

Summary: Intervention & Options – Appendix 1

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 – <u>Born or Identified after 31 December 2009</u>	
Stage: Consultation	Version: 1.0	Date: 12 March 2009
Related Publications: EC Regulation 21/2004		
Available to view or download at: http://www.defra.gov.uk/animalh/id-move/legislation/pdf/reg21_2004.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: Option 1: Introduces EID but exempts all sheep intended for slaughter under 12 months of age; Option 2: Introduces EID but exempts only those sheep intended for slaughter under 12 months of age and move directly to slaughter or to slaughter via a slaughter market; Option 3: Introduces EID for all animals born after 31 December 2009. Option 1 is the preferred option because it keeps the cost as low as possible.

Goats: Option 1: Continue existing identification system and introduce and implement individual recording from 31 December 2009. Option 2: Extend existing identification system to all goats and introduce and implement individual recording from 31 December 2009. Option 1 is the preferred option 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 Consultation Stage Impact Assessments:

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

Signed by the responsible Minister:

Date 10/03/ 09



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

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
	One-off	Yr	
	£ 27.16m	2	The one off cost to farms, markets and abattoirs which occurs in both 2010 & 2016 for equipment are £22.26m, £2.36m and £0.18m respectively. The average annual costs to farms markets and abattoirs (for identification, holding registers, movement documents and maintenance) are £4.0m, £0.39m and £0.49m respectively. The one off cost government in 2010 & 2016 is £2.36m (for ETAS, equipment and training) and the average annual cost is £0.39m(for inspections)
	Average Annual Cost (excluding one-off)		
£ 5.27m	10	(PV) £65.27m	
Other key non-monetised costs by 'main affected groups' None			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
	One-off	Yr	
	£ 0	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		
£ 0	10	(PV) £2.2m¹	
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 up 3% 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.

Price Base Year 2009	Time Period 10 Years	Net Benefit Range (NPV) £ m	NET BENEFIT (NPV Best estimate) -£63.07m (net cost)

What is the geographic coverage of the policy/option?	England
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	£0.39m

¹ Assuming a major infectious disease outbreak might happen once every 30 years, the £66m outbreak reduction is averaged over this period.

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 £635	Medium Lowland £793		
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)				(Increase -
Increase	£3.25m	Decrease	£ 0.05m	Net £3.20m

Key:	Annual costs and benefits: Constant Prices	(Net) Present Value
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Policy Option: 2.	Description: EID with a restricted slaughter derogation applying only to those sheep intended for slaughter, which are under 12 months of age and move directly to slaughter or to slaughter via a slaughter market
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COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' The one off cost to farms, markets and abattoirs for equipment which occurs in both in 2010 & 2016 are £51.66m, £5.92m and £0.90m respectively. The average annual costs to farms markets and abattoirs (for identification, holding registers, movement documents and maintenance are £8.05m, £0.62m and £0.13m respectively. The one off cost government in 2010 & 2016 is £2.36m (for ETAS, equipment and training) and the average annual cost is £0.59m (for inspections).
	One-off	Yr	
	£ 60.84m	2	
	Average Annual Cost (excluding one-off)		
	£9.39m	10	(PV) £126.85m
Other key non-monetised costs by 'main affected groups' None			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' 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 £78.8m.
	One-off	Yr	
	£ 0	10	
	Average Annual Benefit (excluding one-off)		
	£ 0	10	5 (PV) £2.62m²
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 up 3% 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 4.4m will be electronically identified and individually recorded. These figures are assumed to remain constant. See Annex 2 for key assumptions.

Price Base Year 2009	Time Period Years 10	Net Benefit Range (NPV) £ m	NET BENEFIT (NPV Best estimate) - £124.23m (net cost)
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² Assuming a major infectious disease outbreak might happen once every 30 years, the £78.8m outbreak reduction is averaged over this period.

What is the geographic coverage of the policy/option?		UK		
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		£0.59m		
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 £793	Medium Lowland £646		
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)				(Increase -
Increase	£4.74m	Decrease	£ 0.05m	Net
				£ 4.69m

Key:	Annual costs and benefits: Constant Prices	(Net) Present Value
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Policy Option: 3.	Description: EID all animals born or identified after 31 December 2009.
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COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' The one off cost to farms, markets and abattoirs for equipment which occurs in both in 2010 & 2016 are £51.66m £5.92m and £0.90m respectively. The average annual costs to farms markets and abattoirs (for identification, holding registers, movement documents and maintenance are £12.87m, £0.63m and £0.16m respectively. The one off cost government is in 2010 & 2016 £2.36m (for ETAS, equipment and training) and the average annual cost is £0.59m (for inspections).
	One-off	Yr	
	£ 60.84m	2	
	Average Annual Cost (excluding one-off)		
	£ 14.03m	10	
(PV) £164.14m			
Other key non-monetised costs by 'main affected groups' None			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' 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 £79.4m.
	One-off	Yr	
	£ 0	10	
	Average Annual Benefit (excluding one-off)		
	£0	10	
(PV) £ 2.65m³			
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 up 3% 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 all of which will be electronically identified and individually recorded. These figures are assumed to remain constant. See Annex 2 for key assumptions.

Price Base Year 2009	Time Period Years 10	Net Benefit Range (NPV) £ m	NET BENEFIT (NPV Best estimate) -£161.49m (net cost)
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What is the geographic coverage of the policy/option?	UK
On what date will the policy be implemented?	31 December

³ Assuming a major infectious disease outbreak might happen once every 30 years, the £79.4m outbreak reduction is averaged over this period.

Which organisation(s) will enforce the policy?		RPA & LAs		
What is the total annual cost of enforcement for these		£0.59m		
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 year?		£		
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 £1010	Medium Lowland £1189		
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)				(Increase -
Increase	£5.86m.	Decrease	£0.05m	Net £5.81m

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

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2. Purpose and intended effect
3. Options for Implementing the Regulation
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5. Costs
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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: Option 1 Industry and Government – Current Costs and Present Values over the period 2010 – 2019

A6: Option 2 Industry and Government – Current Costs and Present Values over the period 2010 – 2019

A7: Option 2 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 ([www...defra.gov.uk/animalh/id-move/sheep-goats/pdf/impactassessment.pdf](http://www.defra.gov.uk/animalh/id-move/sheep-goats/pdf/impactassessment.pdf)), has been implemented in England and the second phase, which introduces electronic identification and individual recording must be implemented by 31 December 2009. This IA identifies the options for implementation of the second phase of the Regulation and discusses their associated costs and benefits.

