA. This IA includes estimates for equipment for Local Authorities, but does not assess how the Regulation will impact on inspections.

8. Compensatory Simplification

8.1 Statutory controls on the identification and movement of sheep (and more recently goats) to trace animals and mitigate the spread of disease have been in place for many years. The new rules replace double tagging requirements

introduced in 2008. The introduction of individual identification for each animal will impose additional costs, for which it has not been possible to identify direct offsetting simplification measures, but which have the potential to deliver offsetting benefits in the improvement of information, traceability and disease control.

8.2 Defra has been successful in securing changes to the Regulation which will reduce recording burdens during the start up period to full EID. These include an estimated saving to industry for breeding animals identified after 31December 2009 of between £10k and 20k. The Central Point Recording derogation would also reduce the annual cost of the policy by between £3m and £7.7m per year; because the majority of keepers would not need to purchase a reader and the individual record keeping would be reduced by CPRCs. If the 2 year deferment of the implementation date is also included, the total package of saving to the English sheep industry is estimated to be in the region of £28m, depending on take up of CPR and electronic slaughter tags.

8.3. For the Historic Flock the Regulation will increase burdens on keepers from end 2011. However, it will also simplify replacement rules straight away and improve compliance. As this Regulation is a cross compliance measure improved compliance should result in less disallowance of single farm payment to keepers for non compliance with the rules.

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	No	Yes
Small Firms Impact Test	No	Yes
Legal Aid	No	Yes
Sustainable Development	No	Yes
Carbon Assessment	No	Yes
Other Environment	No	Yes
Health Impact Assessment	No	Yes
Race Equality	No	Yes
Disability Equality	No	Yes
Gender Equality	No	Yes
Human Rights	No	Yes
Rural Proofing	No	Yes

Annex 1: Outcome of Impact Tests not referred to in the Evidence Base

Competition assessment

The Regulation is directly applicable in all Member States. Its aim is to improve on the existing requirements with regard to the identification and traceability of sheep and goats. Given that this Regulation is taken into account for cross-compliance for the single payment under CAP, it is crucial that English sheep farmers are able to comply with the chosen route for implementation otherwise they risk disallowance.

The OFT Competition Filter was carried out and asked the following questions:

1. Directly limit the number of suppliers?
2. Indirectly limit the range of supplier?
3. Limit the ability of suppliers to compete?
4. Reduce suppliers' incentives to compete vigorously?

The answer to questions 1, 2 and 4 is negative. However, for question 3 the effect the regulation will have on supplier's ability to compete will depend upon how the regulation is implemented and the size and nature of the business concerned.

Farms

The adopted policy for a slaughter derogation could distort competition as it may encourage keepers, who are able to finish their lambs, to move animals direct to slaughter. However, the impact of this is thought to be low, because the majority of upland producers would not be able to do so and would have no choice but to electronically identify their animals if demanded by markets. This potentially could discriminate against poorer breed types and certain geographic regions (in particular SDAs), where holding of birth is not capable to sustain the animal until the finished condition. These keepers would have little choice but to accept their being electronically identified, if finishers or markets demanded.

Higher costs of a production as a result of the regulation may result in some changes to the number of holdings. However, it should not lead to significant changes in the structure of competition within the market.

Exporters

Intra-community trade is largely with those Member States, which must also compulsorily EID animals; the impact is likely to be negligible.

Abattoirs and Markets

Abattoirs and markets will also be affected by the introduction of EID, because irrespective of the option chosen they will have to change their practices or infrastructure to incorporate individual recording. The scale of the business will determine how they do this, but the introduction of EID is not thought to be a barrier to competition.

Small firms impact test

All of the 48,000 sheep and 8,000 goat farms in England are small businesses. Most of the 211 abattoirs and 78 markets are small businesses as well. The Regulation is directly applicable to all of these and the cost of complying with the Regulation is

significant and varies according to the scale and type of business. The consultation confirmed that small businesses remain concerned about the high cost of the Regulation. Defra has worked closely with stakeholders of these businesses, in order to identify the best solution for implementation and to where possible reduce burdens on them. Overall the chosen policy is the least cost option for keepers and the processes needed to meet the requirements of the regulation can be met in the normal business operation of these SMEs.

Legal aid impact test

The proposal does not create new criminal sanctions or civil penalties.

Sustainable development impact test

The proposals are in line with the Governments five principles of sustainable development.