1.2. Options for implementation

1.2.1 The options for implementation are different for sheep and goats.

1.2.2 For sheep there are three options:

- i. Option 1 – All sheep identified on or after 31 December to be electrically identified, except those intended for slaughter within 12 months of age.
- ii. Option 2 – All sheep identified on or after 31 December to be electrically identified, except those intended for slaughter within 12 months of age and moving direct to slaughter or via a market to slaughter.
- iii. Option 3 – All sheep identified on or after 31 December to be electrically identified.

1.2.3 For goats there are two options:

- i. Option 1 Continue existing identification system and introduce and implement individual recording from 31 December 2009
- ii. Option 2 Extend existing identification system to all goats and introduce and implement individual recording from 31 December 2009

1.3 Costs

1.3.1 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.

Table 1. Sheep - Comparison of the ongoing Total Annual Costs of options 1 to 3 above the current system for 2015⁴.

Option	Farms	Markets	Abattoirs	Government	Total
Option 1	+£6.93m	+£0.65m	+£0.51m	+0.83m	+£8.92m
Option 2	+£14.55m	+£1.24m	+£0.24m	+£1.03m	+£17.06m
Option 3	+£19.17m	+£1.25m	+£0.27m	+£1.03m	+£21.72m

1.3.2 The overall costs for the goat industry and the government over the current regime are discussed in section 5 and summarised in table 2 below.

Table 2. Goats – Comparison of the on-going Total Annual Costs of options 1 & 2 above the current system for 2015.

Option	Farms	Markets	Abattoirs	Government	Total
Option 1	+£7k	negligible	negligible	negligible	+£7k
Option 2	+£10k	negligible	negligible	negligible	+£10k

1.4 Benefits

1.4.1 Independent epidemiological modelling has identified that the introduction of electronic identification (EID) and individual recording could reduce costs of managing an outbreak of exotic disease over the current UK system by up to 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 £2.2m, £2.62m and £2.65m p.a. for options 1, 2 and 3 respectively (see paragraph 4.11). It will also improve our ability to track individual animal movements.

1.4.2 The direct financial benefits to the UK of implementing EID in accordance with EU law is a reduced risk of Single Farm Payment disallowance and EU infringement 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, carcase quality, weight, milk yield etc.

1.5 Recommended implementation option Sheep

1.5.1 Option 1 is the recommended option because it is the least cost option overall. It also reduces the individual recording burden for many keepers and it does

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

not introduce any regulatory burden over and above the minimum imposed by the Regulation. It is also on balance the preferred industry option. The overall cost saving of option 1 is **£8.14m** over option 2 and **£12.80m** over option 3, once the regulation is fully implemented (see Table1).

1.5.2 Research carried out by Risk Solutions has indicated that this option would marginally improve disease control above the current double tagging system by up to 3%. Although batch traceability would be maintained via holdings and on the Animal Movements Licencing System (AMLS), this system would not provide individual traceability of slaughter animals. Therefore the speed and accuracy of tracing is not as effective as options 2 and 3. However, the improvement in traceability by adopting options 2 and 3 is small when compared with the high costs that would be imposed by adopting either of these options.

1.5.3 This option would be labour intensive for high throughput situations e.g. markets, store lamb finishers and abattoirs where they are required to record the number of animals in a batch with the same identity. However, industry has identified a commercial solution, which will help resolve this issue.

1.5.4 **Option 2** is not recommended because it is over £8m more expensive each year than option 1. It also increases the regulatory burden over the minimum proposed by the Regulation. This option has little or no industry support. Research has shown that restricting the slaughter derogation could provide a similar disease control benefit to option 3 (all EID), but at **£4.66m** less per year, however the benefit over option 1 is not great, compared to the increased cost. Therefore restricting the slaughter derogation cannot be recommended on grounds of high cost, low benefit and industry preference.

1.5.5 **Option 3** is not recommended either because it is over **£12.80m** more expensive each year than option 1. It also increases the regulatory burden over the minimum proposed by the Regulation. This option is supported by markets and some abattoirs. Research has shown this option could however enhance disease control by between 3% and 13%. It is considered unlikely that improvements of around 13% could be delivered with this option, because to achieve this would require all keepers to record and transmit data electronically. The benefits of this option are therefore considered to be disproportionate to the costs and this option is not therefore recommended.

Goats

1.5.6 Option 1 is the preferred option for goats because it maintains the current identification regime and cheaper than option 2.

1. 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 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. These changes were agreed at the EU Commission’s Standing Committee on the Food Chain and Animal Health (Scofcah) on 30 June 2008, and help to considerably reduce the movement recording burdens.

2.1.4. The Regulation now provides a phased in approach to individual recording as follows:

- no animals to have to be individually recorded on a movement document until 1 January 2011;
- no animals born before 31 December 2009 have to be individually recorded on a movement document until 31 December 2011;
- and no animal born before 31 December 2009 and moving to slaughter (directly or via a market) have to be individually recorded on a movement document at all;
- Individual recording in holding registers is a requirement from 31 December 2009, but only in relation to animals born after this date.

2.1.6. This phased approach has significantly reduced costs to English keepers for the transition period between the current system and EID, by reducing admin burdens by £1.9m for existing animals (see IA for older animals) following the introduction of EID and individual recording for sheep and goats and by £40k for breeding animals born after 31 December 2009.

This IA considers the impact of the new requirements from 31 December 2009 on sheep and goats born after that date. The identification requirements and timescales for individual recording are different for those animals identified

before 31 December 2009. Therefore a separate IA has been prepared for sheep and goats born before 31 December 2009 (need weblink to Appendix 2).

2.1.7. The Regulation allows for the use of derogations from the requirement to electronically identify and individually record animals. These are:

- A derogation for animals from the need to electronically identify and individually record (slaughter derogation) which applies to animals intended for slaughter within 12 months of age.
- A derogation which allows for Member States with a population of goats less than 160,000 to be exempt from the EID requirements. This would mean that goat keepers would continue to be required to individually identify their animals with a matching pair of conventional tags. However they would be required from 31 December 2009 to read and record their animals each time they were moved.

2.1.8. It is assumed that this derogation will be applied for goats. This IA explores the costs and benefits of the use of the slaughter derogation.

2.2. Evidence

2.2.1. To inform these options Defra has commissioned 2 trials and 2 pieces of research in order to understand the impact to UK industry and Government. This has included:

- A pilot trial (carried out by ADAS) in 2005 evaluated systems of EID and electronic data transfer (EDT) under English sheep farming conditions. The trial focused on identifying aptitudinal and additional factors as they relate to the potential take up of EID. The lessons learnt from this trial helped inform the ADAS 2006 trial and therefore this IA.
- Field trials (carried out by ADAS) in 2006 to inform assumptions and provide the cost data used in this IA.
- 2006 Research by Risk Solutions 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.
- 2007 Research by Risk Solutions, building on their earlier research; it considers the impact of the 3 policy options for EID and estimates the disease control benefit for each option.

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 an important part of Government's capability in controlling the spread of infectious animal diseases to manage an outbreak and achieve eradication. If traceability was left to individuals, the potential benefits to livestock farmers as a whole would not be achieved. This is the basis of the case for compulsory animal identification.

2.5. Sensitivity Analysis

2.5.1. This IA gives figures for costs as point estimates rather than ranges throughout. This reflects the fact that, at overall industry level, the figures can be estimated with a high degree of certainty. 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 and would be subject to change after consultation. 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 during the assessment period regardless of EID; however this will affect all the EID options in a similar way and their relative ranking will not alter. More detailed references to the sources of the assumptions are given as appropriate in the document.

2. Options for Implementing the Regulation

The implementation options for sheep and goats are different.

3.1. Sheep

3.1.1. All sheep born or identified after 31 December 2009 must be identified with two identifiers, one of which must be electronic. The exception to this rule is in the case of animals intended for slaughter within 12 months of age, where a single non-electronic slaughter batch tag may be applied. Animals which are identified with a slaughter tag must be slaughtered within 12 months of age and cannot subsequently be electronically identified unless the animal is still on its holding of birth. This provision is known as the slaughter derogation.

3.1.2. There is no flexibility with regard to the application of EID devices to animals over 12 months of age. These sheep must bear an electronic identifier if identified on or after 31 December 2009. However we can choose whether or not we wish to permit the use of slaughter tags instead of two identifiers (one of which is electronic) to animals which the keeper on the birth holding intends to be slaughtered within 12 months of age. When animals are electronically identified they must be individually recorded.

3.1.3. The difference between the options described is the number of animals, and therefore the cost of implementation, which will need to be electronically identified and individually recorded.

Option 1 – All sheep born or identified after 31 December 2009 to be electronically identified, except those intended for slaughter within 12 months of age.

3.1.4. Only those sheep which are to be kept beyond the age of 12 months would be electronically identified. These animals would need to be individually recorded on a movement document and in the holding register. All animals which are intended for slaughter within 12 months of age would be subject to the slaughter derogation i.e. identified with a single non electronic slaughter tag and recorded on a batch basis.

3.1.5. There is however a practical issue with this option. The Regulation requires the number of sheep within a batch with the same holding of birth identity to be recorded. This is not a problem where animals are moving from the holding of birth, as their batch identity will be the same. It will though affect those businesses which handle large volumes of animal, such as markets, abattoirs and store lamb finishers, because the sheep constituting a batch will originate on more than one holding of birth (mixed batch). For those businesses having to record the numbers of sheep having the same holding of birth identity would increase the cost of handling and increase recording burdens.

3.1.6. However, industry themselves have suggested the introduction of a voluntary system where keepers intending to supply animals through specific markets or abattoirs (where this is a requirement of the specific market or abattoir) would apply an electronic batch tag to enable the mixed batch recording requirement to be met.

Option 2 – All sheep born or identified after 31 December 2009 to be electronically identified, except those intended for slaughter within 12 months of age, or moving direct to slaughter or via a market to slaughter.

3.1.7. Only those sheep moving direct to slaughter or via a market to slaughter would be subject to the slaughter derogation. These animals could continue to be recorded in movement documents and holding registers on a batch basis. All other sheep would need to be identified electronically and would need to be individually recorded.

3.1.8. Limiting the scope of the derogation will remove the problems identified at option 1 with recording mixed batches.

Option 3 – All sheep born or identified after 31 December 2009 to be electronically identified.

3.1.9. All sheep, with no exception, would be identified electronically. This would mean that all animals would need to be individually read and recorded.

Goats

3.1.10. The rules for the identification of goats will not change, but goats will need to be individually recorded. Goats will continue to be required to be identified with two non-electronic identifiers, but keepers may fit electronic identifiers if they wish. As with sheep we can choose whether or not to apply the slaughter derogation (paragraph 3.1.1.).

Option 1 Continue existing identification system and introduce and implement individual recording from 31 December 2009

3.1.11. Only those goats which are to be kept beyond the age of 12 months would be double identified with a matching pair of conventional tags. These animals would need to be individually recorded on a movement document and in the holding register. All animals which are intended for slaughter within 12 months of age would be subject to the slaughter derogation i.e. identified with a slaughter tag and recorded on a batch basis.

Option 2 – Extend existing identification system to all goats and introduce and implement individual recording from 31 December 2009

3.1.12. All goats, with no exception, would be double identified. This would mean that all animals would need to be individually read and recorded.

Central Database

3.1.13. 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 these enhanced options have not been included in this IA.

4.0. Benefits

Sheep Industry

4.1. Disease control benefits of all options

4.1.1. In 2007 Risk Solutions were commissioned to model the impact of the 3 policy options for EID as a disease control measure. The main conclusion of their report was that the contribution of the EID tracing system was estimated to be between 3 (option 1) and 13% (options 2 and 3) 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 around £80 million in the largest outbreak scenario (£66.6m for option 1, £78.8m for option 2 and £79.4m for option 3). 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 £80 million 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 options for sheep are outlined in the table below.

Table 3 Sheep - Benefits to industry and government

Options	Industry, Farms, Markets & Abattoirs	Government
Disease Control Benefit - All options offer some improvement on disease control over the current system to industry and Government (Option 1 by up to 3%, Options 2 & 3 by up to 13%)		
Option 1 Slaughter Derogation	Implements 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 in option 1 most favours farms as there could be logistical problems in recording individual batches (mainly store lambs) for markets & abattoirs	All three options implement the Regulation fully and eliminates the risk of infraction proceedings
Option 2 Restricted Derogation	Implements the Regulation. Costs and time greater than Option 1 but main advantage is that it provides a more simpler system i.e. only finished lambs would move on a batch basis to slaughter (direct or via a market).	
Option 3 All EID	Implements the Regulation. This is the most expensive option but offers the simplest system. All keepers would follow the same rules and this in turn would simplify requirements for markets and slaughterhouses.	
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.	