Carbon assessment

The proposal will have no significant effect on carbon emissions, as the nature and scale of the handling, collections and transport of sheep is likely to remain similar. There will be individual winners and losers in terms of increased or reduced trade opportunities, and therefore some change to the carbon footprint of individual businesses, but the overall impact for the industry is unlikely to alter substantially. For example abattoirs will be required to dispose of eartags and boluses but this is not thought to significantly affect carbon emissions or their business.

Other environmental

Sheep numbers have fallen in recent years and with an ageing sheep keeper population some keepers will leave the industry. There is no evidence though that the mandatory introduction of EID would hasten a decline in the sheep population. Therefore the proposal has few implications in relation to climate change, waste management, landscapes, water and floods, habitat and wildlife or noise pollution.

Health impact assessment

The proposals will not directly impact on health or well being and will not result in health inequalities.

Race/Disability/Gender

There are no limitations on meeting the requirements of the proposal on the grounds of race, disability or gender. The proposal does not impose any restriction or involve any requirement that a person of a particular racial background, disability or gender would find difficult to comply with. Conditions apply equally to all individuals and businesses involved in the activities.

Human Rights

The Proposal is consistent with the Human Rights Act 1998.

Rural proofing

Industry has indicated that the introduction of EID will result in keepers giving up keeping. However, sheep numbers have been falling for a number of years and the sheep keeping population is also aging. This would suggest that the introduction of EID would have little impact on what is already an established trend.

The introduction of EID may also provide a business opportunity in rural communities to businesses, such as supply, keeper training companies and transporters which could also carry out electronic reading on behalf of keepers. Whilst it may be possible to estimate the demand for equipment it is not yet possible to estimate the demand for other services.

The benefit of the adopted policy is that EID would improve our ability to trace animals and, in the event of a disease outbreak, this would have a positive effect on the industry and the rural economy.

Annex 2

Summary of Assumptions

The following assumptions, unless stated, are taken from the 2006 ADAS field trials in support of producing a IA for sheep identification in England

New Flock (Animals Born or Identified After 31 December 2009)

- The number of sheep in England is 15.2 million.
- The number of lambs born per year is 8.5 million.
- The number of lambs retained per year for breeding stock is 1.7 million (22% of lamb crop)⁷.
- The number of lambs slaughtered each year is 6.8 million, of which:
4.1 million go direct to slaughter;
2.7 million are store lambs (40% of lamb crop)⁸.
- The number of sheep passing through markets per year is 7 million⁹.
- The number of sheep slaughtered at abattoirs per year is 9.2 million.
- Sheep must be identified within 6 or 9 months of birth or before they move off their holding of birth whichever is soonest.
- It is assumed that lambs will be identified as they leave the holding. Therefore for those lambs moving directly to slaughter or via a slaughter market no replacement costs are assumed.
- Tagging is assumed to be a one man operation¹⁰.
- It is assumed that better quality tags will be used for breeding stock and that lambs slaughtered in their first year would be tagged with less durable UK tags.
- All animals must be identified within 9 months of birth and if they are not intended for slaughter within 12 months they should be EID'd.
- There is little information on the long term failure rates of electronic devices, but for the purpose of the calculations failure rates are included with loss rates, as the net effect is the same.

Historic Flock (Animals identified before 31 December 2009)

- The figure used for the breeding population of sheep as at 31 December 2009 is 8.08 million. This is based on 6.58 million ewes, 0.17million rams and 1.33 million unbred ewe lambs (or followers).
- The lifespan of sheep is estimated to be 5 years, so the numbers will decrease (via slaughter and natural deaths) from 2010 to 2015. It is

⁷ NSA estimate agreed for ADAS RIA research

⁸ NSA estimate agreed for ADAS RIA research

⁹ LAA figures agreed for ADAS RIA research

¹⁰ ADAS assumption, based on lowest cost and not time taken, see ADAS report.

recognised that the lifespan could range from 4 to 7 years but the aim was to give an overall indication of costs within a sensible timescale.

- Mortality rate was estimated at 5% for breeding animals. The costs therefore decrease from 2010 to 2015 as the numbers of older animals reduce by slaughter and natural deaths.