Goat Industry

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

Table 4. Goats – Benefits to industry and government

Options	Industry, Farms, Markets & Abattoirs	Government
Both options offer some improvement in controlling disease because they introduce individual recording. Recent 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		
Option 2 Minimum implementation (individual recording for breeding goats, batch recording for slaughter goats)	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.	Both options implement the Regulation fully and eliminates the risk of infraction proceedings.
Option 1 Double identification & individual recording for goats born after 31/12/2009	Implements the Regulation This is the most expensive option but provides a simpler system for all to operate as all keepers would follow the same rules. Benefit quite small because Option will only derogate around 6,000 animals a year.	

5. Costs for government and industry

5.1. Compliance costs key assumptions for SHEEP

5.1.1. The following costs are for different businesses, set against options 1, 2, and 3. Costs 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 intended for intra-community trade or export must be electronically identified. No derogation is available on this issue. As the cost will be the same irrespective of which option is chosen, a full set of costings has not been produced.

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 estimated tipping points at which manual recording is not viable or economical and a keeper would chose to record manually is 200 breeding ewes for option 1 and 100 breeding ewes for options 2 and 3.⁵ Similar tipping points have been estimated for markets and abattoirs, based on throughput. This recording method (also known as reading by scale) is assumed to be the most cost effective means or reading and recording and the costs in this IA have been demonstrated this way.

5.1.8. The Regulation states that Member States shall ensure any person responsible for identification and registration of animals has received instruction and guidance and that appropriate training courses are available. Research is currently being carried out by ADAS to establish the best format and level of training required. Their final report is expected in the Spring and will include indicative costs to the industry. Therefore training costs for industry have therefore not been included in this version of the IA, but will be in the Full IA.

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.

Industry

5.2. Option 1

5.2.1. This option would introduce EID for all sheep which live beyond the age of 12 months. These sheep would need to be identified with a standard eartag and an electronic eartag. Those animals subject to the slaughter derogation would be

⁵ Figures agreed with NSA 2005.

identified with a single batch tag. The main costs for Option 1 to industry and government are outlined in the table below.

Table 5: Main cost to Government and Industry over and above the current system for option 1 for 2015 when fully implemented

Industry				
Measure	Farms	Markets	Abattoirs	Total
Full implementation ongoing costs				
One off costs				
Equipment	£11.13m	£1.18m	£0.09m	£12.4m
Annual costs				
Cost EID Devices Breeding animals	£1.32m	NA	NA	£1.32m
Breeding animal replacement tags	£0.86m	NA	NA	£0.86m
Maintenance	£1.10m	£0.14m	£0.01m	£1.25m
Holding Register	£0.90m	£0.25m	£0.48m	£1.63m
Movement Documents	£0.04m	Included in above	Included in above	£0.04m
	£4.22m	£0.39m	£0.49m	£5.11m
Annual charge for equipment	£2.71m	£0.26m	£0.02m	£2.99m
Total Annual Costs 2015	£6.93m	£0.65m	£0.52m	£8.10m
Government				
Measure				Total
One off costs	<i>£60k training, ETAS⁶ Rebuild 1.2m, Equipment 519k</i>			£1.78m⁷
Annual costs				
Inspection & Enforcement	£15k inspection preparation costs + £267k inspection costs for individual sheep			£282k
Training	6k			£6k
Maintenance	Maintenance £104k			£104k
				£392k
Annual charge	<i>ETAS £293k, Training £15k, Equipment £127k</i>			£435k
Total Annual Costs 2015				£827k
Average Annual Cost⁸	<i>Government + Industry 2010 - 2019</i>			£5.27m

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

⁶ Eartag Allocation System (ETAS). Government database which allocates unique identifier numbers for sheep and goats in accordance with the Regulation.

⁷ Note these are one off costs up to 2015. 2016 a further £0.58m for equipment and training is assumed (see Annex 5)

⁸ 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

5.3. Option 2

5.3.1.1. This option partially implements the slaughter derogation for animals intended for slaughter within 12 months of age. It would introduce EID for all breeding sheep born after 1 January 2009. It also introduces EID and for slaughter lambs which move indirectly to slaughter (i.e. via a second holding) within 12 months of age. These animals are commonly known as store lambs.

Table 6: Main cost to Government and Industry over and above the current system for option 2 in 2015 when fully implemented

Industry				
Full implementation ongoing costs	Farms	Markets	Abattoirs	Total
One off costs				
Equipment	£25.83m	£2.96m	£0.45m	£29.24m
Annual costs				
Cost EID Devices Breeding animals	£1.32m	NA	NA	£1.32m
Cost of EID Devices Store Lambs	£2.77m	NA	NA	£2.77m
Breeding animal replacement	£0.86m	NA	NA	£0.86m
Store Lambs replacement Tags	£0.16m	NA	NA	£0.16m
Maintenance	£2.58m	£0.36m	£0.07m	£3.01m
Holding Register	£0.5m	£0.26m	£0.06m	£0.82m
Movement Documents	£0.06m	Included in above	Included in above	£0.06m
	£8.25m	£0.62m	£0.13m	£9.00m
Annual charge for equipment	£6.30m	£0.62m	£0.11m	£7.03m
Total Annual Cost 2015	£14.55m	£1.24m	£0.24m	£16.03m
Government				
Full implementation ongoing costs				Total
One off costs	£60k training, ETAS Rebuild 1.2m, Equipment 519k			£1.78m ⁹
Annual costs				
Inspection & Enforcement	£15k inspection preparation costs + £267k inspection costs for individual sheep			£482k
Training	6k			£6k
Maintenance	Maintenance £104k			£104k
				£592k
Annual charge	ETAS £293k, Training £15k, Equipment £127k			£435k
Total Annual Cost 2015				£1.03m
Average Annual Cost¹⁰	<i>Government + Industry 2010 - 2019</i>			£9.39m

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

⁹ Note these are one off costs up to 2015. In 2016 a further £0.58m for equipment and training is assumed (see Annex 6) and applied in Summary: Analysis & Evidence

¹⁰ 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. (Annex 7)

5.4. Option 3

5.4.1. This option would introduce electronic identification and individual recording for all sheep born after 1 January 2009. The main costs for Option 3 to industry and government are outlined in the table below.

Table 7: Main cost to Government and Industry over and above the current system for option 3 in 2015 when fully implemented

Industry				
Full implementation ongoing costs 2015	Farms	Markets	Abattoirs	Total
One off costs				
Equipment	£25.83m	££2.96m	£0.45m	£29.24m
Annual costs				
Cost EID Devices Breeding animals	£1.32m	NA	NA	£1.32m
Cost of EID Devices Store Lambs	£2.77m	NA	NA	£2.77m
Cost of EID finished	£4.23m	NA	NA	£4.23m
Breeding animal replacement tags	£0.86m	NA	NA	£0.86m
Store Lambs replacement tags	£0.16m	NA	NA	£0.16m
Maintenance	£2.58m	£0.36m	£0.07m	£3.01m
Holding Register	£0.82m	£0.27m	£0.09m	£1.18m
Movement Documents	£0.13m	Included in above	Included in above	£0.13m
	£12.87m	£0.63m	£0.16m	£13.66m
Annual charge for equipment	£6.30m	£0.62m	£0.11m	£7.03m
Total Annual cost 2015	£19.17m	£1.25m	£0.27m	£20.69m
Government				
Full implementation ongoing costs 2015				Total
One off costs	£60k training, ETAS Rebuild 1.2m, Equipment 519k			£1.78m¹¹
Annual costs				
Inspection & Enforcement	£15k inspection preparation costs + £267k inspection costs for individual sheep			£482k
Training	6k			£6k
Maintenance	Maintenance £104k			£104k
				£592k
Annual charge	ETAS £293k, Training £15k, Equipment £127k			£435k
Total Annual Cost 2015				£1.03m
Average Annual Cost¹²	Government + Industry 2010 - 2019			£14.03m

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

¹¹ Note these are one off costs up to 2015. In 2016 a further £0.58m for equipment and training is assumed (see Annex 7) and applied in the Summary: Analysis & Evidence.

¹² 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. (annex 7)

5.5 Other Businesses Options 1, 2 and 3

5.5.1. Pet Food Manufacturers and Renderers

5.5.1.1 The Technical Guidelines part 1¹³ 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 utilise 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

2015 Full implementation ongoing costs	Option 1)	Option 2)
Farms		
Identification		
Cost of Devices slaughter animals	0	£1509
Replacements		
Breeding animals	£3078	£3078
Slaughter Animals	0	£787
Total ID Costs	£3078	£5374
Holding Register	£2428	£2762
Movement Documents	£1198	£1442
Markets		
Holding Registers & Movement Documents	Negligible	Negligible
Abattoirs		
Holding Registers & Movement Documents	Negligible	Negligible
Total Annual Costs 2015	£6704	£9578
Measure	Government Options 1) and 2)	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 8: Main cost to Government and Goat Industry over and above the current system for options 1 and 2 in 2015 when fully implemented

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

¹³ 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.’

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 of the 3 options 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 9: Comparison of annual costs and cost per breeding ewe for 2 typical farm businesses.

	SDA Farm	Lowland Farm
Option 1	£635 p.a. (£1.27 per ewe) 4.4% of income	£541 p.a. (£1.97 per ewe) £5% of income
Option 2	£793 p.a. (£1.59 per ewe) 5.5% of income	£646 p.a. (£2.35 per ewe) £5.8% of income
Option 3	£1010 p.a. (£2.02 per ewe) 7% of income	£1189 p.a. (£2.92 per ewe) 10.7% 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. From 31 December 2009 sheep identified for export will have to be electronically identified and individually recorded. The introduction of electronic identification will make the individual recording requirements easier.

6.2.2. The 2007 FMD outbreak meant that there were relatively few exports. 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. Therefore exporters are not thought to be disadvantaged by the introduction of EID.

6.2.3. 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 costings in this IA show that the slaughter derogation option is less costly overall than the restricted derogation and full EID options. However, this option is more costly for the abattoir sector alone and may present some practical problems in all places of high throughput (including markets and abattoirs) with the requirement to read and record batches of lambs with different holding of birth identities.

6.3.2. For example where a market handles both breeding animals and slaughter lambs it 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.

6.3.2. Different operators will find different ways to solve these practical problems. Another approach that has been discussed is for slaughter sheep without EID to be fitted with electronic slaughter tags for management purposes. This would enable the holding of birth details to be read electronically, instead of having to be done manually, thus saving handling costs at market or abattoir. It would, however, increase costs to producers because electronic slaughter tags are more expensive than conventional ones. This solution would be outside the scope of the Regulation and therefore would be industry driven. It also has the advantage compared to options 2 and 3 of not requiring individual numbers to be recorded.

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. Option 1 would require store lamb finishers to manually read and record the mixed identities of store lambs in holding registers. The estimated cost is £0.54m p.a. or 20p per lamb to the store lamb finishing sector. The electronic solution provided by options 2 and 3 is estimated to cost £0.73m p.a. or 33p per lamb to the store lamb finishing sector¹⁴. Whilst options 2 and 3 are more expensive, than option 1, store lamb finishers may choose to purchase only lambs that have been electronically identified as it offers a practical system of reading animal identities in

¹⁴ These costs may be reduced depending on the outcome of the application of the Madder's Recommendations.

large numbers. As in the case of markets and abattoirs, this would be a private choice where individual operators would make their own decisions for the benefit of their business, with option 1 allowing the greatest possible freedom to do so within the Regulation.

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. No estimates are available for Local Authorities.

8. Consultation

8.1 Within government

- Colleagues in the devolved administrations and delivery agencies will be fully involved with the implementation of the Regulation to ensure consistency of application.

8.2 Public consultation

- 12 week consultation – small businesses will also be fully consulted.

9. Compensatory Simplification

9.1 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.

9.2 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 born or identified after 31 December 2009 of **£40k**.

9.3. Whilst the Regulation will increase burdens on keepers, rules for replacements have been simplified, which should lead to a better understanding of the rules and improved 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 Office of Fair Trading (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

Where competition could be distorted is if the full or restricted slaughter derogation is adopted. This 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 and by how the regulation is implemented. 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.

Farms

The cost of compliance with the proposed legislation will be greater for those keepers that trade a lot of animals and have many movements onto and off their premises. Therefore dealers and lowland finishers will be disproportionately affected. Breeders, for whom the great majority of animals are born on their holding, will be affected the least. Headage costs should be broadly similar for all size of units.