Replacements¹¹

- The regulation provides for different numbered replacements and does not preclude keepers from applying identical replacements if they so wish. Different numbered replacements are cheaper than identical and for this IA we have costed replacements on the cheapest option. The process assumed is as follows. As part of the initial supply run a percentage (to be agreed) would be supplied as sets of replacements (red) i.e. if an order was placed for 100 tags 10% would be added to the order and supplied in red and the numbers would run on sequentially. Both initial supply and replacement stock will be recorded on ETAS at the time of supply. There is also the possibility of supplying a barcode sticker with the replacement stock to reduce the record keeping burden.
- When one of a set of identifiers is lost the remaining identifier (whether conventional or EID) will be removed and replaced by a new set of red identifiers from the replacement stock. Red identifiers are not a requirement if the identifier is being replaced on the holding of birth. The new set of identifiers would need to be cross referenced against the surviving identifier in the register. The optional use of a barcode sticker (not costed) which could be stuck into the register would limit transcription errors and would reduce the cross referencing burden.
- For cross referencing the replacement tag number with the surviving tag number it is assumed that:
 - Keepers will read both the new and surviving tag number and record these together on the replacements page of the farm register.
 - Where possible keepers will read fully electronically and otherwise they will read and record manually.

Central Point Recording

In 2008 ADAS carried out research to estimate the savings to be had for keepers if CPR was allowed. Where their approach and assumptions differed from earlier IAs is how they determined the point where as a consequence of central point recording, keepers would need to purchase their own reading and IT equipment to read movements not captured by 3rd parties. In the earlier IAs a tipping point of 200 breeding ewes was assumed as the point under the slaughter derogation where a keeper would need to purchase reading equipment. However for this IA they used numbers of farm to farm movements. This was achieved by identifying that up to 75% of all movements which require movement documents to be generated could be reported back through CPRCs. The remaining movements were mostly moves to and from temporary grazing, to/from SOA land over 5 miles and other farm to farm

¹¹ Replacement policy agreed at the England EID Coordination Board in 2008

moves. From their assessment of how these remaining moves are distributed amongst different types of keepers ADAS concluded that for the full slaughter derogation approximately 10% (or 3000) of commercial keepers and for the restricted and full EID options 20% (or 6000) of commercial keepers, would need to purchase reading equipment.

Tag Costs¹²

Tag	Cost
UK tag matching pair	£0.32
UK tag individual	£0.18
Replacement slaughter Tag	£0.18
EID Tag	£0.85

Table 9: Cost of tags

The Technical Guidelines Part 2 requires EID suppliers to have EID transponders and reading equipment (i.e. transponders, ruminal boluses and readers) approved for use in Member States. It is assumed that the approval cost will be passed on to keepers and included in the cost of devices. In addition UK EID manufacturers would need to have their ear-tags (but not the transponder component of the ear-tag) approved under the Publicly Available Specification (PAS) approval for PAS is carried out BSI. The cost of PAS approval is not a new cost and is not therefore included here.

Labour costs¹³

	Labour rate per hour
Farm	£10.16
Market	£9.67
Abattoir	£9.48
Inspector	£21.6

Table 10: Labour rates

Equipment Costs¹⁴

Equipment	Cost	Maintenance (% of equipment cost)
Computer	£500	-
Software (farms)	£250	10%
Software (markets/abattoirs)	£2500 per site	10%
IT equipment (markets/abattoirs)	£1500	10%
Stick reader	£450	20% Markets and Abattoirs 10% Farms
Race reader with shedder (markets)	£8725	20%
Market infrastructure	£5000 per	-

¹² Average cost taken from Defra survey of 6 suppliers 2008

¹³ Labour rates from 2005 standard cost model with 12% added to take account expected increase in earnings by 2010.

¹⁴ Average cost of equipment taken from Defra survey of 6 suppliers in 2008.

	reader	
Panel reader (large abattoirs)	£6535	20%

- 60% of keepers already have access to a home computer¹⁵
- 10% of keepers already have compatible software¹⁶.
- Annual charge spreads the capital cost of equipment over its life (assumed to be 5 years) at an interest rate of 7%.

Table 11: Equipment and associated maintenance costs

Organisation	Cost	Detail
RPA	£250k	Based on a package (i.e. reader, printer, software, training) costing £1k per inspector – 250 inspectors.
Local Authorities	£325k	Based on 1 kit per AH inspector no.s - from their 09/10 direct funding profiles . 1 mini printer or CD/DVD recording device – per LA.

Table 12: Equipment for inspections

Loss Rates

- Tag loss rate for breeding stock is 5%¹⁷
- Tag loss rate for store lambs is 2.5%
- For double-tagged animals it is assumed the tag loss rate is double.

Labour times

Throughout the calculations the following figures have been converted to man hours per 100 sheep.