Abattoirs and Markets

Depending on size and throughput markets and abattoirs will either decide to record manually or electronically. It is expected that the cost of implementation will be passed on to sheep keepers in the form of higher commission charges.

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 aging 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 to all of the options 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 RIA for sheep identification in England

General

- 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)¹⁵.
- 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)¹⁶.
- The number of sheep passing through markets per year is 7 million¹⁷.
- 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 operation¹⁸.
- 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.

Replacements¹⁹

- 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

¹⁵ NSA estimate agreed for ADAS RIA research

¹⁶ NSA estimate agreed for ADAS RIA research

¹⁷ LAA figures agreed for ADAS RIA research

¹⁸ ADAS assumption, based on lowest cost and not time taken, see ADAS report.

¹⁹ Replacement policy agreed at the England EID Coordination Board in 2008

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.

Tag Costs²⁰

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

Table 10: 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.

²⁰ Average cost taken from Defra survey of 6 suppliers 2008

Labour costs²¹

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

Table 11: Labour rates

Equipment Costs²²

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
Hand held reader (Inspectors)	£600	20%
Race reader with shedder (markets)	£8725	20%
Market infrastructure	£5000 per reader	-
Panel reader (large abattoirs)	£6535	20%

- 60% of keepers already have access to a home computer²³
- 10% of keepers already have compatible software²⁴.
- Annual charge spreads the capital cost of equipment over its life (assumed to be 5 years) at an interest rate of 7%.

Table 12: Equipment and associated maintenance costs

Loss Rates

- Tag loss rate for breeding stock is 5%²⁵
- Tag loss rate for store lambs is 2.5%
- For double-tagged animals it is assumed the tag loss rate is double.

²¹ Labour rates from 2005 standard cost model with 12% added to take account expected increase in earnings by 2010.

²² Average cost of equipment taken from Defra survey of 6 suppliers in 2008.

²³ Defra Farm Practices Survey 2006

²⁴ Industry assumption

²⁵ EU Average agreed with NSA in 2005.

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 ²⁶	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	25
Race reading	4	3

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 seconds²⁷.

	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 ²⁸	32

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

²⁶ 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.

²⁷ 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.

²⁸ 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.

	Time to create movement document (seconds per sheep)	<u>Time to create flock register</u> (seconds per sheep)
First or second move (batch recording)	2	1
Adjusting for lumpiness ²⁹ (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 1st move (seconds per sheep)	Time to adjust register 2nd move (seconds per sheep)
Manual reading	17	17	17
Semi electronic	13	13	13
Fully electronic	2	2	2

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

	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

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

²⁹ 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.

Annex 3

Research and trials carried out by Defra

A3.1. Research

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 option 1) or full EID (similar to option 3 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, £78.8m for option 2 and £79.4m for option 3, 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 19. 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. Both reports are available at ([need to insert weblink www//defraweb/animalh/id-move/sheep-goats/eid/key-docs.htm](http://www.defraweb/animalh/id-move/sheep-goats/eid/key-docs.htm)).

A3.2. Trials

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 and these requirements are currently being assessed by ADAS. Whilst not every keeper will need training in the use of EID equipment as many will choose to record individual information manually, there will be a training need for some. ADAS has been commissioned to identify what these training needs might be and how best they can be delivered. The results of this work is expected in early 2009 and the cost of training will be included in the final IA once the outcome of this work is available.

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. The reports to both trials are available at: (www.defra.gov.uk/goats/eid/pdf/evidence-report.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.

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.

Table 20: 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 options 1, 2 and 3 over the current system of double tagging and batch movement recording. The 3 options are 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 the 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, and if moved to land over 5 miles from the main holding. All reading and recording is done electronically with the exception of the 20 store lambs which are purchased by the lowland farm. These will need to be manually read and recorded in order to establish the flock identities of a mixed batch.

A4.1.6. In Option 1, all breeding stock and lambs sold for breeding, are electronically tagged. Store lambs and lambs sold finished are single tagged using non-EID tags under the derogation. Movements are recorded on an individual animal basis, except for slaughter and store lambs.

A4.1.7. In Option 2, all breeding stock and lambs sold for breeding and lambs sold as store lambs are electronically tagged. Lambs sold finished are single tagged using non-EID tags under the derogation. Movements are recorded on an individual animal basis, except for finished lambs.

A4.1.8. In Option 3, all lambs and sheep are electronically identified. All reading and data handling is carried out fully electronically.

A4.1.9. For all options, the costings assume that farms purchase a stick reader at a cost £450, a computer at a cost of £500 and software at a cost of £250. To the extent that many farms already have some ancillary computer equipment, the costs would be reduced.

A4.1.10. The full costings for each farm type and option are in tables 1 and 2

A4. 2. Results

A2. 2.1. Relative to the current situation, the cost implications of implementing options 1, 2 and 3 are given below.

	SDA Farm	Lowland Farm
Option 1	£635 p.a. (£1.27 per ewe)	£541 p.a. (£1.97 per ewe)
Option 2	£793 p.a. (£1.59 per ewe)	£646 p.a. (£2.35 per ewe)

Option 3	£1010 p.a. (£2.02 per ewe)	£1189 p.a. (£2.92 per ewe)
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Table 21: Costs to SDA and Lowland Farm

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

A4.3.1. For both businesses the greatest cost increase is option 3 because of the additional tagging costs, both holding of birth tags and replacement tags. Both farms are breeding lambs finished for slaughter but, under option 1, there is a full derogation from double tagging these lambs. Under option 3, between 34 and 52% of the additional cost for farms is due to identification. Compared to between 17 and 39% for option 2 and 11 and 25% for option 1. For option 1, the tagging costs are considerably less onerous, and it is the cost of equipment which is the greatest single cost.

A4.3.2. Tagging and equipment account for the greater majority of the increased costs. The relative cost increase of reading the animal tag numbers, updating the holding register and completing the movement document is relatively insignificant. Some keepers may also purchase training and support in using their equipment. This is not mandatory, but would significantly increase annual costs for those which do.

A4.3.3. The impact as measured as a cost per breeding ewe is much greater for the lowland farm. The cost to the SDA farm with 500 ewes is £2.02 per ewe for option 3 compared to and £2.92 for option 3 for the lowland farm. The burden is disproportionate because of the fixed costs of tags and reading equipment.