Tag type	Time taken to tag an animal
UK tag ¹⁸	32.4 seconds
Single EID tag	1 minute
UK and EID tag	1 minute 32.4 seconds
UK Replacement	32.4 seconds
Like for like replacement conventional tag	54 seconds
Like for like replacement EID tag	1 minute 16 seconds
Time taken to remove a tag	22 seconds

Table 13: Time taken to apply tags

	Read tags on individual basis (same flock) (seconds per sheep)	Read tags on individual basis (mixed flock) (seconds per sheep)
Manual reading	13	36
Stick reading	5	5

¹⁵ Defra Farm Practices Survey 2006

¹⁶ Industry assumption

¹⁷ EU Average agreed with NSA in 2005.

¹⁸ The labour time does not include gathering and penning times as it is assumed that tagging would take place as the lambs leave the holding or are gathered for another purpose.

Race reading	4	3
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Table 14: Time taken to read tags on an individual basis

- Under option 1 the time taken to read batch tags for the derogated lambs is 24 seconds¹⁹.

	Reading individual number on EID tag (seconds per sheep)	
	Markets	Abattoirs
Manual reading	48	48
Stick reading	27	7
Race reading	10	NA
Manual Batch recording	32 ²⁰	32

Table 15: Time taken to read individual tags at markets and abattoirs

	Time to create movement document (seconds per sheep)	Time to create flock register (seconds per sheep)
First or second move (batch recording)	2	1
Adjusting for lumpiness ²¹ (mixed flock)	3	1

Table 16: Time taken to complete movement documents and flock registers (no EID)

	Time to add sheep to register (seconds per sheep)	Time to adjust register 1 st move (seconds per sheep)	Time to adjust register 2 nd move (seconds per sheep)
Manual reading	17	17	17
Semi electronic	13	13	13
Fully electronic	2	2	2

Note it also takes 0.95 minutes to record batch information on a holding register

Table 17: Time taken to complete flock register (with EID)

¹⁹ Revised in consultation with ADAS from their original estimate, which was 9 seconds – Time will probably be in the range of 9 to 24 seconds. The higher figure has been assumed for this IA.

²⁰ Revised in consultation with ADAS from their original estimate, which was 9 seconds – Time will probably be in the range of 9 to 32 seconds. The higher figure has been assumed for this IA.

²¹ To allow for breaks and other changes to the use of labour resources and market proceedings, a further 30% has been added to the time taken to complete movement documents and flock registers at markets and abattoirs.

	Time to complete movement document 1st move (seconds per sheep)	Time to complete movement document 2nd move (seconds per sheep)
Manual reading	17	18
Semi electronic	6	13
Fully electronic	N/A	N/A

Note it takes 3.20 minutes complete batch information on a movement document

Table 18: Time taken to fill in movement document (with EID).

Annex 3

Research and trials carried out by Defra

A3.1. Risk Solutions

A3.1.1. In 2006 Risk Solutions (RS) developed epidemiological and economic models that allowed analysis of the impact of different strategies on the control and management of FMD on sheep. These were used to compare the disease control benefits of our existing batch tracing system against a variety of scenarios including EID and to test the assumption that individual animal tracing will mitigate the effects of an FMD type disease outbreak. This work was extended in 2007 to consider the impact of policy options for EID as a disease control measure.

A3.1.2. The 2006 RS analysis showed that whilst the existing batch tagging system in operation in Great Britain appears to provide the smallest reduction in disease control costs of the three solutions considered, the additional benefit achieved by a derogated (similar to the policy) or full EID (but with 100% EDT) system was small. The main conclusions were that:

- At worst the combination of the existing standstill and batch tagging system for sheep produced 85% of the achievable benefit of full EID and individual recording and an overall outbreak cost reduction of between 17% and 23%.
- The majority of disease control benefit can actually be achieved by the current batch tracing system with a 6 day standstill.

A3.1.3. The report also suggested that the size of an outbreak is not significantly affected by the success or speed of movement tracing, once it reaches a reasonable level of tracing probability (greater than 0.6).

A3.1.4. The 2007 report showed that, for the scenario with the largest mean costs, the overall outbreak cost reduction varied between 16% and 20% (a reduction of £66.6m for option 1 (Slaughter derogation), £78.8m for option 2 (Restricted derogation) and £79.4m for option 3 (Full EID) , against a 2001 baseline of £392.7m). This equates to a reduction in the number of infected premises by 73 for option 1 and 82 for options 2 and option 3 and in the number of animals culled by 160,000 for option 1, by 180,000 for options 2 and by 200,000 for option 3.

Table 20. Extract from Risk Solutions report 2007 showing comparison of cost reductions for options against baseline for the scenario with the largest mean costs.

Option	Total Outbreak costs	Outbreak cost reduction	Reduction in infected premises	Reduction in animals culled
Double tagging	£328.1m	£64.6m	68	140,000
Option 1	£326.1m	£66.6m	73	160,000
Option 2	£313.9m	£78.8m	82	180,000
Option 3	£313.3m	£79.4m	82	200,000

A3.1.5. The 2006 report estimated that the sheep identification system contributed to between 5 and 9% of the overall outbreak cost reduction. The 2007 report estimated that the contribution of the EID tracing system to be between 3 and 13% of the total cost reduction. This indicates that the majority of the benefit can still be attributed to the operation of a 6 day standstill.

A3.2. ADAS

A3.2.1. Defra conducted a pilot trial in 2005 to evaluate systems of EID and electronic data transfer (EDT) under English sheep farming conditions. The trial focused on identifying aptitude and attitudinal factors as they relate to the potential take up of EID, the level of training and support required and the readiness of the market to rollout commercial EID systems in time for 1 January 2008.

A3.2.2. The trial showed that the benefits associated with the introduction of electronic identification to comply with the data recording requirements of the Regulation are minimal and will apply only where large volumes of individual animal data must be recorded. The trials therefore indicated that costs of EID outweigh the direct benefits. EID will however make the recording of individual animals quicker, more accurate and easier providing better disease control in a disease outbreak by enabling the tracing of an individual animal's origin. There are also indirect management benefits where a keeper chooses to record more than the minimum required by the Regulation. These include using electronic data to make businesses more profitable by actively managing individual performance (e.g. milk yield, lambing results, weight, and carcase quality). However in the majority of cases keepers are unlikely to take advantage of these indirect benefits in the short term.

A3.2.3. The English trial report also identified a number of key issues. In particular there were concerns that equipment was not sufficiently developed for commercial rollout as it was shown to be unreliable, slow and did not perform well in wet and cold conditions. Since the completion of the English pilot further pilots have been running in Wales and Scotland and interim reports are expected in Spring 2009. There have been significant technological advances in the EID equipment since 2005 and the results of these latest pilots are expected to confirm that progress has been made and is on-going.

A3.2.4. The English trial also identified a significant industry training need. The extent and nature of this need was covered in a further piece of research in 2009 by ADAS (see A.3.2.8).

A3.2.5. The English trial also identified a number of technical issues particularly in premises where there is high throughput at speed (i.e. markets). In 2006/07 Government worked closely with the Commission's own Joint Research Centre to resolve these technical issues. Whilst the tests were not carried out in live market conditions the results were very encouraging.

A3.2.6. EID devices and readers will also have to be approved for use in the UK and will need to undergo performance and conformance tests against various standards. Government is currently developing an approval process which suppliers will need to follow if they are to supply EID equipment in the UK. The aim is to make approved

tags and readers available to keepers from the autumn of 2009. It is assumed that the cost of approval will be included in the cost of equipment.

A3.2.7. A second trial was carried out in 2006 to produce hard data to inform this IA. Their key data and assumptions are at Annex 2.

A3.2.8. Since the trials ADAS were commissioned to carry out 2 further pieces of research. The first was research to scope keeper training needs, delivery options and estimated costs to meet the implementation of Regulation. The results of the research was that most keepers would need only minimal training to cope with electronic systems designed to meet the minimum standards of the Regulation. Based on the assumptions applied, estimated cost of accessing training to English keepers was estimated to be approximately £650k. If an allowance for keepers time is included, this figure would increase to £2.2m or around £78 per keeper seeking further training.

A3.2.9. Since this study the UK has secured a derogation for Central Point Recording. As a result many keepers may no longer need to purchase a reader. Had this derogation been secured before the research commenced then respondents views, on which the costings were based, may have been different. Based on the ADAS research into CPR and taking into account of the decision to allow for electronic slaughter tags, only around 5000 keepers would need to purchase a reader. Therefore the cost of training is now estimated to be £270k.

A3.2.10. In the Spring of 2009 ADAS were commissioned to carry out research, on behalf of Defra, to estimate that may accrue if reading was carried out centrally on behalf of keepers by premises such as markets and abattoirs. The conclusion of this research was that CPR could reduce costs to keepers by between 35 and 40%, because the majority of keepers would not need to purchase a reader. Similar research carried out by the Commission's own Joint Research Centre (provide link) has estimated the cost saving to UK keepers to be as great as 52% and up to 66% in other member States. The ADAS report supported UK proposals to the Commission for CPR and on the 14 July at the Standing Committee of Food and Animal Health the UK was able to secure this concession.