A4.3.3.4. The average annual farm annual income over the last 3 years³⁰ for a typical SDA business is approximately £14,000 and its is approximately £11,000 for typical lowland business keeping both sheep and cattle. As a percentage of farm income, for a medium sized SDA farm implementing EID represents 4.4 % for option 1, 5.5% for option 2 and 7% for option 3. This is lower when compared to a medium sized lowland farm where the percentage of income needed to implement EID is 5% for option 1, 5.8% for option 2 and 10.7% for option 3.

³⁰ Farm Business Survey 2005 - 2007

Table 22
Impact of the regulation on a typical SDA business, for each policy option

	Option 1	Option 2	Option 3
Capital cost			
IT equipment	£500	£500	£500
Stick readers	£450	£450	£450
software	£250	£250	£250
Total capital cost	£1200	£1200	£1200
Maintenance	£120	£120	£120
Annual Charge	£293	£293	£293
identification			
Tags for Breeding replacements	£102 (144 x 71p)	£102 (144 x 71p)	£102 (144 x 71p)
Tags for Stores	0	£129 (152 x 85p)	£129 (152 x 85p)
Tags for sold as breeding	£36 (42 x 85p)	£36 (42 x 85p)	£36 (42 x 85p)
Tags for Finished Lambs	0	0	£170 (239 x .71p)
Total	£138	£267	£437
labour	£18 (1.8 hours)	£44 (4.33 hours)	£85 (8.31 hours)
Total	£156	£311	£522
Replacements			
Replacements for Breeding stock	£43 (50 x85p)	£43 (50 x85p)	£43 (50 x85p)
Removing tags	£3 (0.31 hours)	£3 (0.31 hours)	£3 (0.31 hours)
Cross referencing	-£2 (0.2 hours)	-£2(0.2 hours)	-£2(0.2 hours)
Total	£44	£44	£44
Updating Holding Register			
Breeding stock	£16(1.58 hours)	£16(1.58 hours)	£16(1.58 hours)
Store lambs		£2(0.24 hours)	£2(0.24 hours)
Finished lambs			£4(0.37 hours)
Total	£16	£18	£22
Updating Movement Document			
Breeding stock	£6(0.56hours)	£6(0.56hours)	£6(0.56hours)
Store lambs		£1(.08hours)	£1(.08hours)
Finished Lambs			£2(0.132 hours)
Total	£6	£7	£9
Total Cost	£635	£793	£1010
Cost Per Breeding Ewe	£1.27	£1.59	£2.02

- Animals to be identified as leave holding. Therefore assumed to be 0

Table 23
Impact of the regulation on a typical lowland business, for each policy option

	Option 1	Option 2	Option 3
Capital cost			
IT equipment	£500	£500	£500
Stick readers	£450	£450	£450
software	£250	£250	£250
Total capital cost	£1200	£1200	£1200
Maintenance	£120	£120	£120
Annual Charge	£293	£293	£293
Identification			
Tags for Breeding stock	£44 (62 x 71p)	£44 (62 x 71p)	£44 (62 x 71p)
Tags for sold as breeding	£7(8 x 85p)	£7(8 x 85p)	£7(8 x 85p)
Tags for Store lambs	0	£45 (53 x 85p)	£45 (53 x 85p)
Tags for Finished Lambs	0	0	£246 (289 x .85p)
Total	£51	£96	£342
labour	£6(0.6 hours)	£15(1.5 hours)	£64 (6 hours)
Total	£57	£111	£406
Replacements			
Breeding stock	£12 (28 x 85p)	£12 (28 x 85p)	£12 (28 x 85p)
Store lambs	0	£1(1 x 85p)	£1(1 x 85p)
Removing tags	£2 (0.16 hours)	£2 (0.17 hours)	£2 (0.17 hours)
Cross referencing	-£1 (0.2 hours)	-£1 (0.2 hours)	-£1 (0.2 hours)
Total	£13	£14	£14
Updating Holding Register			
Breeding stock	£3(0.24 hours)	£3(0.24 hours)	£3(0.24 hours)
Store lambs	£3(0.27 hours)	£2(0.14 hours)	£2(0.14 hours)
Finished lambs	0	£5(0.45 hours)	£5(0.45 hours)
Total	£6	£10	£10
Updating Movement Document			
Breeding stock	£1(.09 hours)	£1(.09 hours)	£1(.09 hours)
Store lambs	0	£1(.05hours)	£1(.05hours)
Finished Lambs	0	0	£2(.16 hours)
Total	£1	£2	£4
Total Cost	£541	£646	£1189
Cost Per Breeding Ewe	£1.96	£2.35	£4.32

Annex 5 - Industry and Government Current Costs and Present Values (PV) over the period 2010 – 2019

Option 1 – Full Derogation – Costs in Millions

TABLE 24 Current Costs	INDUSTRY – CURRENT COSTS			GOVERNMENT – CURRENT COSTS			TOTAL ONE OFF COSTS	TOTAL ANNUAL COSTS	TOTAL ALL COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	12.40m	4.29m	16.69m	1.78m	0.39m	2.17m	14.18m	4.68m	18.86m
2011		4.54m	4.54m		0.39m	0.39m		4.93m	4.93m
2012		4.72m	4.72m		0.39m	0.39m		5.11m	5.11m
2013		4.84m	4.84m		0.39m	0.39m		5.23m	5.23m
2014		4.90m	4.90m		0.39m	0.39m		5.29m	5.29m
2015		5.11m	5.11m		0.39m	0.39m		5.50m	5.50m
2016	12.40m	5.11m	17.51m	0.58m	0.39m	0.97m	12.98m	5.50m	18.48m
2017		5.11m	5.11m		0.39m	0.39m		5.50m	5.50m
2018		5.11m	5.11m		0.39m	0.39m		5.50m	5.50m
2019		5.11m	5.11m		0.39m	0.39m		5.50m	5.50m
Total	24.80m	48.84m	73.64m	2.36m	3.90m	6.26m	27.16m	52.74m	79.90m
Average Cost		4.88m			0.39m			5.27m	