A3.2.10. The reports on both English trials are available below:

English Pilot Trial of EID/ETD in Sheep (31 October 2005):

ADAS field trials in support of producing a Regulatory Impact Assessment for sheep identification in England:

The ADASs report on **CPR** and **training** is available at:

www.defra.gov.uk/foodfarm/farmanimal/movements/sheep/documents/eid-adas-cost-090728.pdf

www.defra.gov.uk/foodfarm/farmanimal/movements/sheep/documents/eid-adas090519.pdf

Annex 4

Detailed Comparative Cost Increase for two typical Farm Businesses

A4.1. The Farm Businesses

A4.1.1. The projected financial impact of the Regulation is described below for two farm businesses. These are not case studies but are based on average data from the Farm Business Survey and as such represent what the average cost would be for these farm types rearing sheep. The first of these is a specialist sheep farm in a Severely Disadvantaged Area (SDA) with 500 ewes, the second is a lowland cattle and sheep farm with 275 ewes.

A4.1.2. The SDA sheep farm is a self-contained hill flock, selling finished and store lambs and cull stock either for slaughter or as breeding replacements for flocks on farms at lower altitudes. Ewe lambs are retained each year as flock replacements. The farm has 500 ewes which, in a typical year, give birth to 575 lambs, of which 239 are sold finished for slaughter, 152 are sold as store lambs, 42 are sold as breeding lambs and 144 are retained to replace the breeding stock. Sold lambs are tagged just prior to sale. There are 984 homebred movements annually, which are the ewes moving to and from winter temporary grazing, 836 of which are within the business.

A4.1.3. The lowland sheep enterprise consists of crossbred ewes selling predominately finished lambs, cull ewes and rams, and buying in flock replacements. There are a total of 275 ewes, which, in a typical year, give birth to 413 lambs. Of these 289 are sold finished as slaughter lambs, 62 are retained as replacements, 53 are sold as store lambs and 8 sold for breeding. Sold lambs are tagged just prior to sale. Typically, 20 are purchased, and fattened as stores before being sold on. In addition, there are 85 other homebred movements all of which are within the business.

Table 21: Two representative businesses

	SDA Farm	Lowland Farm
Number of breeding ewes	500	275
Lambing percentage (% reared per 100 ewes tupped)	115	150
Number of lambs sold finished	239	289
Number of lambs retained as flock replacements	144	62
Number of lambs sold as breeding stock	42	8
Number of lambs sold as store lambs	152	53
Total number of reads annually – homebred sheep	1409	497
Total number of reads annually – purchased sheep	Nil	40

A4.1.4. Calculations were made to measure the impact of the policy over the current system of double tagging and batch movement recording and is costed against this baseline, both in terms of additional tag costs, equipment and labour requirements.

A4.1.5. The calculations of time required for identification are based on tagging lambs close to the point they leave the farm. At first identification, entries are made individually to the flock register. Movements on and off a farm trigger adjustments to the flock register and the production of movement documentation. The calculations assume that sheep will be read when purchased, or sold out of the flock, Central Point Recording is assumed for both businesses, where their animals move to or from a market or an abattoir. All other movements would need to be read individually where they move outside the business. The exception are lambs which would need to be read on a batch basis and in the case of store lambs the individual flock identities of a mixed batch would also need to be read and recorded.

A4.1.6. In the model all breeding stock and lambs sold for breeding, are electronically tagged. Store lambs and lambs sold finished are identified with either a batch slaughter tag or an electronic slaughter tag under the derogation. Movements are recorded on an individual animal basis, except for slaughter and store lambs.

A4.1.7. For both businesses it is assumed that CPRCs will carry out reading on their behalf. Therefore the total costs and annual charge for equipment (IT equipment, stick readers and software) and maintenance is assumed to be zero.

A4.1.8. The full costings for policy is in table 22.

A4. 2. Results

A2. 2.1. Relative to the current situation, the cost implications of implementing the policy are given below.

Policy	SDA Farm	Lowland Farm
Slaughter Derogation	£216 -£507 p.a. (£0.65 - £1.01 per ewe) 1.5% to 3.6% of income	£71 to £329 p.a. (£0.25 to £119 per ewe) 0.6% to 2.9% of income

Table 22: Costs to SDA and Lowland Farm

A4. 3. Main Impacts of the Regulation on the Farm Businesses

A4.3.1. Both businesses are assumed to take advantage of CPR. Therefore the total costs and annual charge for equipment (IT equipment, stick readers and software) and maintenance is assumed to be zero. This has substantially reduced the annual costs estimated for these businesses in the Partial Impact Assessment. The annual cost reduction, as a result of CPR, for the lowland farm is between 33% and 85%. This compares to an annual cost reduction of between 22% and 65% for the SDA farm. The reason that the SDA farm shows a lower cost reduction is because it has higher identification costs and higher costs for farm to farm moves compared to the lowland farm. Indeed, it may also be more economical for larger SDAs and other categories of farm, which have a significant number of farm to farm moves to invest in reading equipment, rather than to manually record these moves.

A4.3.2. Of the remaining costs the cost for identification are the most significant. Take up of electronic slaughter tags is unknown. Therefore identification costs for this option would range from range from that of a full slaughter derogation to almost

that of full EID, depending upon the commercial demand for slaughter lambs to be electronically identified. One consequence of this option is that the cost or replacements for store lambs would increase as a result of identifying them electronically.

A4.3.3. The impact as measured as a cost per breeding ewe is greater for the SDA farm. The cost to the SDA farm with 500 ewes is £0.65 to £1.25 per ewe compared to and £0.30 to £1.24m for the lowland farm. The main difference is because the identification costs are greater for the SDA farm.

A4.3.4. The average annual farm annual income over the last 3 years²² for a typical SDA business is approximately £14,000 and approximately £11,000 for typical lowland business keeping both sheep and cattle. Then as a percentage of farm income, implementing EID ranges between 1.5 % to 3.6% for the SDA farm and between £0.6% to 2.9 % for the lowland farm.

²² Farm Business Survey 2005 - 2007

Table 23
Impact of the regulation on a typical SDA and lowland businesses

	SDA Farm	Lowland
Capital and Maintenance	For both businesses it is assumed that Central Control Points will carry out reading on their behalf. Therefore the total costs and annual charge for equipment (IT equipment, stick readers and software) and maintenance is assumed to be zero.	
identification		
Tags for Breeding replacements	£102 (144 x 71p)	£44 (62 x 71p)
Tags for Stores*	£101 (152 x 67p)	£7(8 x 85p)
Tags for sold as breeding	£36 (42 x 85p)	£36(53 x 67p)
Tags for Finished Lambs*	£160 (239 x 67p)	£194 (256 x 67p)
Total	£138 to £399	£51 to £281
labour	£18 (1.8 hours) to £48(4.79 hours)	£6 (0.6 hours) to £33(3.2 hours)
Total	£156 to £447	£57 to £314
Replacements		
Replacements for Breeding stock	£43 (50 x85p)	£12(28 x 85p)
Store Lambs*	0	£1
Removing tags	£3 (0.31 hours)	£2 (0.16 hours)
Cross referencing	0	0
Total	£46	£14 to £15
Updating Holding Register		
Breeding stock	£7. (0.7 hours)	0
Store lambs	0	0
Finished lambs	0	0
Total	£7	£0
Updating Movement Document		
Breeding stock	£8 (0.74 hours)	0
Store lambs	0	0
Finished Lambs	0	0
Total	£7	£0
Total Cost	£216 to £507	£71to £329
Cost Per Breeding Ewe	£0.43 to £1.01	£0.25 to £1.19

*Where electronic slaughter tag is assumed, costs included to estimate top end of range.

Annex 5 - Industry and Government Current Costs and Present Values (PV) over the period 2010 – 2019
Option 1b – Full Derogation including CPRRs and allowing for both batch and electronic slaughter tags – Costs in Millions