TABLE 25 PV Costs	INDUSTRY – PRESENT VALUE			GOVERNMENT – PRESENT VALUE			TOTAL ONE OFF PV COSTS	TOTAL ANNUAL PV COSTS	TOTAL ALL PV COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	11.58m	4.00m	15.58m	1.65m	0.36m	2.01m	13.23m	4.36m	17.59m
2011		4.09m	4.09m		0.35m	0.35m		4.44m	4.44m
2012		4.11m	4.11m		0.34m	0.34m		4.45m	4.45m
2013		4.08m	4.08m		0.33m	0.33m		4.41m	4.41m
2014		3.99m	3.99m		0.32m	0.32m		4.31m	4.31m
2015		4.02m	4.02m		0.31m	0.31m		4.33m	4.33m
2016	9.42m	3.88m	13.30m	0.44m	0.30m	0.74m	9.86m	4.18m	14.04m
2017		3.75m	3.75m		0.29m	0.29m		4.04m	4.04m
2018		3.62m	3.62m		0.28m	0.28m		3.90m	3.90m
2019		3.50m	3.50m		0.27m	0.27m		3.77m	3.77m
Total	21.00m	39.04m	60.04m	2.09m	3.15m	5.24m	23.09m	42.19m	65.28m

Annex 6 - Industry and Government Current Costs and Present Values (PV) over the period 2010 – 2019
Option 2 – Restricted Derogation – Costs in Millions

TABLE 26 Current Costs	INDUSTRY – CURRENT COSTS			GOVERNMENT – CURRENT COSTS			TOTAL ONE OFF COSTS	TOTAL ANNUAL COSTS	TOTAL ALL COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	29.24m	8.20m	37.44m	1.78m	0.59m	4.15m	31.02m	8.79m	39.81m
2011		8.47m	8.47m		0.59m	0.59m		9.06m	9.06m
2012		8.64m	8.64m		0.59m	0.59m		9.23m	9.23m
2013		8.77m	8.77m		0.59m	0.59m		9.36m	9.36m
2014		8.81m	8.81m		0.59m	0.59m		9.40m	9.40m
2015		9.02m	9.02m		0.59m	0.59m		9.61m	9.61m
2016	29.24m	9.02m	38.26m	0.58m	0.59m	1.17m	29.82m	9.61m	39.43m
2017		9.02m	9.02m		0.59m	0.59m		9.61m	9.61m
2018		9.02m	9.02m		0.59m	0.59m		9.61m	9.61m
2019		9.02m	9.02m		0.59m	0.59m		9.61m	9.61m
Total	58.48m	87.89m	146.37	2.36m	5.90m	8.26m	60.84m	93.89m	154.73m
Average Cost		8.79m			0.59m			9.39m	

TABLE 27 PV Costs	INDUSTRY – PRESENT VALUE			GOVERNMENT – PRESENT VALUE			TOTAL ONE OFF PV COSTS	TOTAL ANNUAL PV COSTS	TOTAL ALL PV COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	27.30m	7.65m	34.95m	1.66m	0.55m	2.21m	28.96m	8.20m	37.16m
2011		7.64m	7.64m		0.53m	0.53m		8.17m	8.17m
2012		7.53m	7.53m		0.51m	0.51m		8.04m	8.04m
2013		7.38m	7.38m		0.50m	0.50m		7.88m	7.88m
2014		7.17m	7.17m		0.48m	0.48m		7.65m	7.65m
2015		7.09m	7.09m		0.46m	0.46m		7.55m	7.55m
2016	22.21m	6.85m	29.06m	0.44m	0.45m	0.89m	22.65m	7.30m	29.95m
2017		6.62m	6.62m		0.43m	0.43m		7.05m	7.05m
2018		6.39m	6.39m		0.42m	0.42m		6.81m	6.81m
2019		6.18m	6.18m		0.41m	0.41m		6.59m	6.59m
Total	49.51m	70.50m	120.01m	2.10m	4.74m	6.84m	51.61m	75.24	126.85

Annex 7 - Industry and Government Current Costs and Present Values (PV) over the period 2010 – 2019

Option 3 – Full EID – Costs in Millions

TABLE 5 Current Costs	INDUSTRY – CURRENT COSTS			GOVERNMENT – CURRENT COSTS			TOTAL ONE OFF COSTS	TOTAL ANNUAL COSTS	TOTAL ALL COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	29.24m	12.81m	42.05m	1.78m	0.59m	4.15m	31.02m	13.40m	44.42m
2011		13.12m	13.12m		0.59m	0.59m		13.71m	13.71m
2012		13.29m	13.29m		0.59m	0.59m		13.88m	13.88m
2013		13.42m	13.42m		0.59m	0.59m		14.01m	14.01m
2014		13.46m	13.46m		0.59m	0.59m		14.05m	14.05m
2015		13.66m	13.66m		0.59m	0.59m		14.25m	14.25m
2016	29.24m	13.66m	142.90m	0.58m	0.59m	1.17m	29.82m	14.25m	44.07m
2017		13.66m	13.66m		0.59m	0.59m		14.25m	14.25m
2018		13.66m	13.66m		0.59m	0.59m		14.25m	14.25m
2019		13.66m	13.66m		0.59m	0.59m		14.25m	14.25m
Total	58.48m	134.40m		2.36m	5.90m	8.26m	60.84m	140.30	201.14m
Average Cost		13.44m						14.03m	

TABLE 6 PV Costs	INDUSTRY – PRESENT VALUE			GOVERNMENT – PRESENT VALUE			TOTAL ONE OFF PV COSTS	TOTAL ANNUAL PV COSTS	TOTAL ALL PV COSTS
Year	One-Off Costs	Annual Running Costs	Total Industry	One –Off Costs	Annual Running Costs	Total Government	Industry & Government	Industry & Government	Industry & Government
2010	27.30m	11.96m	39.26m	1.66m	0.55m	2.21m	28.96m	12.51m	41.47m
2011		11.83m	11.83m		0.53m	0.53m		12.36m	12.36m
2012		11.59m	11.59m		0.51m	0.51m		12.10m	12.10m
2013		11.30m	11.30m		0.50m	0.50m		11.80m	11.80m
2014		10.95m	10.95m		0.48m	0.48m		11.43m	11.43m
2015		10.74m	10.74m		0.46m	0.46m		11.20m	11.20m
2016	22.21m	10.37m	32.58m	0.44m	0.45m	0.89m	22.65m	10.82m	33.47m
2017		10.02m	10.02m		0.43m	0.43m		10.45m	10.45m
2018		9.68m	9.68m		0.42m	0.42m		10.10m	10.10m
2019		9.36m	9.36m		0.41m	0.41m		9.77m	9.77m
Total	49.51m	107.80m	147.31m	2.10m	4.74m	6.84m	51.61m	112.54m	164.15m