Year	INDUSTRY – CURRENT COSTS			GOVERNMENT – CURRENT COSTS			TOTAL ONE OFF COSTS	TOTAL ANNUAL COSTS	TOTAL ALL COSTS
	One-Off Costs	Annual Running Costs	Total Industry	One-Off Costs	Annual Running Costs	Total Government			
2010	5.14m - 11.31m	3.54m - 5.57m	8.68m – 16.88m	2.48m	0.28m	2.76m	7.62m – 13.79m	3.82m – 5.85m	11.44m – 19.64m
2011		3.71m - 5.74m	3.71m - 5.74m		0.28m	0.28m		3.99m – 6.02m	3.99m – 6.02m
2012		3.94m - 5.97m	3.94m - 5.97m		0.28m	0.28m		4.22m -6.25m	4.22m -6.25m
2013		4.03m – 6.06m	4.03m – 6.06m		0.28m	0.28m		4.31m – 6.34m	4.31m – 6.34m
2014		4.04m – 6.07m	4.04m – 6.07m		0.28m	0.28m		4.32m – 6.35m	4.32m – 6.35m
2015		3.55m – 5.62m	3.55m – 5.62m		0.38m	0.28m		3.83m – 5.90m	3.83m – 5.90m
2016	4.87m - 10.61m	3.55m – 5.62m	8.42m – 16.23m		0.28m	0.28m	4.87m – 10.61m	3.83m – 5.90m	8.70m – 16.51m
2017		3.55m – 5.62m	3.55m – 5.62m		0.28m	0.28m		3.83m – 5.90m	5.50m
2018		3.55m – 5.62m	3.55m – 5.62m		0.28m	0.28m		3.83m – 5.90m	5.50m
2019		3.55m – 5.62m	3.55m – 5.62m		0.28m	0.28m		3.83m – 5.90m	5.50m
Total	10.01m – 21.92m	37.01m – 57.51m	47.02m – 79.43m	2.48m	2.82m	5.30m	12.49m – 24.40m	39.83m – 60.33m	52.32m – 64.73m
Average Cost		3.70m – 5.75m			0.25m			3.98m – 6.03m	

TABLE 25 PV Costs	INDUSTRY – PRESENT VALUE			GOVERNMENT – PRESENT VALUE			TOTAL ONE OFF PV COSTS	TOTAL ANNUAL PV COSTS	TOTAL ALL PV COSTS
	One-Off Costs	Annual Running Costs	Total Industry	One-Off Costs	Annual Running Costs	Total Government			
Year									
2010	4.80m – 10.56m	3.31m – 5.20m	8.45m – 15.73m	2.32mm	0.26m	2.58m	7.12m – 12.88m	3.57m – 5.46m	10.69m – 18.34m
2011		3.35m – 5.18m	3.35m – 5.18m		0.25m	0.26m		3.60m – 5.43m	3.60m – 5.43m
2012		3.43m – 5.20m	3.43m – 5.20m		0.25m	0.34m		3.68m – 5.45m	3.68m – 5.45m
2013		3.38m – 5.10m	3.38m – 5.10m		0.24m	0.33m		3.62m – 5.34m	3.62m – 5.34m
2014		3.28m – 4.94m	3.28m – 4.94m		0.23m	0.32m		3.51m – 5.17m	3.51m – 5.17m
2015		2.79m – 4.42m	2.79m – 4.42m		0.22m	0.31m		3.01m – 4.64m	3.01m – 4.64m
2016	3.70m – 8.06m	2.70m – 4.27m	6.40m – 12.33m		0.21m	0.74m	3.70m - 8.06m	2.91m - 4.48m	6.61m – 12.54m
2017		2.61m – 4.12m	2.61m – 4.12m		0.21m	0.29m		2.82m – 4.33m	2.82m – 4.33m
2018		2.52m – 3.98m	2.52m – 3.98m		0.20m	0.28m		2.72m – 4.18m	2.72m – 4.18m
2019		2.43m – 3.85m	2.43m – 3.85m		0.19m	0.27m		2.62m – 4.04m	2.62m – 4.04m
Total	8.50m – 18.62m	29.80m – 46.26m	38.30m – 64.88m	2.32m	2.26m	4.58m	10.82m – 20.94m	32.06m – 48.52m	42.88m – 69.46m

Table 26 – Impact on Admin Burdens

The admin burden figures relate only to the industry's administrative running costs for labour over and above the current 2008 system. All costs are expressed in 2005 price terms.

Labour costs	Farms £ (m)	Markets £ (m)	Abattoirs £ (m)	Total £ (m)
To apply new identifiers and re-tag	0.33m	NA	NA	0.33m
For Equipment maintenance	0.26m to 0.53m	0.14 to 0.36m	0.01m to 0.11m	0.41m
For Reading and recording (holding register and movement document)	0.26m to 0.30m	0.25m to 0.26m	0.48m to 0.06m	0.99m
TOTAL	0.85m to 1.16m	0.39m to 0.62m	0.49m to 0.17m	1.73m to 1.95m

The total admin burden range of £1.73m to £1.95m is shown in the admin burden box at the end of the summary and analysis evidence page.